

SCOTTISH BIRDS



THE JOURNAL OF THE
SCOTTISH ORNITHOLOGISTS' CLUB

Volume 6 No. 5

SPRING 1971

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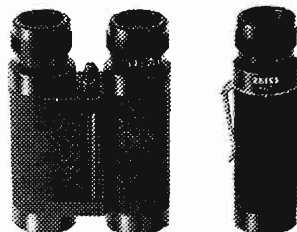


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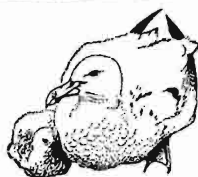
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THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

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SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



Vol. 6 No. 5

Spring 1971

Edited by Tom Delaney, assisted by D. G. Andrew

Editorial

Since 1962, and its second volume, *Scottish Birds* has been edited by Andrew Macmillan, who has been responsible not only for the policy of the journal but also for most of the detailed work involved in producing it every quarter. Under his control *Scottish Birds* has gained an excellent reputation, and the Scottish Ornithologists' Club owe a considerable debt to him for his outstanding work. We are glad to know we may continue to call upon his experience and advice.

The purpose of the journal is to provide interest and pleasure, and its success in doing so depends largely on the quality of the material offered for publication. A number of papers and articles are in preparation for future issues, and we shall continue to welcome contributions and suggestions.

BTO Ornithological Atlas. On another page Christopher Headlam summarizes the progress of the BTO Atlas project in Scotland and points a few morals. Also with this issue we are distributing the *BTO News* supplement giving instructions for the 1971 season. There is an up-to-date coverage map and a list of areas where help is needed most, which is recommended reading for observers planning holidays and excursions.

New local recorders for Dumfriesshire. John G. Young, the local recorder for Dumfriesshire is leaving to take up a post on Speyside. The task of local recorder is being taken on as a joint effort by D. Skilling, 86 Auchenkeld Avenue, Heathhall, Dumfries, and R. T. Smith, Applegarthtown, Lockerbie, Dumfriesshire.

Current literature. Recent material of Scottish interest includes :

Research on Vertebrate Predators in Scotland. Progress Report, 1970. Nature Conservancy, 19 pages, price 20p. Deals with crows, Buzzards, Sparrowhawks, Golden Eagles and other research.

Seabird movements in N.E. Scotland, 1968 and 1969. N. Elkins & M. R. Williams, 1970. *Seabird Report* 1969: 31-39. Rattray Head seawatching.

SCOTTISH BIRDS — A SPECIAL APPEAL

As a result of personal approaches made by Members of Council and the Notice in *Scottish Birds* 6 : 180, by mid February the Club had received Covenants which, with the tax recoverable, will give an income of £100 for seven years towards our target of £500, and also Donations of £110 for this year only.

Council is extremely grateful to all members of the Club who have supported the Appeal so generously, but hopes that there are others who are prepared to help maintain the high standard of the Journal.

I would like to remind members who are considering a Donation, that all money received will be used specifically for *Scottish Birds*. We want to ensure a firm basis on which to secure the Journal in the future, and for this I appeal for further donations given under Deed of Covenant. If you are prepared to give your support in this way, will you please contact either the Club Secretary or myself. Your Donation will be most gratefully received.

A. DONALD WATSON, President.

BTO Ornithological Atlas 1968-72

In 1970 substantial and gratifying progress was made in Scotland towards completion of the BTO Atlas project. Coverage is now complete in Orkney, and nearly so in Caithness, Easter Ross near Inverness, Nairnshire, Morayshire, much of Banffshire and most of coastal Aberdeenshire. Good organization and consistently keen field work have produced nearly full coverage also in Angus, in Perthshire and in the areas undertaken by the Stirling and Glasgow branches. In the Lothians, Tweed Valley, Ayrshire, Dumfriesshire and Galloway progress has generally been good, though some remoter squares have scarcely been touched. In Galloway, however, the shortage of resident birdwatchers and of visitors seems to have been no discouragement; when there is no "other fellow" to help, you do it all yourself—Samuel Smiles had a word for it.

In the Highlands, Skye, the Outer Hebrides and Shetland there are still major gaps in coverage, little surprise, perhaps, when one considers the size of the areas concerned. However, the 1968-70 returns show a tendency of visitors to head direct for well known areas, where they expect to find "interesting" birds. But species records already show that these "interesting" birds can be found and enjoyed in many places often passed by. The continued existence of areas of incomplete coverage is a challenge to local and visiting birdwatchers alike, and their exploration will often prove very worthwhile; the moral is clear—"seek and ye shall find".

During 1970 the position in mainland Argyll and Mull was greatly improved when M. J. P. Gregory volunteered to take on the organisation and records of this extended and generally difficult area. For 1971 three more regional organisers have come forward to complete the chain of responsibility around the country.

Mainland Argyll and Mull M. J. P. Gregory, 4 High Bank Park, Lochgilphead, Argyll.

Islav, Jura, Colonsay, Oronsay C. Gordon Booth, Cairmore House, Port Ellen, Isle of Islay.

Buteshire Dr J. A. Gibson, Foremount House, Kilbarchan, Renfrewshire.

Lanarkshire south of Hamilton D. L. Clugston, 95 Courthill Avenue, Cathcart, Glasgow S.4.

C. G. HEADLAM.

Foulis Mains, Evanton, Ross-shire.

A massive wreck of oiled birds : northeast Britain, winter 1970

J. J. D. GREENWOOD, R. J. DONALLY, C. J. FEARE,
NANCY J. GORDON and GEORGE WATERSTON

J. J. D. Greenwood is in the Department of Biological Sciences, University of Dundee; R. J. Donally is with the Nature Conservancy at Merlewood Research Station; C. J. Feare is at the Culterty Field Station, University of Aberdeen; Miss Gordon is with the Nature Conservancy in Edinburgh; George Waterston is Assistant Director of the RSPB in Scotland.

Introduction

Between 1st January and 15th February 1970 some 12,856 birds, mostly oiled, were recorded dead or dying on beaches in northeast Britain. In this paper we describe the incident and discuss its possible causes, the steps taken to deal with it and future prospects. A brief report has already appeared (Greenwood 1970).

Wrecks of oiled birds in northeast Britain have increased in recent years. In 1968 an accidental spillage of 87 tons of crude oil in the Tay estuary killed over 1,300 birds (Greenwood and Keddie 1968). In spring 1969 large numbers of oiled birds were washed up on almost the whole length of the east coast of Britain (Bourne and Devlin 1970; Greenwood 1969). The present incident quite outranks these. Indeed, in terms of birds known to have been killed, it is the second largest seabird disaster recorded in the waters around Britain so far, surpassing even the *Torrey Canyon* incident (10,000 known dead: Bourne, Parrack and Potts 1967) and nearly equalling the mysterious Irish Sea wreck of autumn 1969 (15,000 known dead: Bourne 1970). The only larger oil-pollution disaster, off the Friesian Islands in 1969, produced over 14,500 birds known dead (Swennen and Spaans 1970).

Methods

Counts of birds found dead or destroyed were made by many individuals, often under the aegis of the RSPB Beached Birds Survey or of more intensive local schemes, and by various public bodies, especially the animal-welfare societies. Careful analysis has been made to detect all possible cases of duplication in recording. In fact there were few, because most observers removed or buried corpses or cut off wings. However, because some beaches were not visited, many beached birds were probably not recorded at all. Thus over the weekend 28th February/1st March, 380 dead seabirds (30 of them

Table 1. Total numbers of beached birds found, 1st January-15th February

	Yorkshire	Co. Durham	Northumber-land	Berwick and The Lothians	Fife	Angus and Kincardine	Aberdeen	Total
Great Northern Diver <i>Gavia immer</i>	0	0	1	1	12	2	0	16
Black-throated Diver <i>G. arctica</i>	0	0	0	1	1	0	1	3
Red-throated Diver <i>G. stellata</i>	2	0	14	6	37	8	2	69
Diver <i>Gavia</i> spp.	0	0	0	0	15	28	0	43
Great Crested Grebe <i>Podiceps cristatus</i>	2	0	0	1	4	2	0	9
Red-necked Grebe <i>P. griseigena</i>	1	0	0	2	0	0	0	3
Slavonian Grebe <i>P. auritus</i>	0	0	0	1	6	0	0	7
Black-necked Grebe <i>P. nigricollis</i>	1	0	0	0	0	0	0	1
Grebe <i>Podiceps</i> spp.	0	0	0	6	1	2	0	9
Petrel <i>Hydrobates</i> spp.	0	0	0	2	0	0	0	2
Fulmar <i>Fulmarus glacialis</i>	2	0	0	0	7	5	6	20
Gannet <i>Sula bassana</i>	1	1	0	3	11	23	6	45
Cormorant <i>Phalacrocorax carbo</i>	3	4	2	9	14	29	8	69
Shag <i>P. aristotelis</i>	1	0	3	2	5	11	1	23
Heron <i>Ardea cinerea</i>	0	0	0	0	0	0	1	1
Mallard <i>Anas platyrhynchos</i>	0	2	0	1	1	4	0	8
Wigeon <i>Anas penelope</i>	0	0	0	0	0	1	0	1
Scaup <i>Aythya marila</i>	1	1	0	20	19	1	0	42
Tufted Duck <i>Aythya fuligula</i>	0	0	0	0	1	0	0	1
Goldeneye <i>Bucephala clangula</i>	0	0	0	1	2	2	0	5
Long-tailed Duck <i>Clangula hyemalis</i>	1	0	0	5	24	5	0	35
Common Scoter <i>Melanitta nigra</i>	5	0	0	9	251	20	2	287
Velvet Scoter <i>M. fusca</i>	0	0	0	3	47	7	1	58
Scoter <i>Melanitta</i> spp.	0	0	0	2	155	18	0	175
Eider <i>Somateria mollissima</i>	1	0	11	87	1055	934	36	2124

Table 1 (continued)

	Yorkshire	Co. Durham	Northumber- land	Berwick and The Lothians	Fife	Angus and Kincardine	Aberdeen	Total
Goosander	0	0	0	0	0	1	0	1
<i>Mergus merganser</i>								
Red-breasted Merganser	0	0	0	0	10	12	0	22
<i>M. serrator</i>								
Shelduck	0	0	0	1	11	2	0	14
<i>Tadorna tadorna</i>								
Duck	0	0	0	6	3	0	0	9
<i>Anatinae</i>								
Grey Lag Goose	0	0	0	0	1	0	0	1
<i>Anser anser</i>								
Pink-footed Goose	0	0	0	1	1	5	0	7
<i>A. brachyrhynchus</i>								
Grey goose	0	0	0	0	0	0	6	6
<i>Anser spp.</i>								
Mute Swan	1	0	0	0	1	0	0	2
<i>Cygnus olor</i>								
Whooper Swan	0	0	0	0	1	0	0	1
<i>C. cygnus</i>								
Oystercatcher	0	0	0	1	6	1	0	8
<i>Haematopus ostralegus</i>								
Turnstone	0	0	0	0	0	2	0	2
<i>Arenaria interpres</i>								
Curlew	0	0	0	0	4	0	0	4
<i>Numenius arquata</i>								
Bar-tailed Godwit	0	0	0	0	0	3	0	3
<i>Limosa lapponica</i>								
Skua	0	0	1	0	0	0	0	1
<i>Stercorariinae</i>								
Great Black-backed Gull	15	1	0	0	1	19	5	41
<i>Larus marinus</i>								
Herring Gull	15	5	0	0	6	1	5	32
<i>L. argentatus</i>								
Common Gull	27	2	0	0	5	0	3	37
<i>L. canus</i>								
Black-headed Gull	10	3	4	0	3	1	4	25
<i>L. ridibundus</i>								
Kittiwake	4	2	1	0	5	1	6	19
<i>Rissa tridactyla</i>								
Gull	0	0	19	5	3	12	0	39
<i>Larinae</i>								
Razorbill	48	27	122	191	282	840	89	1599
<i>Alca torda</i>								
Little Auk	26	15	36	55	132	254	437	955
<i>Plautus alle</i>								
Guillemot	985	272	1082	783	562	1362	157	5203
<i>Uria aalge</i>								
Puffin	6	0	42	12	19	37	71	187
<i>Fratercula arctica</i>								
Auk	263	0	19	8	28	0	2	320
<i>Alcidae</i>								
Unidentified	0	0	0	62	31	889	280	1262
	1421	335	1357	1287	2783	4544	1129	12856

oiled and long-dead) were found between Rattray Head, Aberdeenshire, and Inverbervie, Kincardineshire, and 760 more (600 of them oiled and on shores unvisited earlier in the year) between Gourdon, Kincardineshire, and Dundee; presumably these were the remnants of previously unrecorded birds.

Much of the organisation of counting and all the compilation and analysis of the data in England and Aberdeenshire were done by RJD and CJF respectively. In the area between, which suffered heavier mortality, NJG and GW gathered the data from most sources. JJDG made the overall analysis.

The number of birds killed

If we rule out possible duplicate counts, 12,856 birds were found dead or dying on the beaches. The incomplete coverage makes this a minimum figure, and, of course, some affected birds may not even have reached land. For example, when 410 marked Guillemot corpses were dropped into the Irish Sea in May 1969, only 20% were found ashore later, despite intensive searches (Hope Jones *et. al.* 1968). Similarly, only about 25% of Shags killed by a 'red tide' off Northumberland in May 1968 were found (Coulson *et. al.* 1968). Finally, Tanis and Mörzer Bruyns (1968) found during an oil pollution incident off the Low Countries that eight to 11 times more birds died at sea than were later found ashore. Thus these findings indicate that only a proportion of dead birds is found ashore, and the most conservative estimate suggests that our count of 12,856 could represent 50,000 birds killed.

Distribution of beached birds

The numbers and species of birds found in each area are given in table 1. The Aberdeenshire and English beaches were well surveyed, so the apparent concentration of birds in Angus and Fife is probably real.

In late December there was minor oil pollution in the Firth of Forth; 211 Scaup and 11 other birds were killed by light diesel oil, apparently from a shore source. After 26th December, however, no beached birds were reported until 6th January, when three Razorbills and three Guillemots were found badly oiled at North Berwick, East Lothian. The subsequent course of the incident in southeast Scotland is shown in fig. 1. Two points are to be borne in mind when fig. 1 is interpreted: first, the scale is logarithmic, giving comparatively more weight to small numbers; secondly, the numbers partly reflect searching effort and are probably relatively too small at the very start of the incident and towards its end. Fortunately, undated records were too few to cause bias.

Fig. 1 shows the patterns in Fife and Angus to be similar, and rather different from that on the southern shores of the

Forth, where the beachings began a few days earlier and showed a trough around 20th January rather than a peak a day or two later. In Yorkshire and Durham the pattern resembled that around the Tay; the beachings started on 10th January, reached a peak around 17th to 25th and petered out in

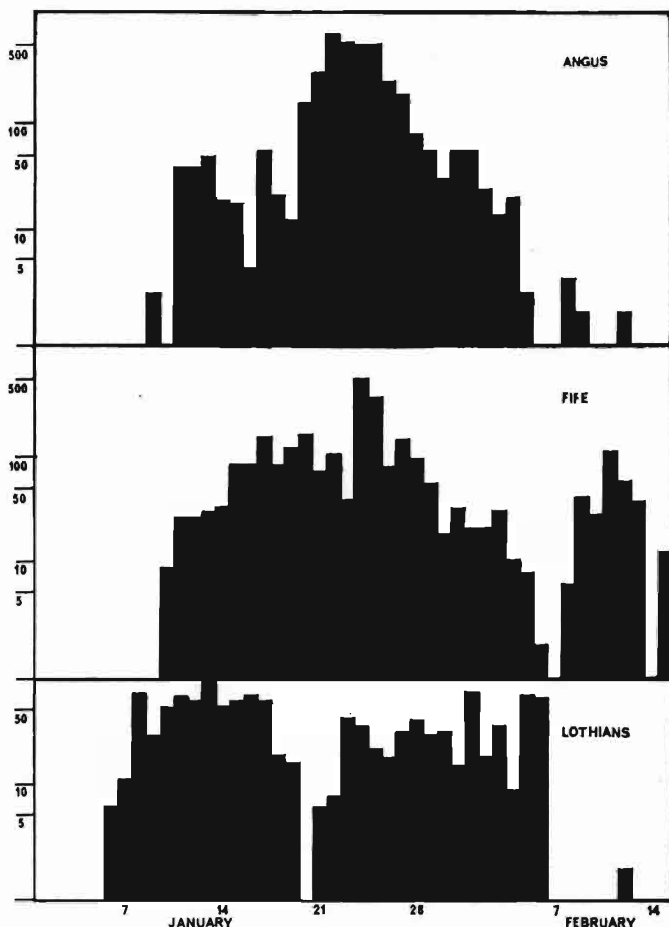


FIG. 1. Time distribution of recoveries of beached birds in Angus, Fife and the Lothians. The scale is logarithmic, exaggerating small numbers.

early February. In Northumberland, no birds were reported until 20th January, but the pattern was otherwise similar. In Aberdeenshire few birds came ashore until the last week in January, during which 117 were reported. The main wave landed overnight on 1st/2nd February, and 733 were found

between Peterhead and Aberdeen on 4th and 5th February. (Also reported for the county were 229 undated birds.)

Species involved

The identifications given in table 1 are mostly those of the observers, except that all scoters are listed as unidentified unless experienced birdwatchers identified them. Most of the unidentified birds comprise records such as "x dead birds between A and B" rather than unidentified remnants at the end of species lists, and so they are probably a random selection of species. Some records, especially of common species, referred to "many" rather than to specific numbers; because of this, the numerical totals are much too low for gulls and somewhat too low for Guillemots and Razorbills. Even allowing for gross underestimation of gulls, however, it is clear that this incident involved mainly divers, Cormorants and Shags, auks and sea-ducks, thus following the usual pattern for oil pollution (Battelle-Northwest 1967; Bourne 1968a; Clark and Kennedy 1968; Tanis and Mörzer Bruyns 1968; Rowan 1968). This is explicable if it is generally true, as Bourne (1968b) observed on one occasion, that gulls fly away on swimming into oil, whereas auks merely dive. Waders, of course, are oiled only if

Table 2. Distribution of auks

	Yorkshire	Co. Durham	Northumber-land	Berwickshire and the Lothians	Fife	Angus and Kincardineshire	Aberdeen
Razorbill	3.6	8.6	9.4	18	28	35	12
Guillemot	74	87	84	75	55	55	21
Puffin	0.5	0	3.2	1.0	1.9	1.5	9.4
Little Auk	2.0	4.8	28	5.2	13	10	58
Auk	19.8	0	1.5	0.8	2.8	0	0.2
	1328	314	1301	1049	1023	2493	756

Note. The figures for individual species are the percentages of the totals for each area contributed by each species.

the shores they haunt are heavily polluted (Harrison and Buck 1967).

The number of wildfowl oiled in Fife and Angus reflects their winter distribution—Scaup particularly in the Forth, scoters and Long-tailed Duck in St Andrews Bay and Eider around the Tay (Atkinson-Willes 1963; Thom 1969). The distribution of auks is of interest (table 2). Not unexpectedly, Guillemots and Razorbills generally outnumbered Puffins and Little Auks, but the latter reached extraordinary numbers in

Aberdeenshire, where Puffins were also abundant. The ratio of Razorbills to Guillemots increased markedly from south to north.

The composition of the counts changed in time as well as in space. In Fife and Angus the proportion of inshore species, wildfowl, waders and gulls, was lower around 21st-26th January than before or after. (Elsewhere it was too low for variations to be significant). In Fife Little Auks were commonest around 21st January. In Angus this peak persisted until the beginning of February, possibly because patrols of the coast north of Arbroath, where Little Auks were commoner, were made only in the last week of January and later. In Aberdeenshire Little Auks formed 8% of the total in the last week of January, 58% on 4th and 5th February.

Cause of death

Few reports stated whether individual birds were oiled. However, the degree of oiling was noted fully in three sets of records (table 3) and occasionally in other reports. These show that external oiling affected over 99% of divers, grebes, Cormorants, Shags and auks; over 90% of seaducks; over 75% of other wildfowl; about 50% of gulls, petrels and Gannets; and few of the waders.

Table 3. Degree of oiling of beached birds in three areas

	Tayport, North Tentsmuir				St Andrews, Tentsmuir				Aberdeenshire			
	0	1	2	3	0	1	2	3	0	1	2	3
Divers and grebes	0	0	86	14	0	0	40	60	0	50	50	0
Petrels and Gannet	100	0	0	0	0	0	0	0	11	44	44	0
Cormorant and Shag	0	0	100	0	0	0	100	0	0	50	50	0
Seaducks	0	20	48	32	1	38	52	9	18	68	14	0
Other wildfowl	0	50	50	0	0	75	0	25	0	0	0	0
Waders	0	0	0	0	100	0	0	0	0	0	0	0
Gulls	100	0	0	0	25	0	75	0	27	64	9	0
Razorbill	0	0	44	56	0	0	66	34	4	0	50	46
Guillemot	0	0	27	73	0	0	76	24	1	4	45	49
Little Auk	0	50	50	0	0	0	13	87	0	0	2	98
Puffin	0	0	0	0	0	0	100	0	0	2	3	95

Note. Degree of oiling estimated as 0—none, 1—slight, 2—moderate, 3—severe. Estimation is consistent within areas but not between areas. Figures show the percentage of dead birds in each category. Figures in *italics* are based on a total of ten or more. "Seaducks" comprise Scaup, Long-tailed Duck, scoters and Eider.

Many of the birds found were alive and obviously suffering from oil, but it might be suggested that the dead ones had been oiled only after death from other causes. We think this highly improbable: enough oil to contaminate over 10,000 birds after death would be enough to kill them in the first place. Furthermore, mortality on this scale has always been associated with

oil pollution since J. P. F. Keddie started keeping detailed records at Tentsmuir, Fife, in September 1966. However, in February near Dundee some Eiders were caught, weak but with no oil on their feathers or in their gut. It is possible that they had been oiled but had cleaned themselves and survived. On the other hand, since none were analysed chemically or bacteriologically, one cannot discount the possibility that they were suffering from some other form of pollution or disease. In general terms this is not important, since these birds form such a small proportion of the total.

Table 4. Minimum estimates of the number of seabirds found that had been affected by oil

	Number found	Minimum percentage affected by oil	Minimum number affected by oil
Divers	131	99	130
Grebes	29	99	29
Petrels and Gannet	67	50	34
Cormorant and Shag	92	99	91
Seaducks	2721	95	2500
Other wildfowl	78	75	58
Waders	18	0	0
Gulls	194	50	97
Auks	8264	99	8200
Unidentified	1262	95	1200
	<u>12856</u>		<u>12400</u>

Many birds beached in eastern Britain in 1969 had oil in their gut but none on their feathers (Greenwood 1969). Dundee Museum staff examined internally all birds they handled during the 1970 incident except Eiders; again, all had oil in their gut. Whether apparently unoiled birds have oil inside through eating lumps of it or through cleaning their plumage is not clear. What is clear is that more birds are affected by oil than show it externally. Thus the figures given in table 4 are minimum estimates of the numbers killed by oil. (The figure of 95% for unidentified birds is based on the belief that most were seaducks or auks.)

The oil that killed these birds had at least two sources, for an underlying, harder layer and a superficial, softer layer were found on birds by several observers around the Tay. The oil in these layers must have differed in age or kind. It appears that at least one source was well out to sea; oiling was very heavy in the more marine species (Puffin and Little Auk), less in the more inshore ones (Guillemot and Razorbill) and least in coastal ones (ducks), and it is reasonable to suppose that the degree of oiling depends on the freshness and quantity of the oil and on length of exposure to it. This view is supported by evidence from Aberdeenshire, where the strandings of

early February contained more heavily oiled and greatly decayed corpses than were found in late January. In the Tay area the majority of casualties in the first half of January were dead, decayed auks, with fewer live auks and ducks. This indicates oiling of offshore auks some time before, with later oiling of coastal auks and ducks as the oil moved inshore with the corpses. After mid January the proportion of live birds increased, presumably because fewer corpses were arriving from offshore and more coastal birds were being affected. In the final stages, as all affected birds succumbed, none were found alive. The proportion of auks was higher in the middle of the incident than in these later stages, perhaps because the ducks, being larger, lost heat less rapidly and so died more slowly: heat loss is the most important aspect of death from oiling (Hartung 1967).

Distribution and nature of the oil

Little oil came ashore in the Forth area or southwards, though small amounts were found on 7th January and subsequently. Sandy shores round Tentsmuir, Fife, retained a scattering of tarry lumps, one inch to one foot in diameter, especially around 13th January. Lumps were distributed every couple of yards along the strandline, with the oily flotsam. On 20th January thick oil hit parts of the esplanade and rocks at Arbroath, Angus, and in the next few days small amounts of similar oil were reported at various towns along the rocky coast to the north. Indeed, at the end of February JJDG found that there were small, scattered patches of oil all along this coast, their splashed nature suggesting that the oil had been rather liquid when deposited. At the beginning of February the sandy shores from Aberdeen north to Cruden Bay received a light oiling, similar to that at Tentsmuir earlier.

On 12th January the Board of Trade alerted fishing vessels and the armed services to keep special watch for oil off eastern Scotland. Perhaps because bad weather reduced traffic, none was reported until 20th January, when a trawler found a slick three-quarters of a mile offshore in the Arbroath-Auchmithie area, Angus. The slick, four miles long and several hundred yards wide, comprised thick oil in its central half mile but was thin elsewhere. Presumably it was linked with the oiling of the Arbroath beaches on the same day.

On 26th January an RAF helicopter on a training flight found small patches of oil off the Angus coast, and the next day a Shackleton reported a number of small slicks just north of the Tay mouth, up to 15 miles offshore. Two days later, however, a helicopter search mounted by the Board of Trade found no oil in the area, and another aerial search on 31st January from Berwick, Northumberland, to Bridlington, Yorkshire, extending up to 50 miles offshore, was equally fruitless.

Between 7th and 16th January 17 samples of oil were taken from birds and beaches at various places from North Berwick to the Tay. All were of the same type of weathered heavy fuel oil, according to gas-chromatographic analyses by the Lothians River Purification Board. On 21st and 22nd January 26 oil samples were taken from birds and beaches between Arbroath, Angus, and Inverbervie, Kincardineshire. These samples resembled the previous ones except that they contained more volatile fractions. However, after weathering, these volatile fractions disappeared, and the characteristics of the two sets of samples were then identical. In general there were lower boiling-point fractions present (i.e. fresher oil) in samples from ducks than in those from auks, indicating that the latter tended to have been oiled earlier.

Four samples taken in Aberdeenshire on 2nd February were of a similar weathered heavy fuel oil, but one from Northumberland on 30th January was of a rather different type of heavy fuel oil.

Winds and surface drift

Birds move at their own volition, and corpses may sink and be carried by deep currents (Hope Jones *et. al.* 1970). Thus the observation that corpses of Guillemot and Razorbill are drifted by the wind at 2.2% of its own velocity (Hope Jones *et. al.* 1970) is of limited use in determining the origin of corpses. Movement of oil is more useful; Smith (1968) found that it travelled at about 3.4% of the wind-speed, as Hughes (1956) and others have found for the surface layer of water (though Tomczak (1964) found a rate of 4.2%). Thus, by plotting a chain of wind-vectors, one can determine roughly the previous track of any oil. We have attempted this, using wind records from Bell Rock Lighthouse (56° 29'N, 2° 23'W) and North Carr Light Vessel (56° 16'N, 2° 31'W), and the resultant track is given in fig. 2.

Had there been any oil in coastal waters in the third week in December, it would have been blown in by the southeasterly winds of that week—at least from Fife northwards. None appeared until 7th January. This suggests the oil was spilled in late December, perhaps off northern England, then moved northwards as far as the Tay, becoming spread out by the variability of the winds in the two weeks around the New Year. It was then deposited widely by the ensuing southeasterly winds—more on the Fife coast than further south simply because of the aspect of these coasts. This oil was already weathered and broken up by the winds, which, by agitating the sea, may also have reduced the amount of oil deposited on beaches; the peak deposition at Tentsmuir was on 13th January, a calm day following two days of light winds.

The wind pattern clearly explains the apparent northward drift of the oil from the Arbroath slick of 20th January, the south-southeasterlies depositing this oil all along the coast of Angus, Kincardineshire and Aberdeenshire. Had the coast been parallel to the wind, the oil would have travelled the 50 miles in three or four days: deflection of its drift by the south-east aspect of the coast is presumably why it took about ten.

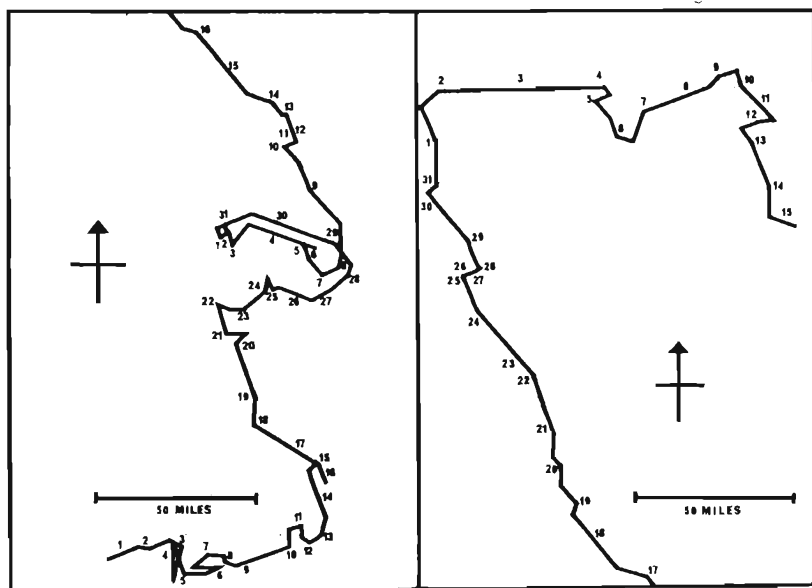


FIG. 2. Track of drifted oil. The track is drawn on the assumption that the oil drifted in the direction of the wind and at 3.4% of its speed. The numbers indicate dates. The track begins on 1st December 1969 at the bottom of the left-hand diagram, crosses to the bottom of the right-hand diagram on 17th January 1970 and terminates on 15th February. Oil seen on any date during the period in any place can be back-tracked by reading directions and distances off this diagram and plotting them on the map.

Even such details as the small number of birds beached on the southern shores of the Forth around 20th January (fig. 1) may be explained, for at this time the winds were almost due south, so holding corpses off this north-facing coast. The late peak on Fife beaches, in the second week of February, cannot be explained by the wind-pattern, however. It may be that the spring tides of 8th February were responsible, for most of these corpses were found at Tentsmuir, where certain areas retain flotsam only on the higher tides, because of the topography of the beach.

Since the angle the winds made to the coast was generally small, it is impossible to say accurately how far offshore the oil originated. (For example, a southeast wind blowing onto an east-facing coast would carry oil from 80% further offshore than a south-southeasterly wind of the same strength.)

Drift of bottles and buoys

A concomitant of the oil pollution was the deposition of about 200 foreign bottles on the shores of Tentsmuir, a remarkable number (M. Smith, pers. comm.). They were bottles that had contained cognac, Dutch genever, Belgian and French aperitifs and anise, and Alsace wines. In addition there were whisky bottles of blends specially bottled for the European market and also whisky bottles themselves specially designed for the same market. Their identities clearly suggest an origin some way from British shores, and their number confirms this. Their track must have coincided with that of the oil while it was still rather sticky, for most were oiled. We do not wish to suggest that the oil originated on the east side of the North Sea but that the pattern of drift in late 1969 and early 1970 was such that the oil could have been brought in from well offshore. This is confirmed by a hydrographic buoy that reached Lerwick, Shetland, at about the end of February, having been released three months before off Germany, 600 miles southeast (*Aberdeen Press and Journal* 1970).

Conclusions on the course of the incident

These several lines of evidence having been examined, a general picture emerges. It seems that heavy fuel oil was discharged off the east coast during December, probably towards the end of the month and possibly some way offshore (since southeasterly winds during 14-22nd December deposited none on beaches). By early January it was well spread out, for the southeasterly winds then started to bring it ashore on a front extending from the Humber to the Tay. The wide spread may have been due to variable winds around the New Year but could also have resulted from more than one source being involved (Northumberland oil seemed different from that sampled elsewhere). The oil killed numbers of auks offshore and affected seaducks as it entered coastal waters.

A fresh discharge occurred in the mouth of the Tay overnight on 19th/20th January. The slick broke up within 24 hours, having soiled Arbroath shores, but, driven by the wind, the oil moved relentlessly north, depositing oil as far north as Rattray Head within the succeeding ten days or so, and affecting more birds. Around the Tay, coastal species were involved (so ducks carried fresher oil than auks, and some individuals carried oil of two ages). Further north, it seems to have oiled more Little Auks and Puffins, though the very decayed

state of the heavily oiled corpses in Aberdeenshire suggests they had been caught in earlier oil.

As the wind started to blow offshore in early February, fewer birds were deposited on beaches. There were still some on the sea, however, for the spring tides of 8th February seem to have caused fresh beachings, at least at Tentsmuir. Thus, though only 12,400 birds are definitely known to have been oiled, more were almost certainly involved, but lost at sea. The best estimate is that about 50,000 birds were killed. Yet the amount of oil found was small, and though more than one discharge was involved, none appears to have been large. Indeed, the nature of the oil suggests it originated from bunker-cleaning operations of general-cargo vessels, which would not individually produce much. Even the area involved was restricted; it seems unlikely that there was much oil south of the Humber or, until the wind took it there, north of the Tay. This being so, the number of birds killed is remarkable.

Dealing with the oil

Two criticisms were levelled at the Board of Trade (now the Department of Trade and Industry) during this incident : first, that it did not take greater action to deal with the oil and, secondly, that some of its officials were slow to accept that the seabird mortality was at all abnormal. The first is really a criticism of the Board's remit in that it is required to deal only with pollution that threatens coastal amenities (Board of Trade 1970). Recent top-level discussions between the Nature Conservancy and the Department of Trade and Industry will, it is hoped, lead to an extension of this remit to cover oil threatening seabirds. Especially if this happens, we hope that the second criticism will not need to be repeated. Naturalists now have some experience of levels of mortality, and their views on whether any particular level is normal or not should be accepted by those who are not expert in this field.

The oil on most accessible beaches was insufficient for action to be taken outside the holiday season. However, several hundred yards of the esplanade at Arbroath were oiled and had to be cleaned by smothering with sand. The treatment proved effective and was, of course, much cheaper than the use of detergents would have been, as well as less likely to disturb local ecosystems.

Tankers are usually blamed for all oil pollution. The many samples analysed in this incident were fuel oil, however, and therefore more likely to have come from the bunkers of general-cargo vessels. Such vessels discharge oily water either because they have used it as ballast or because they have cleaned their tanks with it. Though they have separators to remove the oil from discharged water, it is clear that they are

not always used and that there is room for considerable improvement in this matter.

Sampling deposited oil is a good way to determine its source, and local oil-pollution officers should arrange the analysis of samples taken by naturalists. Samples are best kept in glass containers to prevent escape of volatile components; polythene does not do this and may even contaminate samples.

Dealing with the birds

It is now generally considered that there is little point in attempting to rehabilitate oiled birds. Most of the live birds picked up in this incident were, therefore, destroyed. Marsault (1969) found, however, that Guillemots will recover to the point of laying eggs in captivity and has now found that Razor-bills will do so as well (Greenwood and Marsault 1971). The latter authors have detailed methods (individual care, with good feeding and judicious medication) by which such success may be achieved. Using these methods, Alf Robertson of Dundee had some success in 1970 : of about three dozen birds he took into care, some 75% survived until the summer to be released in natural or seminatural conditions. It is clear, therefore, that future research on rehabilitation needs to be directed not so much to the methods of restoring the birds but to finding out if the present methods are producing birds that are viable after release. Of course, rehabilitation is but a small part of the problem of oiled birds, and research on other aspects must not be neglected.

One type of research is simply to monitor the damage. The Bird Disasters Enquiry of the RSPB, which is an expansion of the Beached Birds Survey, needs widespread support. Local intensive schemes, like that already operating in northern England, can complement the national scheme by providing more complete information on particular incidents and for specific areas. If the extrapolation from the counts made under such schemes is to be accurate, we must know more about the behaviour at sea of oiled birds and corpses. Finally, all can help in the accurate census of seabirds now being attempted on the biggest scale in Operation Seafarer. Only from this information can the long-term effects of oil pollution be judged.

Acknowledgments

Though this paper has been written by only five people, the work on which it is based was done by a large number of others, both private individuals and representatives of various private and public bodies. They have made their results freely available to us, and our gratitude to them is great indeed. Though we have not attempted to list their names, since some records were anonymous or noted under the name of one

of a team, this does not mean that we do not appreciate the hard and often unpleasant work they have done.

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Summary

Counts of beached birds in northeast England and east Scotland in the period 1st January to 15th February, 1970 have been collated. The counts were not systematic, so many beaches were not covered, though possible overlaps have been excluded. The number of dead or dying birds found was 12,856, which probably means that about 50,000 were affected altogether. The species affected are shown in table 1, and the time distribution of the beachings in fig. 1. Between the Humber and the Tay, most birds came ashore between about 7th January and 7th February, with a peak in the middle of this period. In Aberdeenshire the birds did not arrive until near the end of January. Among the beached birds there were regional differences in distribution of the species, some of which reflected their known natural distributions; Little Auks were especially abundant in Aberdeenshire.

Of the 12,856 birds, 12,400 were probably killed by oil. Oil was obvious on nearly all the natatorial seabirds, on most of the other wildfowl and on half of the aerial seabirds but on few of the waders. It was found in the gut of many apparently unoiled birds. The oil on the birds was of at least two types or ages; ducks tended to have fresher oil on them than did auks. Small amounts of oil were deposited between the Humber and the Tay during January. On 20th January a large slick was seen off Arbroath, and thick oil contaminated some beaches there. Small amounts of oil were subsequently deposited to the north, reaching Aberdeenshire at the beginning of February. Nearly 50 samples of oil were taken. All were of weathered heavy fuel oil, though one from Northumberland was of a rather different type.

The distribution of the oil can be explained by the action of a long period of generally southeasterly winds on oil spilled off northern England or southern Scotland in late December and in the mouth of the Tay on 20th January. Unusually large numbers of bottles of continental types were cast ashore as a result of the same winds, and a buoy travelled from Germany to Lerwick during the same period.

We conclude that heavy fuel oil, perhaps from more than one source, was discharged off the east coast, probably late in December. It was brought ashore by the southeasterly winds that developed in January, along with the seabirds it had affected. A second discharge in the mouth of the Tay on 20th January affected more birds in that region and then even more up to the north as it was blown up the coast. Since so little was seen, the quantity of oil involved could not have been large, though it killed many birds.

We are glad that the only action taken to deal with the oil was not biologically destructive and that the remit of the Department of Trade and Industry may be widened to include oil pollution which threatens seabirds but not beaches. We hope that in future the views of natural-

ists as to what constitutes abnormal seabird mortality will be accepted, that there will be tighter control over the discharge of oil from general-cargo vessels and that naturalists will take samples of any polluting oil for analysis. For the good of birds, more knowledge is required of their numbers, of the number killed by oil and of the proportion surviving after good rehabilitation.

References

- Aberdeen Press and Journal* 26th February 1970. Lerwick mystery solved.
- ATKINSON-WILLES, G. L. 1963. *Wildfowl in Great Britain*. London.
- BATTELLE-NORTHWEST. 1967. *Oil spillage study, literature search and critical evaluation for selection of promising techniques to control and prevent damage*. Report to the Department of Transportation, U.S. Coastguard, by Pacific Northwest Laboratories, Battelle Memorial Institution, Richland, Washington, U.S.A. *Mimeo*.
- Board of Trade (Information Division). 1970. The battle against oil pollution at sea. *Board of Trade J.* 199 (3834), Supplement I-XII.
- BOURNE, W. R. P., PARRACK, J. D. and POTTS, G. R. 1967. Birds killed in the *Torrey Canyon* disaster. *Nature* 215: 1123-1125.
- BOURNE, W. R. P. 1968a. Oil pollution and bird populations. In *The Biological effects of oil pollution on littoral communities* (ed. J. D. Carthy and D. R. Arthur), *Field Studies* 2 (supplement): 99-121.
- BOURNE, W. R. P. 1968b. Observation of an encounter between birds and floating oil. *Nature* 219: 632.
- BOURNE, W. R. P. 1970. The bird kill in the Irish Sea. *Seabird Report* 1969: 5-6.
- BOURNE, W. R. P. and DEVLIN, T. R. E. 1970. International beached-bird survey 1969. *Birds* 3: 12-13.
- CLARK, R. B. and KENNEDY, J. R. 1968. *Rehabilitation of oiled seabirds*. University of Newcastle-upon-Tyne, Department of Zoology. *Mimeo*.
- COULSON, J. C., POTTS, G. R., DEANS, I. R. and FRASER, S. M. 1968. Exceptional mortality of Shags and other seabirds caused by paralytic shellfish poisoning. *Brit. Birds* 61: 381-404.
- GREENWOOD, J. J. D. and KEDDIE, J. P. F. 1968. Birds killed by oil in the Tay Estuary, March and April 1968. *Scot. Birds* 5: 189-196.
- GREENWOOD, J. J. D. 1969. Oil pollution off the east coast of Britain, February and March 1969. *Marine Pollution Bulletin* 17: 12-14.
- GREENWOOD, J. J. D. 1970. Oiled seabirds in east Scotland. *Marine Pollution Bulletin* 1: 35-36.
- GREENWOOD, J. J. D. and MARSAULT, B. M. 1971. Rehabilitating oiled seabirds. *Int. Zoo Yr. Book*.
- HARRISON, J. G. and BUCK, W. F. A. 1967. Peril in perspective: an account of oil pollution in the Medway Estuary. *Kent Bird Report* 16 (supplement).
- HARTUNG, R. 1967. Energy metabolism in oil-covered ducks. *J. Wildlife Mgmt.* 31: 798-804.
- HOPE JONES, P., HOWELLS, G., REES, E. I. S. and WILSON, J. 1970. Effect of 'Hamilton Trader' oil on birds in the Irish Sea in May 1969. *Brit. Birds* 63: 97-112.
- HUGHES, P. 1956. A determination of the relation between wind and sea surface drift. *Quart. J. Roy. Met. Soc.* 82: 494-502.
- MARSAULT, B. M. 1970. Egg-laying by Gullmots in captivity. *Avicult. Mag.* 75: 42-46.
- ROWAN, M. K. 1968. Oiling of marine birds in South Africa. *Proceedings of International Conference on Oil Pollution of the Sea, 7th-9th October, 1968 at Rome*: 121-124.
- SMITH, J. E. (ed.). 1968. *Torrey Canyon Pollution and Marine Life*. Cambridge.
- SWENNEN, C. and SPAANS, A. L. 1970. De sterfte van zeevogels door olie in februari 1969 in het Waddengebied. *Het Vogeljaar* 18: 233-245.
- TANIS, J. J. C. and MORZER BRUYN, M. F. 1968. The impact of oil pollution on seabirds in Europe. *Proceedings of International Conference on Oil Pollution of the Sea, 7th-9th October, 1968 at Rome*: 69-74.
- THOM, V. M. 1969. Wintering duck in Scotland 1962-68. *Scot. Birds* 5: 417-466.
- TOMCZAK, G. 1964. Investigations with drift cards to determine the influence of the wind on surface currents. In *Studies on Oceanography* (ed. K. Yoshida): 129-139.

Eiders nesting inland in East Lothian

DAVID JENKINS

Northern Eiders (*Somateria mollissima borealis*) occasionally breed up to 8km inland in southwest Baffin Island (R. H. Kerbes, pers comm.), but there are few published records of Common Eiders (*S. mollissima*) breeding more than a few hundred metres inland. The only one I can find is given by Bannerman and Lodge (1958) and concerns Eider nests in the Varanger Peninsula, North Norway, up to 100m above sea-level and as much as 4.8km inland. (But it is not clear whether the nests were this distance from water.) However, Baxter and Rintoul (1953) say that Eiders nested in woods at Archerfield, East Lothian, in 1915, Dr J. C. Coulson (pers. comm.) has heard of Eiders nesting inland near Archerfield more recently, and Eiders can frequently be seen flying inland in pairs in spring and summer near Aberlady Bay. Up to now the distance of nests inland at Archerfield has not been documented, and the Norwegian record of nests so far inland may be unique in the literature. This paper gives notes on Eiders inland near Aberlady; the observations were made casually during spare-time birdwatching not systematically.

Eiders at Aberlady Bay

Eiders nest at and near Aberlady Bay Nature Reserve, but many fail owing to predation of eggs by gulls and crows, presumably mostly following disturbance by people and dogs who regularly pass through the nesting area on the way to the dunes and sea. In 1968 two broods hatched on 26th May and 29th June, suggesting that the nesting period is prolonged, possibly due to relaying. I have found several nests in the eastern, landward part of the reserve as well as in the salt-marsh, and in both 1968 and 1969 a successful nest was built on top of a disused Mute Swans' nest on the Marl Loch, an unusual site. The number of duckings produced is not great; on 12th July 1970 not more than 80 Eider duckings were seen near the reserve, 16 in Aberlady Bay and 60 more at Hummel Rocks.

In 1969 and 1970 there were about 150-200 Eider drakes, presumably mostly paired, at Aberlady Bay in spring. Birds were seldom seen ashore before April and then they stayed mostly near the edge of the sea. In May paired birds came onto the golf links around Aberlady Bay, congregating in large and small groups and often going inland. Pairs frequented bare fields or young corn, especially in the mornings before 0700 hrs, when farm work started, causing disturbance. In some fields there were two or more pairs, sometimes scattered but

sometimes close together. Drakes were obvious on bare plough, but from late May they were seen less often; by then most breeding ducks were laying or incubating and were inconspicuous in the fields.

Table 1. Early morning counts of Eiders around Aberlady in 1969 and 1970

Date 1969	Place	Numbers counted	
		♂	♀
1st May	Beach near Hummel Rocks	122	—
2nd May	Beach near Hummel Rocks	151	—
9th June	Gullane Links	up to 200	—
9th June	Gullane Beach	up to 10	c100*
10th June	Gullane Links	up to 200	—
10th June	Gullane Beach	up to 10	c100*
21st June	Gullane Links	11	37
12th July	Gullane Links	0	67
1970			
26th April	Gullane Links	160	c160
4th May	Gullane Links	85	—
6th May	Gullane Links	150	—
7th May	Gullane Links	180	—
18th May	Gullane Links	12	26†
14th June	Gullane Links	0	48*
15th June	Gullane Links	1	98**
4th July	Archerfield Bay/ Eyebroughty	c1800	95***
12th July	Gullane Links	0	100

Notes.

—ducks not counted

†a sample count to show the sex ratio

*sub-adult ducks

**c90 sub-adult ducks

***+ 10 broods of 40 ducklings

Sub-adult ducks visited the inland breeding area at this period, presumably prospecting. Some drakes with them were presumably sub-adult too. From May to July duck Eiders flew circuits over Aberlady Bay and the surrounding land. On 29th June 1968 a flock of 57 birds were observed doing this. Of 13 examined only one had a wing-bar, and the other 12 were presumably sub-adults. At Gullane Links none of 24 ducks on 6th July 1968 had a wing-bar. Similar observations at other times (table 1) suggested that most birds in flocks inland in late June and July were non-breeding first-year sub-adults.

Throughout the breeding season Eiders were seen on the grass links near Aberlady Bay, especially Gullane Links, as well as on the fields. In 1969 and 1970 I made some counts of drakes on these links but did not usually count the ducks. The numbers recorded (table 1) give an idea of the size of the population in this area. After nesting time the drakes go to sea and gather to moult at favoured places such as Eyebroughty.

Inland nests

Fig. 1 and table 2 give my 1970 observations on Eiders inland. I saw birds flying towards Aberlady Bay from all the sites noted except J and none flying towards or east of Archerfield, where inland nesting had been reported to Dr Coulson. Most fields in which I saw birds were bare or newly sown plough; by late May or June the growth of cereals would usually be high enough to conceal Eiders, and so I probably missed birds in growing crops. On 14th June I saw an Eider duck sitting on a nest in a (bare) sugar-beet field at site G, 3km from the nearest sea. The nest was completely exposed, but the duck sat very tight, allowing me to approach within 1-2m. I was told of five more successful nests, also in sugar-beet, at

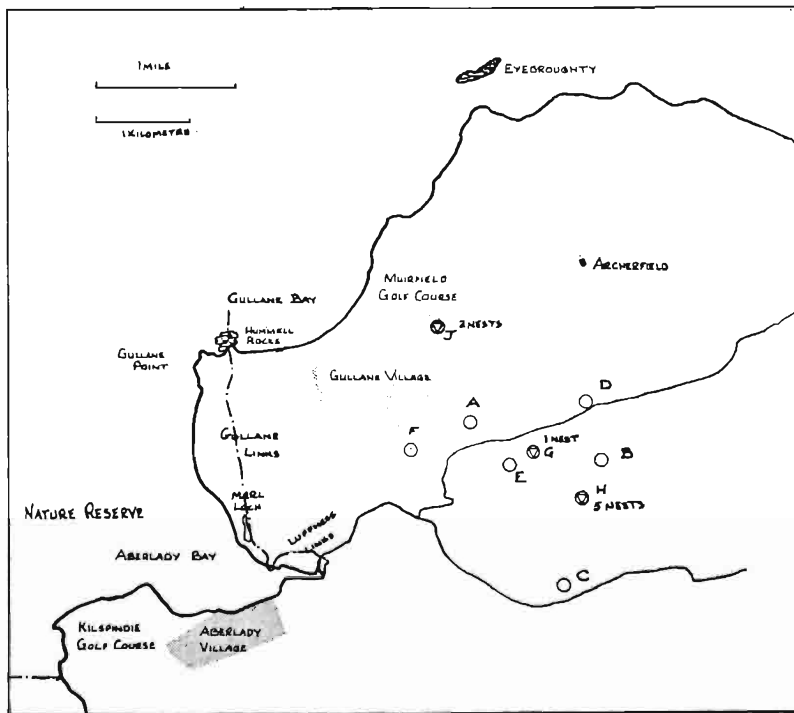


FIG. 1. Inland nests and occurrences of Eiders near Aberlady Bay, 1970.

site H. Incubating ducks here did not leave their eggs when the booms of tractors spraying herbicides passed over them. This field is also about 3km from the nearest sea. Two more nests in a small yard behind the caddies' building. This is about 1km

from the sea. Curiously, none of my sightings of Eiders inland were very near these sites.

Table 2. Observations of Eiders 2km or more inland near Aberlady Bay, 1970

Date	Time	Site A		B		C		D		E		F	
		♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
May													
2	0730	3	3	1	1	3	3						
6	0810							2	3				
7	0800							6	6				
9	0730					3	3	1	1				
10	0800	2	0										
17	2100							0	0				
18	0630					1	1	3	3				
	0745					0	0						
	1110					0	0	0	0				
24	0845							2	4*				
	0920					1	1	0	1				
25	0715					3	3**						
	1000							1	0				
	1400									1	1†		
	1900							1	1°				
28	0600											1	0††
	0710					1	1						
29	0715							1	0				
30	1200					2	2						
31	0720					6	6°	2	2				
June													
2	0700							0	0				
5	0715							0	0				
7	0730					0	1						
12	0705					2	2***						

Notes.

*sub-adult ducks

**two pairs on pond, one pair investigating straw bales

†flying west

††flying inland

°drakes apparently adult, all ducks sub-adult

***ducks on pools, drakes on nearby fields

Discussion

Around 1910 breeding Eiders moved from the links at Tynninghame, East Lothian, to nest in woods there which come right down to the shore. Apparently this was in response to heavy predation by crows and resulted in an increase in the Eider population (Baxter and Rintoul 1953). These authors recorded nesting in Forestry Commission plantations at Tentsmuir in 1938 and claimed that nesting in woods was a recent development. Eiders also nest up to 1.5km inland at one or two other Scottish sites close to agricultural land, such as Sands of Forvie, Aberdeenshire (H. Mylne, pers. comm.). At Aberlady Bay Nature Reserve the density of the breeding population is not high compared with that at other areas (e.g. Sands of Forvie or Farne Islands), and large areas close to the

shore appear to be suitable for nesting but are not being used; human disturbance at Aberlady, resulting in predation, may well be the main factor causing the Eiders to move inland to breed.

Summary

Adult Eiders are often seen inland east of Aberlady Bay, and it seems probable that Eiders may nest inland fairly commonly in this part of East Lothian. The furthest that Eiders were seen from the nearest sea in 1970 was about 4km, and nests were found up to 3km from the sea. According to local farmers this is not a new habit, and the nests usually escape predation. Prospecting sub-adults were also seen inland in late May and June. At Aberlady Bay Natures Reserve, where Eiders also nest, there are many people, and Eider eggs are frequently taken by predators.

Acknowledgment

Dr H. Mylne helped me search the literature.

References

- BANNERMAN, D. A. and LODGE, G. E. 1958. *The Birds of the British Isles*. London.
BAXTER, E. V. and RINTOUL, L. J. 1953. *The Birds of Scotland*. Edinburgh.

Isle of May Bird Observatory and Field Station Report for 1970

Prepared for the Observatory Committee by
NANCY J. GORDON, *Honorary Secretary*

The Observatory was manned for a total of 191 days between 29th March and 4th November 1970. The number of observer-nights was 712. Coverage of spring migration was better than usual, with only one gap, in early April. There were several small gaps in the autumn, and one large one in late October. The Observatory was manned almost continuously throughout the summer.

A prolonged period of east winds throughout the first half of May resulted in a good spell of migration, which was notable for large numbers of warblers, Wrynecks, Reed Buntings and Tree Pipits and the island's first *Thrush Nightingale *Erithacus luscinia* (three trapped between 9th and 17th May). The best autumn migration was seen during the third week of August and early October, though early September produced the island's third Arctic Warbler (on the 7th). Very few Spotted Flycatchers or Chaffinches were recorded during the season.

Spring

Observers were on the island from 29th March to 3rd April, and 10th April onwards.

*Subject to confirmation by the Rarities Committee

March-April There was little movement apart from a few Fieldfares, Redwings, Blackbirds, Song Thrushes and Twites during the cold blustery weather at the beginning of the season. The weather remained cold well into April, but with east winds from 11th to 14th there was a bit more activity—2 Black Redstarts and a Siskin on the 11th, a passage of Meadow Pipits, 10 Goldcrests and a few Wheatears on the 12th, and a passage of Blackbirds (100) and Robins (15) on the 14th. There were also small numbers of Redwings, Fieldfares and Song Thrushes, but little else until 18th April when 12 Twites and the first 2 Willow Warblers arrived. Next day the first Sand Martin of the spring was seen. Winds remained westerly until the 25th, when a Ring Ouzel arrived with a few Wheatears and 2 Linnets. The next few days with east wind were, however, too cold and clear for seeing many migrants, though a Siskin appeared on the 26th, and the first Redstart was seen on the 29th. The last day of the month was perhaps the best, producing Blackbirds, Meadow Pipits, Wheatears, Willow Warblers, a *flava* Wagtail, a Greenfinch and a Redpoll.

May The long spell of east winds did not start until the evening of 3rd May, but there were quite a few birds moving before that : on 1st May the first 2 Swallows of the spring, a Tree Sparrow, Willow Warblers and Meadow Pipits; on 2nd May the first Chiffchaff, one or two *alba* Wagtails and a *flava*, a Redstart and a few Swallows; then overnight a large influx of 140 *Phylloscopus* warblers, 100 Wheatears, 3 Goldcrests, 37 Redstarts, 2 Blackcaps, a Black Redstart and a few Blackbirds. In the afternoon of the 3rd a Cuckoo, a Grasshopper Warbler and the first Whinchat were seen.

A similar influx occurred overnight on 3rd/4th May, and during the 4th no fewer than 9 Grasshopper Warblers were counted, also 6 Ring Ouzels, 3 Whinchats, 3 Redpolls and the first 2 Sedge Warblers. On 5th May the first 2 Whitethroats and a Lesser Whitethroat arrived, with a Turtle Dove and a Collared Dove. Next day, in hazy sunshine, no migrants appeared until 10 a.m., after which came 3 Yellow Wagtails, the first Swift, up to 30 Whinchats, 2 more Turtle Doves, 3 Whimbrels, the first Garden Warbler, the first Tree Pipit and the first of many Reed Buntings. On 7th May there were two influxes : around 7 a.m. 20 Lesser Whitethroats, 15 Chiffchaffs, 45 Whinchats, 6 Redstarts and 20 Wheatears came in; at mid-day after heavy rain and mist there arrived 2 Golden Plovers, 1 Wryneck, 18 Fieldfares, 20 Song Thrushes, 2 Pied Flycatchers, 25 Tree Pipits and a flock of 20 Reed Buntings. Luckily for the observers, the mist persisted throughout 8th May, and new birds came in all day long—9 Wrynecks, a Woodlark, a Red-breasted Flycatcher, a Bluethroat, 3 Black Redstarts, more Lesser Whitethroats, more Tree Pipits (there were now 80 or more on the island), 4 Yellow Wagtails, a Wood Sandpiper

and 3 Bramblings. Thunderstorms on 9th May did not deter further arrivals, including 2 more Bluethroats, a few Sedge Warblers and Reed Buntings and, most exciting of all, the island's first* Thrush Nightingale. Mist and heavy rain on the 10th brought down more migrants, and now 40 Fieldfares, 35 Redstarts and 15 Whinchats were counted, as well as at least 3 more Bluethroats, 18 Whitethroats, 40 Tree Pipits, a Red-backed Shrike and, best of all, another *Thrush Nightingale.

The weather cleared a little next day, and the only arrivals were a Green Sandpiper, 2 Stonechats, 2 Goldcrests and a Lesser Redpoll. Thick fog over the next few days reduced the quantity of migrants, but the quality remained high, with species mainly of Central European origin—2 female Red-backed Shrikes, a Corncrake and a White Wagtail on the 12th, 2 male Red-backed Shrikes and 4 male Red-spotted Bluethroats on the 13th, 4 Turtle Doves on the 14th, and on the 15th 2 Blue-headed Wagtails arrived, and a grand total of 6 Bluethroats were seen—2 Red-spotted, a White-spotted and 3 all-blue males. In the first few hours of 16th May there was a large fall of warblers and other passerines. Common Sandpipers were seen in the lighthouse beam, and at dawn there were at least 100 Whitethroats, 200 Sedge Warblers and 200 Willow Warblers on the island, as well as 3 Garden Warblers, 2 Blackcaps and 3 Grasshopper Warblers. This influx was followed next night by more Whitethroats, Lesser Whitethroats, a Wood Sandpiper, a Woodcock, a Yellow Wagtail and yet a third *Thrush Nightingale. At last, on the 18th, the winds became westerly, and migrants gradually vacated the island. During the last week of May there were small movements of pipits, Swallows, martins, Swifts, Wheatears and warblers; one or two Turtle Doves appeared; a Cuckoo and a Yellow Wagtail came on the 25th, and a few Sandwich Terns were seen.

A few late migrants passed through in June—2 Spotted Flycatchers on the 6th, 2 Whitethroats on the 8th (and another on the 18th) and a Chiffchaff on the 11th.

Autumn

Observers were present up to 15th August, then 18th August-27th September, 3rd-6th October, 9th-18th October and 31st October-4th November.

July-August One July record is especially worth noting—2 Sparrowhawks seen on the 13th. August started auspiciously with mist and east winds, but few migrants can have started on their journeys, because the observers recorded only a few birds on passage—a young Cuckoo, a Whinchat and 2 Wood Warblers on the 2nd, a Whimbrel on the 4th, 2 Tree Pipits on

*Subject to confirmation by the Rarities Committee

the 7th and a few Willow Warblers, Sedge Warblers and Wheatears each day. Even fewer migrants were seen after the winds became westerly, though a few warblers and 30 Whimbrels passed through on the 12th. The first signs of improvement came in calm weather on the 15th, and over the next few days numbers of warblers increased. On the 18th the first 4 Pied Flycatchers, 2 Redstarts and Garden Warbler of the autumn arrived. The 19th was quiet—about 20 Swallows and 8 Whimbrels passed over, and 2 Tree Pipits were seen. Next day, in a mixture of gales, fog and rain, the first Fieldfare of the autumn arrived, accompanied by a Green Sandpiper. The bad weather persisted throughout a fairly birdless 21st August (a Little Stint and a Whinchat were seen), but at midday on the 22nd things started to happen: a variety of waders were found scattered over the island—a Bar-tailed Godwit, a Dunlin, a Ringed Plover, a Greenshank and 10 Golden Plovers; there was also a concentration of small passerines on the top of the island and around Kirkhaven. By dusk the numbers had risen, and the totals were estimated at 4 Swifts, 6 Wrynecks, 4 Whinchats, 30 Garden Warblers, 2 Barred Warblers, 1 Reed Warbler, 20 Willow Warblers and 30 Pied Flycatchers (one of which carried a Norwegian ring, indicating the Scandinavian origin of the influx). Although the fog cleared, more birds came in overnight, Wheatears, Whinchats, Wrynecks (now 15), 3 Icterine Warblers, 2 Blackcaps, 4 more Barred Warblers, 50 Garden Warblers, 2 Spotted Flycatchers, 30 Tree Pipits, 2 *alba* Wagtails and 4 Red-backed Shrikes. Waders recorded included Golden Plovers and Common Sandpipers.

Fog closed in again on the evening of the 23rd but cleared the next day; many migrants departed then, but plenty of warblers, Wheatears, Tree Pipits and the Wrynecks remained around the nettles and gardens. There was some passage of Curlews, terns and Common Gulls, and more Sandpipers and Greenshanks were seen, also Wigeon and Teal and a Little Gull. More birds left overnight, but there were some new arrivals on the 25th despite the clear calm weather—4 Robins, 2 Barred Warblers, a Lesser Whitethroat, a Goldcrest and 2 Redstarts. The 26th was very quiet, except for some movement of Swallows southwards. Early fog on the 27th brought a few new birds—a Redstart, a Spotted Flycatcher and 2 Garden Warblers. At least five of the Wrynecks were still on the island, no doubt feasting on the ant population. A low mist covered the sea at first on the 28th, and some passage of Meadow Pipits, Swallows and, later, of terns was seen; 3 *alba* Wagtails arrived at midday. For the rest of the month the winds were westerly; passage of terns, Meadow Pipits and Swallows continued, and the only other migrants were a Whimbrel (on the 29th), a few warblers, a Whinchat and 2 Goldcrests (on the 30th).

September For the first week winds were mainly westerly, with only coastal passage of Meadow Pipits, Wheatears and (on the 3rd) a Manx Shearwater. Wader arrivals included one or two Whimbrels and Golden Plovers; and 12 Dunlins (on the 3rd). A few warblers arrived on the 2nd and 4th, and a Tree Pipit on the 3rd. On the 6th an Osprey was seen, and there was increased movement of Meadow Pipits (over 100) and "comic" terns (over 100). The weather deteriorated later, and the winds became easterly for the next few days. On the 7th the change of weather brought the most interesting migrant of the autumn—the island's third Arctic Warbler, accompanied by 3 Goldcrests and 4 Pied Flycatchers. There was some fog next day, out of which appeared a Bluethroat, an Icterine Warbler, 2 Barred Warblers, 6 Garden Warblers, 2 Redstarts and the first 2 Fieldfares since the lone one seen in mid August. Most of these migrants had moved on by the 9th, and the only new arrivals were 3 Knots and a Grey Wagtail, though coastal movement of terns, pipits and hirundines continued.

The winds returned to the west for the next week or more, and the only migrants of note were a Whimbrel and a Black-tailed Godwit on the 10th, the first Chiffchaff and Snow Bunting of the autumn on the 11th, a Heron on the 13th, an Arctic Skua and 5 Redpolls on the 14th, and 2 Siskins on the 15th.

The next influx of migrants came after fog and before a change of winds on 20th September. The first birds, seen at 8 a.m., were a Turtle Dove and a Garden Warbler. Then at midday came a Blackcap, a Chiffchaff and a Lapland Bunting; later a Redstart and a few Wheatears arrived. Small numbers of House Martins and Sandwich Terns were seen on passage. Further arrivals next day included a Fieldfare, 2 Bluethroats, a Barred Warbler, 2 Goldcrests and 5 Siskins; 3 Arctic Skuas were seen on passage. On the 22nd fog and drizzle accompanied the southeast winds, and the first Redwings arrived (90 at 8 a.m.). Skylarks and Swallows were moving through all day; other arrivals included 2 Whinchats, 1 Jack Snipe, 1 Whitethroat, 2 Spotted Flycatchers, 6 Pied Flycatchers, 3 *alba* wagtails, 2 Linnets and 6 Redpolls, and 46 Manx Shearwaters were seen flying south. On the 23rd the weather changed a little; shallow fog obscured the mainland coasts, but, with a blue sky above, the top of the island was visible to migrants, and those tempted to land included 8 Goldcrests, several warblers and a Greenshank. Redwings, Skylarks, Swallows and Fieldfares were seen flying over the island, and 19 Manx Shearwaters, 5 Sooty Shearwaters and 3 Red-throated Divers offshore. The same conditions persisted next day, with very similar passage and in addition 8 Common Scoters, 10 Velvet Scoters, a Great Skua, 2 Little Gulls and a Little Stint. On the 25th there was more fog, and more migrants appeared—60 Redwings, 8 Fieldfares, a Ring Ouzel and the only Treecreeper

of the year. There were also a number of wagtails (1 Yellow, 3 Grey and 7 *alba*), 10 Redpolls and a Siskin. Next day, with the last of the east wind, came the first of the few Bramblings of the autumn, a Glaucous Gull, another Little Stint and more Redwings, Fieldfares and Song Thrushes. On the 27th 10 Siskins were seen and the first two Chaffinches of the autumn migration. There were no observers on the island for the next few days.

October Increasingly strong west winds blew for the first ten days of October, and there was little visible migration, only slight coastal movement of thrushes and hirundines. This pattern changed on the 11th when the wind moved to the southeast, and fog appeared by late afternoon. A Great Grey Shrike arrived (the only one of the year), with 4 Lesser Redpolls, 2 Bramblings, 1 Garden Warbler (later killed by the Shrike), 2 Goldcrests, 6 Pied Wagtails, a Ring Ouzel and a Stonechat. The fog persisted all next day (the 12th), and a large number of Redwings (up to 2000) came in, with 400 Song Thrushes, 30 Fieldfares, 20 Bramblings, 10 Mistle Thrushes and 200 Blackbirds. Other migrants were 6 Redstarts, 2 Siskins, a Red-breasted Flycatcher and 5 Reed Buntings. Some of these birds moved on next day when the mist cleared for a while, but Redwings were still passing through, and 50 Redstarts, 25 Robins and 25 Blackcaps were counted, and the only Long-eared Owl of 1970 was seen. Despite more fog on the 14th, there were few further arrivals. The easterly weather continued for two more days, and there was an influx of Blackcaps (mainly females) on the 16th, with more Redwings, Song Thrushes, Blackbirds, Fieldfares and over 100 Bramblings. Next day a spell of blustery westerly weather set in, and few further migrants were seen. There were no observers on the island from the 18th until the 31st.

November The visit by the observatory-closing party coincided with four days of very unsettled weather, one depression passing daily, causing the winds to swing right round the clock, with spells of gales and mist and rain. Although a Black Redstart came in on the 1st, the main influx was next day—up to 140 Blackbirds, 140 Redwings and 110 Fieldfares, 30 Skylarks, a Blackcap, a Woodcock, a Redpoll, 5 Waxwings, 35 Twites, 30 Linnets and a Short-eared Owl. Most of these moved on almost at once, and the only newcomers after that were two Bramblings on the 3rd.

Unusual occurrences

Mute Swan One, 6th September. Only third year of occurrence.

Osprey One, 6th September. Tenth year of occurrence.

Whimbrel 30, 10th September. Largest movement on record.

Black-tailed Godwit One, 10th September. Fourth occurrence and only autumn record.

Wood Sandpiper One, 8th-17th May. Sixth year of occurrence.



PLATES 17-19. The photographs on this and the next two pages are a selection of the work of William S. Paton, ARPS, and show a variety of common birds at the nest. All were taken in Ayrshire. *ABOVE* Trio of Sandwich Terns incubating, Horse Island (plate 17). *OVER* Grey Wagtails feeding young, Darvel (plate 18a); Long-tailed Tit and its nest, Kilmarnock (plate 18b); Lesser Black-backed Gull, Horse Island (plate 19a); Curlew with eggs, Straiton (plate 19b).





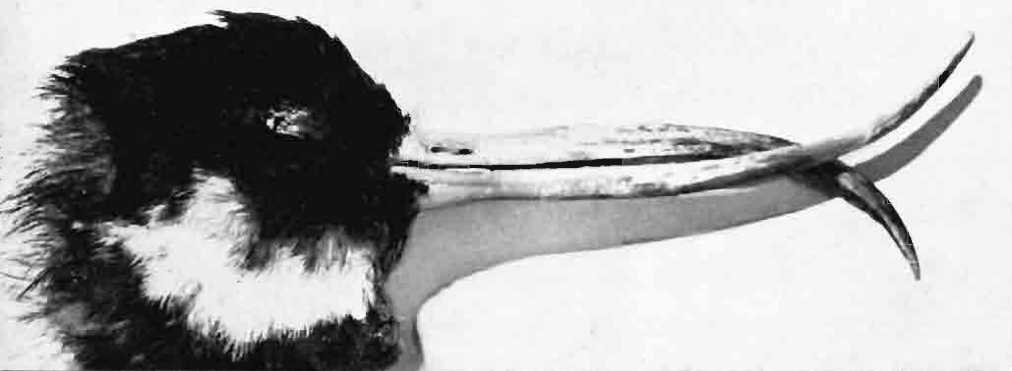


PLATE 20. Deformed Oystercatchers (see page 278). *Top* This bird was picked up alive, Stornoway, June 1970, but died soon afterwards. *Photograph by R. Macintyre.* *Centre* Oystercatcher found dead on beach, Monifieth, Angus, February 1970. *Bottom* Skull of bird found dead on beach, Stannergate, Dundee, February 1970. *Photographs by D. S. Henderson.*

Wryneck Unusually large passage (7th-16th May and 22nd-29th August). Maximum count of 15 on 23rd August is the largest on record.

***Thrush Nightingale** One each, 9th-14th, 9th-17th and 17th May. New record.

Bluethroat Unusually many. At least 12 (11 Red-spotted and 1 White-spotted) between 8th and 17th May. One, 8th September, and 2, 21st September (all Red-spotted).

Sedge Warbler 200, 16th May. Largest number on one day.

Blackcap Up to 35 daily, 12th-17th October. Largest movement recorded.

Lesser Whitethroat 20 and 30, 7th and 8th May respectively. Largest movement recorded.

Arctic Warbler. One, 7th September. Third record.

Red-breasted Flycatcher One, 8th May. Only third spring record.

Tree Pipit Unusually high numbers, 7th-17th May and 23rd-25th August. (80, 8th May is a record daily total).

Twite Only seventh year of occurrence. Record numbers—up to 13 daily on four days in March, up to 45 daily on nine days in April, and 35, 2nd November.

Breeding populations

No measurable change was noted in the gull populations from the 1969 estimate of 15,000 pairs of Herring Gulls and 2,000 pairs of Lesser Black-backed Gulls. Four pairs of Great Black-backed Gulls bred. Durham University's gull research programme continued during the spring and summer, conducted by Margaret Emmerson, who was carrying out studies on behaviour, recruitment to small cleared areas in the colony and breeding success of gulls ringed in 1966 and 1967. About 100 pairs of Eiders nested (more than usual), and about 12 pairs of Oystercatchers bred. No estimates were made of the population of other seabirds, though it was noted that the Puffin colony was still expanding, with many new burrows on the South Plateau. Up to three pairs of Shelducks bred, and one pair of Swallows, three pairs of Blackbirds and five or six pairs of Dunnocks.

Ringing and recoveries

A total of 2,206 birds of 54 species were ringed, fewer birds and fewer species than in previous years (fewer gulls and Shags were ringed, and no waders at all). Record ringing totals were Lesser Whitethroat (28), Wryneck (25), Grasshopper Warbler (13), Tree Pipit (23), Sedge Warbler (74), Willow Warbler (387). High totals were Bluethroat (8), Icterine Warbler (5) and Reed Bunting (17). The Whitethroat total (90) was the highest for ten years. Low totals were Spotted Flycatcher (5), Rock Pipit (19), Starling (13) and Brambling (4). No Chaffinches were ringed.

A new species for the ringing list was *Thrush Nightingale (3 ringed), and an Arctic Warbler was only the second to have been ringed on the May.

*Subject to confirmation by the Rarities Committee

The total of 225 recoveries included 60 Shags and 137 Herring Gulls. 18 Shags ringed on the Farne Islands were recorded breeding on the May.

The foreign recoveries and controls are listed below :

		Ringed	Recovered	Date
Shag	Pull	6. 8.69	List, Sylt, Schleswig-Holstein, Germany	25.10.69
Herring Gull	Pull	5. 7.67	Insel Neuwerk, Elbe Estuary, Germany	18. 8.70
Purple Sandpiper	Ad	18. 9.69	Finse, Hordaland, Norway	17. 7.70
Song Thrush	PJ	12.10.69	Nr. Braga, Minho, Portugal	21. 2.70
Blackbird	Ad ♀	25.10.68	Eext, Drente, Netherlands	10. 4.70
Blackbird	Ad ♂	21.10.69	Westerland, Sylt, Schleswig-Holstein, Germany	24. 4.70
Blackbird	Ad ♂	28.10.69	Valldal, Sunnmøre, Møre and Romsdal, Norway	early 7.70
Blackbird	1st-Y ♂	28.10.69	Os, Hordaland, Norway	3.10.70
Blackbird	Ad ♂	22.10.69	Lomeland, Egersund, Rogaland, Norway	14.10.70
Robin	PJ	12. 4.67	Grimstad, Hareid, Møre and Romsdal, Norway	19. 7.70
Robin	PJ	21. 4.69	Leikanger, Gurskøy, Norway	21. 8.70

A first-year female Pied Flycatcher ringed at Revtangen, Rogaland, Norway, on 19th August 1970 was trapped on the May three days later on the 22nd.

Other observations

Grey seal numbers remained fairly constant, at up to 60 individuals. Rabbit numbers increased only slowly after the myxomatosis of 1969; periodic reinfection appears to be keeping the numbers low.

Three interesting plants recorded by Hector Galbraith and his party in August help to dispel some of the gloom caused by the sight of the rapid deterioration of the vegetation throughout the gull nesting areas; one new record, the wild carrot *Daucus carota*, and two very uncommon island records, the rayless mayweed *Matricaria matricarioides* and lady fern *Athyrium felix-femina*.

James Marr and Peter Kerr kindly donated a number of young spruce and other trees and undertook the task of planting them in the approaches to the Bain Trap.

A long-term research project on the biology of the island's house mouse population has started under the direction of Dr Sam Berry, who has made several previous visits to the island. A laboratory for the work (financed by the Medical Research Council) was built during the summer on the site of the old naval huts and has been occupied since September by Graham and Della Trigg, who are carrying out the main fieldwork for the project.

The Observatory Committee is grateful to the many observers who carried out a variety of repairs and other tasks during their visits; the Committee also wishes to thank the Principal Keeper and his staff and the skippers of the *Breadwinner* for all their help, co-operation and patience during the season.

Breeding birds of Tiree 1969

BEATRICE GILLAM and GORDON R. JACOBS

We visited Tiree in May and June 1969 to survey the island for Operation Seafarer and for the BTO Atlas project. From 26th May to 5th June we spent about 150 man-hours in the field. By careful planning, and with the invaluable assistance of John Graham of Balephetrish, we achieved almost complete coverage of the island, using BTO mapping techniques. Although it was not possible in such a short period to confirm breeding for every species, some 44 species were proved to breed and a further 19 observed in suitable habitat. That it was possible to assess the breeding status of most of the species on Tiree over the very short period of our visit demonstrates clearly the value of the BTO techniques. The information we gathered on the population of the breeding species shows a number of changes from the status detailed by J. Morton Boyd in 1958 (*Brit. Birds* 51 : 41-56, 103-118). The species list indicates briefly the breeding population of each species as given by Boyd, followed by the 1969 status as determined during our visit.

Species List

Fulmar Breeding population at Ceann a' Mhara 193 pairs 1955. Increased to 604 pairs 1969, with 3 pairs at each of 4 other localities and single birds investigating many possible nesting sites.

Shag Breeding population at Ceann a' Mhara apparently fluctuated 1942-55, maximum 25 pairs 1952. Fifty pairs here 1969.

Mallard Scarce 1956. At least 16 breeding pairs 1969.

Teal Bred all over island 1913; a few breeding pairs 1952-55. Only 1 nest found 1969 (JG).

Pintail Breeding first proved 1951. A duck with 6 ducklings seen 1969 (JG).

Shoveler Twenty young birds seen July 1955. Two clutches (4 and 5 eggs) found 1969.

Tufted Duck A duck seen with 2 ducklings 1957. No confirmed breeding 1969, but 2 pairs seen in suitable habitats.

Eider As in 1955, still breeding in fair numbers 1969.

Goosander No previous record of breeding. Pair copulating and second male present at Loch Caol 29th May 1969. Three males at Port Ban.

Red-breasted Merganser Plentiful May-August 1937-55. Only 1 pair seen 1969.

Shelduck Fair numbers bred 1949-55. Sixteen pairs spread round coast 1969.

Mute Swan One or 2 pairs 1949-56. At least 8 pairs 1969 on the larger lochs.

Buzzard Bred 1956. Two pairs present and 1 nest confirmed 1969 (JG).

Pheasant Eight shot November 1955. None seen 1969.

Corncrake Abundant, common or fairly common up to 1955. Still common 1969.

Oystercatcher Very common up to 1955. Still very numerous on coast and machair 1969, but probably less common on moors than formerly.

Lapwing Abundant up to 1955. Still numerous 1969.

Ringed Plover As before, still breeding plentifully on shore and machair 1969.

Snipe Numerous 1949-55. Locally common as breeding species 1969.

Common Sandpiper Breeding last confirmed 1947. Single birds seen in 2 suitable breeding localities 1969.

Redshank At least 3 breeding pairs 1955. Locally common 1969; at least 20 pairs and 2 nests found.

Dunlin Common 1952-55. Only 6 pairs scattered over the island in suitable habitats and 1 nest found 1969.

Great Black-backed Gull Only 1 breeding record up to 1955. Thirty nests Ceann a' Mhara, 20 on Soa, small colonies and single nests round the coast 1969.

Lesser Black-backed Gull A few pairs at Ceann a' Mhara 1955. We found 14 nests there, 25 on Soa and small number of nests elsewhere on the coast 1969.

Herring Gull At Ceann a' Mhara 100-150 nests in 1955. In 1969, 384 nests there, 36 at Chraiginis, 40 on Soa. Also breeding commonly round the coast; inland colonies of 33 pairs at Loch a' Chapuill (JG) and 20 Loch an Eilein.

Common Gull Common breeder up to 1955. Probably little change 1969; largest colony 23 nests on vegetated sand dunes on west coast. Colonies of 16, 8 and 4 at inland sites.

Black-headed Gull Three sites each with usually less than 30 pairs 1954-55. A large concentrated colony of about 125 pairs at Carrastain, Ben Hough plus a few small scattered colonies 1969.

Kittiwake At Ceann a' Mhara "438 birds counted July 1955". Approximately 660 breeding pairs here 1969.

Common Tern About 25 nests 1955. Only 2 single birds seen and no evidence of breeding 1969.

Arctic Tern Numerous small colonies of under 30 pairs in various habitats 1955. Probably little change 1969 (birds were still arriving). Some 28 nests Soa (JG), 16 Chraiginis, 15 Am Barradhu.

Little Tern At least 55 pairs on the airfield and about 10 on An Fhao-dhail estuary. Only 8 nests on the airfield and a few single nests on the shore 1969.

Razorbill At Ceann a' Mhara "34 birds with young" 1955. Approximately 125 breeding birds 1969.

Guillemot Last bred 1920. No birds seen 1969.

Rock Dove Breeding plentifully at Ceann a' Mhara up to 1955. A colony of about 200 pairs there 1969, breeding 9 months of the year (JG). A few pairs breeding South of Hynish.

Woodpigeon No previous record of this species on Tiree. Bird flushed from a gorse and bramble thicket 1969.

Collared Dove Not recorded by Boyd. Birds seen in 3 localities 1969; possibly breeding in 2 of these.

Cuckoo Breeding not proved up to 1968. Male and female each seen twice on different dates in the same moorland locality 1969.

Skylark Reported to breed in abundance 1912-55. Still breeding abundantly 1969.

Swallow At Caoles 5 nests in 1950 and 3 in 1955. Three pairs building at Balemartine and 1 at Ballevulin 1969. Other pairs may have arrived later.

House Martin Breeding not proved previously. Two birds seen at Ceann a' Mhara 1969.

Sand Martin Five pairs with young at Crossapoll 1955. No birds seen 1969.

Raven Nested at Ceann a' Mhara 1955. Family parties seen at Ben Hough and Ben Hynish 1969.

Hooded Crow Fewer than 12 pairs attempted breeding 1949-55. At least 4 pairs attempted 1969, 1 nest with eggs and 1 with young located.

Song Thrush At least one pair bred successfully 1955. In 1969 young were reared in a nest sited 3 ft. down in a wet roadside ditch; a gorse patch near Scarinish contained 3 singing males; 1 nest was located. Behaviour of a bird in gorse near Ruaig suggested attempted breeding.

Blackbird One pair proved to breed 1957. In 1969 6 males (including a striking pied bird) were seen in 3 localities but no females; 1 unoccupied nest at Hynish.

Wheatear Numbers appear to have fluctuated between "several pairs" and "numerous" 1913-55. JG considered the number of breeding pairs had declined in recent years. Six pairs (1 nest found) on Ceann a' Mhara moors; 16 other pairs observed widely scattered 1969.

Stonechat Pairs and single cocks seen at 7 sites 1950-55. Territorial behaviour by a single male, but no female seen 1969.

Whinchat No breeding record to 1955. Single male seen by BG and GRJ; JG saw a pair feeding young in a nest at Balephuill 1969.

Sedge Warbler At least 6 singing males 1955. Six males in full song; 2 pairs seen by JG 1969.

Whitethroat Bred successfully 1955. No birds seen 1969.

Dunnock Boyd makes no reference to breeding. Two birds, possibly a pair, appeared to be holding territory in a gorse patch near Scarinish 1969.

Meadow Pipit As before, still breeding commonly 1969.

Rock Pipit As before, still breeding commonly 1969.

Pied Wagtail No breeding proved up to 1955. A pair with 3 juveniles at An Fhaodhail estuary; an adult carrying food at Hynish and single birds seen in 4 other localities 1969.

Starling As before, still breeding abundantly.

Greenfinch First breeding record 1954 near Scarinish. A pair seen at a suitable nest site also near Scarinish June 1969.

Linnet Breeding not confirmed since 1892. A pair seen by JG June 1969.

Twite Breeding plentifully up to 1956. Birds scattered all over the island 1969; nests found in gorse and heather.

Corn Bunting More than 50 singing males 1955. We noted 36 in 1969.

Reed Bunting Thought by JMB to breed in fair numbers. In 1969 17 males were seen in suitable breeding sites.

House Sparrow As before, still breeding abundantly 1969.

Discussion

Table 1 shows our estimate of the number of breeding pairs of the 44 species proved to have bred in Tiree in 1969, and table 2 lists species seen in suitable habitat but not proved to breed.

Table 1. Estimated numbers of breeding pairs in Tiree in 1969

1-5	5-20	20-50	50-100	100-200	Over 400
Teal	Mallard	Eider	Shag	Black-headed	Fulmar
Pintail	Shelduck	Ringed	Oyster-catcher	Gull	Herring Gull
Shoveler	Mute Swan	Plover	Lapwing	Razorbill	Kittiwake
Buzzard	Corncrake	Lesser	Snipe	Skylark	Starling
Dunlin	Redshank	Black-backed	Great		House Sparrow
Swallow	Little Tern	Gull	Black-backed		
Raven	Rock Dove	Common	Gull		
Hooded	Reed	Gull	Arctic		
Crow	Bunting	Wheatear	Tern		
Song		Rock	Meadow		
Thrush		Pipit	Pipit		
Blackbird		Twite			
Whinchat		Corn			
Sedge		Bunting			
Warbler					
Pied					
Wagtail					

Table 2. List of species seen in suitable habitat but not proved to breed

Heron	Coot	Collared Dove
Tufted Duck	Curlew	Cuckoo
Goosander	Whimbrel	House Martin
Red-breasted	Common	Stonechat
Merganser	Sandpiper	Dunnock
Peregrine	Common Tern	Greenfinch
Moorhen	Woodpigeon	Linnet

Additions to Boyd's list are Whinchat and Pied Wagtail, both proved to have bred in 1969. Goosander probably attempted to breed, and Dunnock showed signs of possible breeding. Collared Dove will almost certainly be breeding in the 1970s. On the debit side Common Tern and Guillemot have not made a recovery, and Pheasant is no longer present. The absence of Whitethroat was not unexpected in view of the massive reduction in numbers of this bird throughout Britain in 1969.

The greatest increase in breeding population has been among the Fulmars, Kittiwakes and Great Black-backed Gulls at Ceann a' Mhara. Mallard and Redshank also show a marked increase.

A true assessment of the change of status of the less common passerines was not possible since the amount of time spent trying to prove breeding of these species was probably not comparable with that spent by Boyd. The increase in

numbers of singing male Reed Buntings is noteworthy in view of their gradual spread into drier habitats in southern England (Williamson 1968).

Acknowledgments

John Graham helped us plan our timetable, spent many hours in the field with us, and after our departure recorded late breeders and the outcome of nests we had found. We are indeed grateful to him.

We wish to thank M. J. Everett for records he submitted after a visit to Tiree in late June 1969, David R. Saunders for helpful information about the island, Mrs R. G. Barnes, who criticised a draft of the paper, and Mrs M. Annable who typed it.

References

- BOYD, J. MORTON. 1958. The birds of Tiree and Coll. *Brit. Birds* 51: 41-56, 103-118.
WILLIAMSON, K. 1968. Buntings on a barley farm. *Bird Study* 15: 34-37.

Breeding birds of Coll 1969-70

J. G. BLATCHFORD

This report is based on observations made during 13th-19th June 1969 and 5th-12th June 1970, when Coll was surveyed for Operation Seafarer and the BTO Atlas project. The status of the birds of Coll was reviewed by Morton Boyd (1958). In table 1 the status of birds he recorded as known to breed on Coll 1892-1956 is compared with the breeding records (and sightings of birds in possible breeding habitat) made in 1969-70. The minimum number of breeding pairs is given where this was determined; otherwise no attempt is made to indicate abundance or scarcity of species. Tables 2 and 3 give comments on species whose breeding status has changed since 1956.

Table 1. Past and present breeding status of species on Coll

	Breeding status up to 1956	Breeding status 1969-70†
Black-throated Diver	declining	absent
Red-throated Diver	steady	present
Fulmar	no record	breeding (26)
Shag	no record	breeding (4)
Heron	steady	present
Mallard	declining	breeding
Teal	declining	present
Wigeon	declining	absent
Eider	steady	breeding
Red-breasted Merganser	steady	present
Shelduck	steady	breeding

Table 1 (continued)

	Breeding status up to 1956	Breeding status 1969-70 ¹
Grey Lag Goose	declining	breeding (9)
Mute Swan	steady	probably breeding
Buzzard	increasing	present
Peregrine	declining	present
Merlin	steady	present
Kestrel	declining	breeding
Red Grouse	declining	absent
Partridge	declining	present
Pheasant	declining	present
Corncrake	steady	breeding
Moorhen	declining	present
Coot	declining	absent
Oystercatcher	steady	breeding
Lapwing	steady	breeding
Ringed Plover	steady	breeding
Golden Plover	steady	absent
Snipe	steady	breeding
Curlew	steady	present
Wood Sandpiper	no record	present
Common Sandpiper	steady	breeding
Redshank	steady	breeding
Dunlin	steady	probably breeding
Arctic Skua	increasing	breeding (6)
Great Black-backed Gull	steady	breeding (19)
Lesser Black-backed Gull	steady	breeding (75)
Herring Gull	steady	breeding (611)
Common Gull	steady	breeding (12)
Black-headed Gull	steady	present
Kittiwake	no record	present
Common Tern	steady	breeding (26)
Arctic Tern	steady	breeding (203)
Little Tern	no record	breeding (18)
Guillemot	no record	present
Black Guillemot	steady	present
Rock Dove	steady	breeding
Woodpigeon	no record	present
Turtle Dove	no record	present
Collared Dove	no record	probably breeding
Cuckoo	steady	present
Short-eared Owl	no record	present*
Swift	no record	present
Skylark	steady	breeding
House Martin	declining	present
Raven	steady	present
Hooded Crow	steady	breeding
Wren	steady	present
Song Thrush	steady	breeding
Blackbird	steady	breeding
Wheatear	steady	probably breeding
Stonechat	steady	present
Whinchat	steady	present
Robin	steady	absent
Grasshopper Warbler	no record	present
Sedge Warbler	increasing	present
Whitethroat	steady	present
Willow Warbler	steady	present
Chiffchaff	no record	present

Table 1 (continued)	Breeding status up to 1956	Breeding status 1969-70†
Spotted Flycatcher	no record	present
Dunnock	no record	present
Meadow Pipit	steady	breeding
Rock Pipit	steady	present
Pied Wagtail	increasing	present
Starling	steady	breeding
Greenfinch	increasing	present
Linnet	declining	present
Twite	steady	present
Corn Bunting	steady	probably breeding
Yellowhammer	steady	absent
Reed Bunting	steady	present
House Sparrow	steady	probably breeding
Tree Sparrow	declining	absent

†The figures in brackets, where given, show the minimum number of breeding pairs.

*Breeding was reported but not confirmed.

Table 2. Species breeding or present in possible breeding habitat 1969-70 but not known to have bred previously

	Status 1969-70	Comment
Fulmar	breeding	increasing non-breeding summer visitor 1956
Shag	breeding	common non-breeding summer visitor 1956
Wood Sandpiper	present	seen only once 1969
Kittiwake	present	
Little Tern	breeding	new species for Coll since 1956
Guillemot	present	non-breeding summer visitor 1956
Woodpigeon	present	
Turtle Dove	present	
Collared Dove	breeding	new species for Coll since 1956
Short-eared Owl	breeding	reported nesting, new species for Coll since 1956
Swift	present	non-breeding summer visitor 1956
Grasshopper Warbler	present	seen only once 1970
Chiffchaff	present	
Spotted Flycatcher	present	one previous record of non-breeding summer visitor 1956
Dunnock	present	increasing non-breeding summer visitor 1956

Table 3. Species known to have bred previously but absent 1969-70

	Status 1956
Black-throated Diver	declining
Wigeon	declining
Red Grouse	declining
Coot	declining
Golden Plover	steady
Robin	steady
Yellowhammer	steady
Tree sparrow	declining

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Reference

ROYD, J. MORTON 1958. The birds of Tiree and Coll. *Brit. Birds* 51: 41-56, 103-118.

Short Notes

King Eiders in Shetland and Wigtownshire

A male King Eider was at Ronas Voe from 18th April to 7th May 1969. A different male was at East Voe, Scalloway, from 24th May to 25th June, and a female was at Scalloway on 30th May and on 4th and 9th June.

I have seen all seven of the King Eiders recorded in Shetland since 1964, all hitherto males, and typically smaller than common Eider. The Ronas Voe bird, however, seemed unusually large; on the water it seemed at least as long as a common Eider, and in flight its wingspan was as great as that of common Eider. It often displayed to females of that species.

The Scalloway male was the most magnificent bird I have ever seen. Through June it spent more and more time ashore, and washed and preened a great deal. It was noticeably smaller than common Eider. Compared with the Ronas Voe male, it was smaller, the flush on its breast was paler and pinker, and the lines following the edge of the hood were more clearly defined. The top of the bill in front of the nostrils was lilac, the rest of the bill being the usual bright waxy red with pink at the tip. The knob on the bill was bright orange with a black surround.

On 30th May, when Roy H. Dennis came with me to see the male King Eider at Scalloway, we discovered a female there. We identified the bird by the tiny sails in the wings. As it turned broadside to us, we compared it with the female of a pair of common Eiders it was accompanying; the King Eider was smaller, paler and slightly more reddish. Nevertheless it did not appear to be of the reddish phase but of the duller form, which is rarer. The bill was short, and the forehead steep, unlike the long sloping forehead of the common Eider. The head showed a slight effect of a hood like that of the male. Where it extended behind the eye, the edge of this hood was pale, giving the bird a light eyestripe in the same position as that of the male. There was a pale patch on the face behind the bill.

We watched the bird at ranges down to 20 yards, and RHD sketched the head shape and markings. At longer ranges the paleness of the primaries was noticeable. The underwings were also light in colour.

I checked the voe almost every day after this sighting and found the female again only on the dates given. During this period I studied many female common Eiders. I found no two were the same colour, the occasional bird had pale primaries, and size was often difficult to determine. Although I used all these features to find this individual again, the only reliable identification feature is the shape of the head. The sails in the wings, so obvious in the male, could be seen only at very close quarters in the female.

I never saw the male and female King Eiders together.

DENNIS COUTTS.

On 30th March 1970 at the Scar peninsula, Loch Ryan, a party of West Midland Bird Club members observed an immature male King Eider among a group of common Eiders. The birds were first seen resting at the end of the peninsula. When approached within 20 yards, they paddled just off shore revealing the King Eider among them. They remained on the water for three or four minutes then took off and circled twice, passing very close each time. The common Eiders alighted on Wig Bay, but the King Eider flew off south and was not seen again.

Compared with female common Eider it was similar in shape, except for the bill, and smaller in size; in flight it was a darker, more chocolate brown.

Description Head dark brown with paler cheeks; breast dirty white extending as a collar to a pale area on the upper part of the back; less conspicuous pale areas on each side of the under tail appeared in flight as two light patches when seen from behind; bill very conspicuous, dull orange, much shorter than common Eider's, with rectangular knob on upper mandible extending almost to the top of the forehead.

A. F. JACOBS.

(There is no previous record of the species in Solway, nor anywhere on the west mainland of Scotland.—ED.)

Feeding behaviour of Golden Eagle

On 4th September 1970 my wife and I were sitting in our car watching seven Grey Lag Geese on the River Helmsdale, Caithness, when they uttered loud alarm calls and flew off. We were about to leave when we saw a large dark bird moving slowly over the edge of the river-bank onto the level turf about 150 yards away and only 50 yards from where the

geese had been. It was a Golden Eagle and in one foot it was clutching two rabbits, lifting and dragging them along. It dropped the smaller-looking one, moved a few yards with the other and began to eat it.

The eagle first plucked the rabbit's fur, then pulled out the entrails, before eating the flesh. The meal lasted 40 minutes, and a few minutes after finishing it, the bird moved, almost waddling, to the second rabbit, began half-heartedly to pluck at the fur, then stopped. It stood for 20 minutes with its talons on the rabbit, but when a motorist left his car the eagle was disturbed and flew off slowly, low over the river.

During this time we had a perfect view of the bird; it was uniformly dark except for the golden patch on the back of the head. Its legs were heavily feathered. It paid no attention to traffic on the road, to rabbits 20 yards from it, nor to a Common Gull which flew around it for most of the time and sometimes landed within a few yards of it.

When we inspected the river-bank there was no sign of fur or skin; all that was left of the first rabbit was the entrails, the skull, the backbone and the bones of the legs. The bones were picked so clean that an ant could hardly have found eating on them. The rabbit that remained was 13 inches long, excluding head and tail, and weighed probably about a pound and a half. When we first saw the eagle, therefore, it must have been carrying about three and a half pounds of rabbit in the one foot.

S. L. MCKINLAY.

Kestrel hiding prey

Shortly after midday on 5th December 1970 I saw a male Kestrel resting on a boulder at the foot of a rocky slope at West Ferry, Dundee. After a few minutes, during which I watched it with binoculars and telescope at a range of about 150 feet, the bird picked up from the rock a small mammal, which I identified as a short-tailed vole. Carrying the vole in its bill, the Kestrel left the rock and moved along the steep grassy face of the slope in a series of bounding hops, often spreading its wings for balance. Four times the Kestrel paused and appeared to try to push the body of the vole under tufts of grass. Each time, however, it withdrew the vole and moved on. Finally it found a tussock more to its liking and thrust the vole under the overhanging grass. After looking round and billing the grass as if attempting further concealment, the Kestrel flew onto the roof of a nearby house.

After a short but rather difficult search I found the concealed vole. The tussock of grass hid it entirely from above, and

the overhanging grass tended to hide it from all but a low-level view. I was able to confirm its identity as a short-tailed vole, an adult female. The body was still warm, and the only visible wound was a punctured eye, from which blood was still flowing.

Deliberate hiding of food items has been recorded in a number of passerine species; Merlins have been recorded (J. W. Greaves *Brit. Birds* 61: 310-311) concealing intact prey items in a similarly purposeful manner, but those were birds at the nest or probably still in their breeding quarters.

T. M. CLEGG.

Little Crake at Fair Isle

At 0800 hrs on 11th May 1970 Dr Brian Marshall saw a small crake run under a road culvert on the Gilsetter Burn. It escaped without being caught or identified. Later in the morning it was again seen there but disappeared once more without trace. I was notified and arrived on the scene; the ditch had been thoroughly searched, but the bird had not been found. We went over the same ground several more times, reaching into the water to feel under the overhanging banks; finally the bird was seen to scramble for cover, and I caught it with my hands in a small hole in the bank of the burn. It was a male Little Crake—a splendid bird and a new species for Fair Isle.

It was examined, ringed and photographed at the observatory, where it was seen by many observers. It was taken back to the marsh and on release it walked daintily along the side of a stone dyke, like a tiny Water Rail, and then dived into the stream with a plop. We left it alone, and it was not seen again. Amazingly, just before we released the Little Crake, a Spotted Crake was found about 50 yards away in the marsh, and this bird was trapped after we released the Little Crake.

Although smaller than the Spotted Crake, the Little Crake was not as tiny as I had expected; while its weight at 1100 hrs was 36.0 gm, its measurements were wing 109 mm, bill (from feathers) 18 mm, tarsus 32 mm and tail 51 mm. To me it seemed a tiny edition of a Water Rail rather than a small Spotted Crake. It had long legs, long wings and longish bill with a small thin scraggy body, whereas the Spotted Crake was plumper, with proportionately shorter wings, bill, tarsus and tail. For example, the Spotted Crake weighed 65 gm as against the Little Crake's 36 gm, but its wings were only 9 mm longer, its bill although heavier was also 18 mm long, while its tarsus was 2 mm shorter and its tail 1 mm shorter than those of the Little Crake.

Description Forehead and sides of crown blue dove-grey, a triangle of olive-brown stretching back from forehead and widening out over crown; back of neck olive-brown becoming paler on mantle, some feathers marked with black; mantle and back feathers mainly black-brown

with buff-brown edges and a very few whitish tips (the white tips being only on one web of about 12 feathers in all); rump darker brownish with gingery-buff tinge; upper tail-coverts black-brown with buff-brown ends, plumage worn; sides of head above eye, lores, chin, throat, breast and belly blue dove-grey, paler underneath especially on chin; sides of neck merging into buff-brown; some feathers on belly with traces of white tipping; thighs paler grey with quite noticeable white tipping; rear flanks and vent mainly dark grey with admixture of brown, feathers quite noticeably tipped white underneath; under tail-coverts—inner ones black with white tips and white patches forming double white bars, outer ones with base of feathers black and rest white with rusty buff bars; primaries and secondaries dark brown, browner on outer webs, feathers worn with bleached overlap; bastard wing and primary coverts similar, with tiny white spots on inner webs of two outer bastard feathers; wing-coverts as upper mantle but without dark markings; tertials like mantle; tail very worn, ten feathers, rather like mantle, dark brown with buff-brown fringes and tips, the innermost very pointed and worn, the outers 15 mm shorter than centre; bill bright pale green with red gape and red rim over top of bill and at centre of base of lower mandible; inside mouth slate blue and pink; iris bright crimson slightly yellower towards pupil; orbital ring red; legs and feet mainly green, slightly paler at joints.

There is a sad sequel to this record : the following morning about 100 yards from where we had released the bird, I found the remains of a Little Crake that had obviously been killed and eaten by one of the island's too plentiful feral cats. Although the right leg with the ring was missing, the wings were left along with the other leg and some feathers. I measured the wings carefully and was satisfied that it must have been the individual we had recorded the previous day.

ROY H. DENNIS.

(There are three previous spring records for Scotland (Banff, March 1852; Ayr, March 1909; Shetland, April 1959), one autumn and two probable winter records.—ED.)

Hard times and the disadvantage of deformity

On 14th February 1970 at Broughty Ferry, Dundee, BP and SP saw an Oystercatcher with mandibles crossed at the tip and elongated. On 28th March T. M. Clegg saw what was perhaps the same bird about a mile away at West Ferry. On 22nd May a ringed bird with a similar deformity was seen by BP at Stanergate, Dundee; it appeared to feed adequately, probing in the mud and scraping out already-opened mussel shells.

These birds must have survived long enough for their deformities to develop, but we have evidence that such deformities do lower the viability of their possessors. We and others often find Oystercatchers dead around the Firth of Tay in January and February, apparently starved during prolonged frosts when food is not available inland. On 21st February 1970 BP

found five emaciated birds dead on a small area of beach at Monifieth. A few weeks earlier at Broughty Ferry Dr M. J. Cotton found six dead, clearly starved. They weighed 268, 271 (without head), 334, 342, 346 and 368 grams, usual weights at this season being 550-600 grams (*Brit. Birds* 61: 262). Two of these birds were deformed. The one weighing 346 grams had a broken lower mandible which had healed improperly, with erosion of the horn over the injured bone and subsequent overgrowth of both mandibles. The one that weighed 334 grams had the joints of one leg and its foot swollen and the proximal toe turned back and clawless.

On 14th February at Stannergate SP found an Oystercatcher with crossed and elongated mandibles and on 29th February he found another at Balmossie, near Dundee. In neither of these did the condition seem to be the result of damage to the bill.

Since only about one live Oystercatcher in 30 has deformed feet (*Brit. Birds* 61: 258), and since our own observations, together with the reports of Pomeroy (*Brit. Birds* 55: 49-72), suggest that bill deformities are at least as rare, the frequency of deformity among the starved birds seems high.

It appears to us, therefore, that while deformed individuals may survive for long periods, their viability is reduced, especially in very hard weather. We are confirmed in this view by a Black-headed Gull, also apparently starved, found by Dr Cotton with the six Oystercatchers; this bird had lost one leg, the result of an old injury.

B. POUNDER, S. POUNDER, J. J. D. GREENWOOD.

(Photographs of Oystercatchers with the cross-bill deformity as described above appear on plate 20.—ED.)

Whimbrels breeding at sea level in Northern Highlands

In early July 1969 I received a report of Whimbrels giving alarm calls at a coastal site in the Northern Highlands. I visited the place in May 1970 and saw two adult Whimbrels, one giving alarm calls. On 8th June I found a Whimbrel sitting on four eggs about 100 yards from the tideline. The nest, in an area of short grass, was a simple hollow lined with dead grasses. On a later visit the nest and eggs were photographed. Within a mile of the nest site a second pair showed distraction display, and not far away yet another bird was apparently defending territory.

On 3rd July the adult Whimbrels were still defending territory at the nest site. After watching for some time, I saw one

of the adults in sparse heather nearby with a three-quarters-grown young.

According to Bannerman, *Birds of the British Isles*, it is uncommon for Whimbrels to breed at sea level.

C. G. HEADLAM.

Stilt Sandpiper in Southeast Sunderland—a new bird for Scotland

On the morning of 18th April 1970, at a saltmarsh at Dornoch Point, VMT saw a darkish grey wader alight about 100 yards from us, raising its wings momentarily over its back on landing. As we approached it we realised that this was a bird neither of us knew. During the next ten minutes the wader stood more or less motionless, almost belly-deep in a pool of salt water at the edge of the mudflats, and we had a very good view of it at ranges down to 25 yards.

In general appearance the bird was streamlined and slender, with body held horizontally and head up. The most striking feature was the long rather thick black bill, which seemed out of proportion to the slim elegant body and gave rather a top-heavy effect. DM thought that it had if anything a slight downward curve. The upperparts were various shades of grey, the underparts paler. The upper breast was streaked, whereas the lower breast and, more especially, the flanks were heavily barred. There was a distinct whitish superciliary and below it a dark line extending from the base of the bill through the eye. The bird was not seen to feed, and no call was heard. When it moved there was no bobbing motion as in *Tringa* species. DM considered the bird slightly smaller than a Redshank; it was very much smaller than Common Gull and Sandwich Tern, the only birds within range for direct size comparison. When it rose eventually, its wingbeats were sharp and jerky. VMT noted white around the base of the tail or lower rump, but this was not a conspicuous feature. We were unable to see whether the legs extended beyond the tail in flight.

The following description is based on notes taken before we consulted reference books :

Crown showed obvious dark streak; superciliary whitish, extending from base of bill to behind eye, where it curved down slightly; eye-stripe dark, extending from base of bill through eye, and curving down slightly; mantle and scapulars various shades of grey, with paler edges to feathers giving scaly effect as in Ruff; wings like mantle and scapulars in colouration, seemed longish in flight; no wing-bar noted; primaries showed dark tips when bird was at rest; tail showed some white in flight; chin whitish; upper breast streaked grey; lower breast and flanks heavily barred grey-brown, the bars fading only on the lower belly (no distinct demarcation between streaking of upper breast and barring of lower breast); bill black, long (about $1\frac{1}{2}$ times the length of

the head) and rather thick; eye black or very dark; legs (those parts visible above water) black or very dark.

Since we could not identify the bird, we had recourse to several works of reference. In general colouration the wader resembled the right-hand bird in D. M. Henry's illustrations of Stilt Sandpiper in *The Popular Handbook of Rarer British Birds*. The markings on the underparts of the wader we saw were grey, not brown, but in formation they were like those of the left-hand bird in that illustration. The plumage pattern we observed combined features of both the spring and the fall Stilt Sandpipers shown in Peterson's *A Field Guide to the Birds*, and it seems likely the bird was in intermediate plumage. The horizontal attitude we noted resembled that of the bird on the right-hand side of plate 5, *Brit. Birds* 48.

We concluded therefore that the bird was a Stilt Sandpiper, and the Rarities Committee have accepted the identification. The area was revisited that afternoon and searched the next day but the bird was not seen again.

D. MACDONALD, V. M. THOM.

(This is the first spring record of a Stilt Sandpiper in Britain. There are seven previous records from England and one from Ireland, all since 1954 and all single birds. First dates range from 19th July to 6th October, and the individual birds remained where found for from two to 20 days, the latest date being 8th October. After a gap from 1954 to 1962 the species has been noted every year except 1964 and 1966.—ED.)

Pectoral Sandpiper in Peeblesshire

On 16th October 1970 at Westwater Reservoir I disturbed a small flock of Lapwings from the water's edge and with them a small wader that looked like a Dunlin but uttered *chreep* notes. It landed with the Lapwings on the west shore of the reservoir but was repeatedly chased by them as it tried to feed. Eventually it was left to feed in peace about 100 yards from me, and I approached within 50 yards of it.

It had yellow legs and seemed slightly larger than Dunlin. It was roughly half the size of Lapwing (the only species present for direct comparison) with proportionately shorter legs. In general appearance it was rather Ruff-like, especially the plumage on the back; when disturbed by some Teal landing nearby the bird stretched its neck up and it then looked very similar to a Ruff in shape. When feeding at the water's edge it moved with legs well bent, which gave it a very crouched appearance. When disturbed, the bird would fly off with

a rapid twisting flight; no wing-bar was seen. The following description was made at the time :

Crown dark brown; cheeks fairly pale, whitish; slight eyestripe present, more noticeable when the bird was seen head-on; back Ruff-like with brown feathers edged with pale brown, two sets of pale lines coming close together towards the tail giving a snipe-like effect, especially as the feathers between these lines seemed much darker than those on either side; scapulars edged with pale brown; rump showed a blackish line extending to central tail feathers; throat whitish; sides of neck and breast covered with small brownish streaks, forming a clearly defined gorget on the breast; underparts pure white; legs yellow; bill black, short and slightly decurved, rather stout at base, which showed a small flesh-coloured area.

From these notes I identified the bird as a Pectoral Sand-piper.

R. K. MACGREGOR.

(This seems to be the first occurrence in Peeblesshire and the Tweed faunal area.—ED.)

Erythrism in eggs of Herring Gull in Scotland

On 15th May 1969 my son, Neville Cuss, was studying a colony of Herring Gulls on an island off the northeast coast of Sutherland when he came across a clutch of three red eggs. Knowing he had made an unusual discovery, he removed the eggs and brought them to me for my opinion.

The eggs are of normal size for Herring Gull. The background is of a pink suffusion; two of the clutch are covered with fine flecks of violet overlaid with equally fine flecks of brownish-red; the third egg is similarly marked, but the flecks are bolder.

This is the first British record of erythristic eggs of Herring Gull, all previous records being from Scandinavia. Most of the red Herring Gulls' eggs in museums and private collections have been obtained in the Arctic provinces of Norway (though one such clutch was found as far south as the skerries off Göteborg in Sweden). Arctic Norway has also produced all the known records of erythristic eggs of Greater Black-backed Gull. There is only one record considered authentic of red eggs of Common Gull, a clutch having been obtained at Hallands Väderö, well south of the Arctic Circle in Sweden, one record for Iceland Gull and none for Glaucous or Lesser Black-backed Gulls. Erythristic eggs of Black-headed Gull occur rarely; three examples found in Sutherland are illustrated in *A Vertebrate Fauna of Sutherland, Caithness and West Cromarty* (Harvie-Brown and Buckley 1887).

The eggs will be placed in one of the national collections.

JOHN CUSS, HUGH M. BLAIR.

Thrush Nightingales at Fair Isle and in Shetland

Between 8th and 14th May 1970 four Thrush Nightingales were recorded at Fair Isle. The first was trapped by Gordon J. Barnes in a Heligoland trap at Setter on 8th May. It was examined, ringed and photographed at the observatory. It was identified in the hand by the short first primary, the emargination of the third primary only and by its generally brown upperparts and dusky throat. After its release, good views were had of the bird feeding and running about on the hillside. This bird left by the afternoon.

On 9th the second Thrush Nightingale was found by Bill Oddie and Chris Thorne in Hesti Geo. I caught the bird in a mistnet, and it also was examined, ringed and released at the observatory. It was not seen again.

On 11th May I found the third individual beside the garden at Busta. A mistnet was put up, but the bird flew in through the door of the byre, and we trapped it by shutting the door. It was ringed and released at Setter and was seen in the garden there on 12th May.

The second and third birds were identified before capture; their dusky mottled throats and the earth-brown of the upperparts with only the tail showing chestnut were the identifying features (although the second bird showed a slight rufous wash on the flight feathers). Both were found feeding near cover and were watched running along and stopping with tail cocked up in Nightingale fashion.

On 14th May GJB found a dead Thrush Nightingale in one of his sheds. I examined the corpse, and the skin was preserved by GJB. The four birds were very similar. A full description is given of the first bird, and the others are compared with it.

Description Upperparts earth-brown, slightly more olive on mantle and greyer on rump; upper tail-coverts slightly rufous; lores grey-brown, paler than upperparts; ear-coverts richer earth-brown; chin whitish; breast and throat smudgy brown, feathers white with grey-brown tips; sides of throat and flanks grey-brown; belly whitish, becoming slightly creamy on under tail-coverts, with some slight dark marks on tips of some feathers; wings as mantle, but with slight rufous edgings on outer webs; greater coverts and tertials with tiny buff tips; underwing greyish with slight buff wash, feathers with pale fringes; upper mandible dark horn with pale cutting edge; lower mandible dark flesh with darker tip; gape and inside of mouth bright yellow; iris dark brown; legs and feet pale brown or dark flesh with back of tarsus and soles paler; rictal bristles few and very weak; tail (12 feathers) rufous brown, fairly noticeable when spread, all the shafts rufous.

Bird of 9th May Rump slightly more olive; chin buff; underparts generally buff, the feathers having tiny buff tips; breast grey-buff with the smudging darker than in first bird, each feather being grey-brown with shaft a little darker; belly whiter; upper tail-coverts rufous brown, edges of primaries, secondaries, primary and greater coverts more

rufous; pale tips on greater coverts and tertials less obvious; gape paler, yellow-flesh, not bright yellow; inside mouth pale yellow.

Bird of 11th May Breast shower more dusky markings; belly not so white; chin dusker; gape and inside mouth paler, as in second bird; pale tips on greater coverts only; legs had slight purplish tinge.

Bird of 14th May Plumage very similar to that of the third bird.

The paler gape and shorter wings of the second and third birds suggest that they were females and that the first bird was a male.

Weights (gm) and measurements (mm) of the four birds were :

Date	Ring No.	Wing	Bill	Tarsus	Tail	Weight
8 May	HX86900	93	17	30	70	21.1
19 May	HV67059	88	17	27	65	20.3
11 May	HV67121	87	18	28	68	22.4
14 May	—	94	17	27	66	23.3

All four birds had the third primary emarginated on the outer web, and the wing formulae, in the same order as above, were :

1st	2nd	3rd	4th	5th	6th	7th	8th
from primary coverts		from third primary—longest in each bird					
—7½	—4	—	—4	—9	—11½	—15	—17
—10	—2	—	—3½	—7	—11	—14	—16
—6	—2	—	—4½	—9	—12	—15	—19
—6	—3	—	—4	—8	—12	—15	—20

ROY H. DENNIS.

Between 31st July and 7th August 1970 at Hillswick, Mainland, a Thrush Nightingale frequented a stone wall directly opposite the hotel where I was staying. The bird had been seen by the hotel proprietor since about 27th July, usually early in the morning on the lawns around the hotel; it was also watched by R. H. D. Young.

In size it was like a large Robin, and in the open its movements recalled those of a Robin; it would hop forward, pausing frequently to stand still and look around; occasionally it would give a Robin-like bob. Generally, however, the bird seemed wary and skulking, spending most of the time concealed in the nettles, long grass and weeds growing on each side of the wall. The frequent and rather deliberate raising and lowering of the tail was the bird's most characteristic movement. In flight it was simply a dark olive-brown bird with no distinguishing mark whatever. Its flight was direct, rapid and whirring like a warbler's; it flew just above the grass and weeds and soon dropped into cover. I watched it on several

occasions at ranges down to a few feet before finally identifying it. The following description is a summary of notes made at the time:

Head dark olive-brown with random small grey flecks most numerous around eye; upperparts uniform dark olive-brown from crown to tail, with primaries in closed wing darker; wing showed very faint very small barring on edge near carpal; tail longish, basal half tinged rufous (when seen in good light), tip rounded with narrow darker rim; underparts pale fawn with faint narrow vertical streaks or lines of tiny speckles on the breast; under tail-coverts noticeably tawny; bill dark; legs pale flesh or pale pinky grey; eye black or dark brown.

I did not hear the bird call, but the hotel proprietor had noted a Chaffinch-like *tick* and had heard it warble on one occasion.

G. M. CHAPMAN.

(These records bring the Fair Isle total to nine, all of them arriving between 8th and 26th May. The last record is the first for Shetland other than Fair Isle and the first autumn record for Scotland. In England there have been three autumn records and one in May. Apart from a 1911 Fair Isle record, all the others have been reported since 1957. On the Isle of May three individuals were reported trapped between 9th and 17th May 1970, (see page 255 *et seq.*) and details have been submitted to the Rarities Committee.—ED.)

Obituary

JAMES FISHER

James Maxwell McConnell Fisher had Scottish blood as well as Scottish names and a deep affection for Scotland and its wild life. But he thought of himself as an Englishman, a man of the Midlands and especially of Northamptonshire, where he lived most of his life and of whose Naturalists' Trust he was such a vigorous chairman from its inception. James liked to poke fun at what he considered our Caledonian foibles, but to Scotland he had to come to study the seabirds he loved and their wild habitats.

The first of his papers indexed in the Alexander Library of the Edward Grey Institute is that on the Gannet colonies of Shetland, which appeared in 1938 in *British Birds* and was written in collaboration with Malcolm Stewart and Pat Venables. In the same year he and Venables published a paper in the *Journal of Animal Ecology* on the Gannets of Noss. These were followed by his long papers in the same journal, the first in collaboration with George Waterston on the breeding distribution,

history and population of the Fulmar in the British Isles (1941), the second with Gwynne Vevers on the North Atlantic Gannet (1943, 1944). In 1949 came an article on the natural history of Inverpolly Forest in *Bird Notes* and collaboration in a note on the breeding of the Northern Golden Plover on St Kilda in *British Birds*, and in 1950 a paper in the *Scottish Naturalist* with Keith Piercy on Eilean Bulgach. Soon followed two books in the New Naturalist series: his massive monograph *The Fulmar* (1952), supported by a long paper in *Ibis*, and *Sea Birds* (1954) in collaboration with R. M. Lockley, both containing much Scottish material. In 1956 he published *Rockall*, its climax the landing by helicopter on 18th September 1955, in which he was the only civilian to take part. The bibliography of 120 titles showed how assiduously James went to work.

Throughout his seabird books and papers sound the names of stacks and skerries, of cliffs and headlands, a ringing mixture of Scandinavian and Gaelic, for James was fascinated by names, by topography and by scenery at its wildest and least man-handled. As he put it, most seabird colonies are self-protecting, bastions that defy all but the hardest climbers. Although he took a First in zoology at Oxford, James would have made an equally successful historian, and his recent researches into the fossil record showed him once more protean in his interests and indefatigable in pursuit of facts.

I had the privilege of being with him on the Seal Flight of September 1947, when we covered almost every island round Scotland, from the Scar Rocks to Muckle Flugga, from the Bass to Boreray. We proved pretty conclusively that you could not count grey seal calves accurately from the air, but as a feast of islands the flight was rich beyond all dreams, and James' voice over the intercom showed how much he relished it. In more recent years his warmth and eloquence enlivened many island cruises organised by the National Trust for Scotland and the SOC's celebrated pre-Congress cruise in 1966. Many others have followed and will follow his road to the isles, but none will ever enjoy them more.

BRUCE CAMPBELL.

Review

The Hamlyn Guide to Birds of Britain and Europe. By Bertel Bruun, illustrated by Arthur Singer; consultant editor, Bruce Campbell. London, The Hamlyn Publishing Group Ltd. 1970. Pp. 319: 516 birds illustrated in colour; 448 distribution maps. £1.25.

The appearance of *A Field Guide to the Birds of Britain and Europe* in 1954 set a completely new standard in this line. The *Hamlyn Guide* is its first serious rival, and it is a matter for rueful reflection that the inspira-

tion for both of these outstanding books should have come from North America.

How does the new book compare with the old? At first sight it has all the advantages. Particularly striking is the layout, which allows text and map to lie directly opposite the appropriate species illustration. This virtually eliminates the need to refer to the index, as one can quickly find any bird by riffling through the right-hand pages, which carry the illustrations. These are remarkably complete, showing virtually all the relevant plumages as well as many drawings of the birds in flight. As for the maps, they are a great improvement on those in the *Field Guide*. They cover a greater area, extending south to northwest Africa and east to the Caspian; they differentiate in three colours between the breeding and wintering ranges and the areas of overlap occupied at both seasons, and they indicate the months during which the birds may be found in these areas and the direction of migration. Then there is the question of completeness. By my count the *Hamlyn Guide* describes 520 species, of which all but eight are shown in colour. So far as the illustrations are concerned, this compares very favourably with the *Field Guide*, which, in the revised edition, depicts only 387 species in colour and a further 75 in black and white.

But the comparisons do not all favour the new book. Although it has fewer illustrations, the *Field Guide* in fact describes the greater number (582) of species—and a good description can be of more use than a poor drawing. Arthur Singer's illustrations are generally of a high standard, but he lacks Roger Tory Peterson's genius for projecting the essential characters of the bird while at the same time playing down irrelevant detail. (Peterson's use of lines to draw attention to diagnostic characters is a feature that one misses in the new book.) The shortcomings of the illustrations are particularly apparent where there is a series of small species without distinctive markings, e.g. the warblers on pp. 225-235. One suspects that these failures are due to the artist's lack of familiarity with the species rather than to any defect in the printing process, although one is inclined to blame the printers for the over-uniform colouring of the grey geese and for such individual eccentricities as the non-Red-throated Pipit and the luridly pink Robin.

The text of the new book is much less complete than that of the *Field Guide*, but this is partly compensated by the greater variety of the pictures, and is something one must be prepared to accept as the price of having the text facing the illustrations. Condensation does, however, bring its own problems, and one misses the unmistakable ring of authority that is such a feature of the *Field Guide* text. So far, I have had the opportunity of testing the new book on only two critical identifications. One was an immature Glaucous Gull, which the book would have led me to identify as an Iceland Gull on the strength of the wing-tips projecting beyond the tail, without any caution that this is a feature that varies according to the stage of moult. The other occasion led to the discovery that one can not rely on the lengths quoted for the smaller American waders for an accurate comparison of sizes.

I would emphasise that it is only when judged by the highest standards that the book begins to reveal some shortcomings; for all ordinary purposes it will (if its limp binding stands up to the physical test of repeated use) serve very well. At its modest price it is a real bargain, and proves once and for all that it is not financially impracticable to align text and illustrations opposite each other. This is a challenge Messrs Collins will have to take up if they are contemplating another edition of the *Field Guide*, for there is no doubt that the layout of the first two editions has now been made to look decidedly old-hat!

DOUGAL G. ANDREW.

Letter

SIR,

The oiling of large raptors by Fulmars

I was interested to read the account by Roy H. Dennis concerning the oiling of large raptors by Fulmars (*Scot. Birds* 6: 198). The incident I will describe shows that Fulmars can use their oil-spitting capability in an offensive (or at least retaliatory) manner, rather than as a purely defensive reaction to attack or disturbance.

On 18th April 1970 I was in a hide near a Ravens' nest at Gutcher on the island of Yell, Shetland. The male Raven was hopping around in an aimless manner, and Fulmars were displaying and cackling on grassy ledges nearby. As the Raven approached a pair of Fulmars sitting together (at what may have been a prospective nest site), both the Fulmars flew off, and the Raven began to peck idly at something on the ledge they had vacated. As I watched the Raven, a Fulmar flew past and, turning its head in flight, accurately sprayed the Raven with oil from a range of about three feet. I could not be certain, but it seems probable that the Fulmar was one of the two the Raven had disturbed.

The Raven was obviously disgusted and after an involuntary jump spent the next ten minutes trying to rid itself of the oil. It would pull feathers individually through its bill to squeeze out the oil then shake its head and rub its bill in the grass to clean it. On one occasion the Raven nearly fell off the ledge when trying to clean oil from the top of its head by rubbing it on the grass. At no time did it show any aggressive reaction to the Fulmars and eventually flew off when Fulmars again landed on the ledge.

I have seen Fulmars drive gulls and Bonxies off food many times but have never seen them spit oil on those occasions; the Fulmar need only take up an aggressive attitude, opening its bill, lowering its head and raising its scapulars (rather in the manner of a Mute Swan), and even Bonxies will invariably back down and leave the Fulmar to it.

BOBBY TULLOCH.

Enquiries

Ospreys. It has become apparent over the past few years that the number of Ospreys seen throughout the country has increased, perhaps quite considerably. With a view to collating records, and ultimately publishing a paper on the subject, it would be appreciated if observers would send details of **any** sightings they have made to Harvey J. Burton, Warden, Loch Garten Osprey Reserve, Inchdryne Farm, Nethy Bridge, Inverness-shire.

The Scottish Ornithologists' Club

WEEKEND EXCURSION TO SPEYSIDE

A weekend excursion, based on CARRBRIDGE, has been arranged from Friday 21st May to Sunday 23rd May 1971. The local organisers are Douglas Weir, Roy Dennis and Nick Picozzi.

Hotel

Special weekend terms have been arranged as follows :

Carrbridge Hotel, Carrbridge, Inverness-shire (tel. Carrbridge 202).

Friday 21st—Bed and Breakfast	£2.00
Saturday 22nd—Packed Lunch, Bed and Breakfast ...	2.37½
Sunday 23rd—Packed Lunch	0.37½
	<hr/>
	£4.75

Service charge 10% extra

Dinner—Saturday 22nd May

Dinner has been arranged for Saturday night in the restaurant at the LANDMARK Visitors' Centre, Carrbridge, for approximately £1.05. Those wishing to have Dinner at LANDMARK should advise the excursions organiser on Saturday morning before 10 a.m. The cost of Dinner has not been included in the Hotel special weekend charges, and will be extra if taken at the Hotel.

Booking

Members may bring guests and should book direct with the Hotel Manager, notifying him that they are attending the Club excursion. When booking, please let the Management know if you require Dinner on Friday night (extra). Soup and Salad can be provided (extra) for those arriving late. **Note** The last train from the South to stop at Carrbridge arrives at Aviemore at 6.13 p.m. and at Carrbridge at 6.29 p.m. The train arriving at Aviemore at 8.38 p.m. does **not** stop at Carrbridge.

Information about alternative accommodation can be obtained by writing, with s.a.e. please, to Mrs W. A. Sinclair, 4 Altnaskiach House, Culduthel Road, Inverness (tel. 0463 30053).

Outline Programme

Friday 21st 8.30 p.m.—Informal film programme at LANDMARK. Books from the BIRD BOOKSHOP will be on sale.

Saturday 22nd 10 a.m.—Meet at LANDMARK.

Excursions will be arranged in the Cairngorms and on Speyside. Details will be announced on Friday evening.

7.30 p.m. (prompt) Dinner at LANDMARK.

8.30 p.m. Film and slide programme at LANDMARK.

Sunday 23rd 10 a.m.—Meet at LANDMARK. Excursions as Saturday.

Members are advised that strong footwear and warm clothing are essential for those intending to join the Cairngorms excursion. Gum boots are advisable for some excursions.

SUMMER EXCURSIONS

Important Notes

1. Members may attend excursions of any Branch in addition to those arranged by the Branch they attend regularly.

2. Where transport is by private car please inform the organiser if you can bring a car and how many spare seats are available. All petrol expenses will be shared.

3. Please inform the organiser in good time if you are prevented from attending an excursion where special hire of boats is involved. Failure to turn up may mean you are asked to pay for the place to avoid additional expense to the rest of the party.

4. Please bring meals as indicated (in brackets) below.

ABERDEEN

For all excursions, please notify Miss F. J. Greig, 9 Ashgrove Road, Aberdeen AB2 5AE (tel. 0224 40241, Ext. Old Aberdeen 342, 9 a.m. - 5 p.m.) one week in advance.

Sunday 22nd August. YTHAN ESTUARY AND LOCHS. Meet Culterty 10.30 a.m. (lunch).

Sunday 17th October. LOCH STRATHBEG (lunch).

AYR

For all excursions involving the use of public transport (coach or boat), please book at least a fortnight in advance through the Branch Secretary, R. M. Ramage, 57B St Quivox Road, Prestwick, Ayrshire (tel. 0292 79192).

Saturday 3rd April. LOCHINCH, STRANRAER (by kind permission of the Earl of Stair). Leader: R. M. Ramage. Coach leaves Wellington Square, Ayr, 9 a.m. Cost £1.00 per head approx. (lunch and tea).

Saturday 29th May. CULZEAN COUNTRY PARK. Joint excursion with the National Trust for Scotland. Leader: Douglas Bremner. Meet at the Car Park, Culzean, 2.15 p.m. (tea).

Saturday 12th June. AILSA CRAIG. Leader: Dr M. E. Castle. Boats leave Girvan Harbour at 10 a.m. and return in the evening. Priority will be given to members of the Ayr Branch. Cost £1.50 per head (lunch and tea).

Wednesday 23rd June. AUCHENDRANE. Leader: A. G. Stewart. Meet Wellington Square, Ayr, 7.30 p.m.

Saturday 21st August. NEW CUMNOCK LOCHS. Leader: J. A. Begg. Meet Wellington Square, Ayr, 2 p.m. (tea).

Saturday 11th September. FIFE COAST. Leader: R. M. Ramage. Coach leaves Wellington Square, Ayr, 8 a.m. and is expected to return there at about 10 p.m. Expected all-inclusive cost £1.50 per head. (Lunch. Tea will probably be taken in Cupar).

It is likely that there will also be excursions by small parties in July and August for mapping squares, which will be arranged locally. Details from the Branch Secretary.

DUMFRIES

Sunday 9th May. LEIGHTON MOSS, SILVERDALE, LANCASHIRE. Leader: W. Austin. Meet Ewart Library, Dumfries, 9.30 a.m. (lunch and tea).

Sunday 6th June. RAEHILLS AND LOCHWOOD OAKS (by kind permission of Major P. W. Hope-Johnstone). Leader: R. T. Smith. No dogs allowed and the party must stay together. Meet Ewart Library, Dumfries, 2 p.m. (tea).

Sunday 4th July. MULL OF GALLOWAY. Leader: A. D. Watson. Meet Ewart Library, Dumfries, 9.30 a.m. and join members from West Galloway at DRUMMORE HARBOUR 12 noon (lunch and tea).

Sunday 5th September. SOUTHERNESS, meet at the Lighthouse 11.30 a.m.; CARSETHORN, meet 2 p.m. Leaders: D. Skilling and H. M. Russell (lunch and tea).

DUNDEE

All excursions by private car, leaving City Square, Dundee, 9 a.m. except for 9th May (lunch and tea for all excursions).

Sunday 9th May. GLENLYON. Depart 8 a.m.

Sunday 6th June. CRAWTON BAY, STONEHAVEN.

Sunday 4th July. LOCH ORDIE area.

Sunday 1st August. STRATHARDLE.

Sunday 5th September. SCURDYNESS.

EDINBURGH

Saturday 8th May. ABERLADY BAY NATURE RESERVE. Leader: K. S. Macgregor. Meet Timber Bridge 2 p.m. (tea).

Saturday 22nd May. PENICUIK HOUSE GROUNDS (by kind permission of Sir John D. Clerk). Leader: Dr L. L. J. Vick. Meet South Church, Peebles Road, Penicuik, 2 p.m. (tea).

Sunday 30th May. THE HIRSEL, COLDSTREAM (by kind permission of Sir Alec Douglas-Home). Excursion by private cars leaving Edinburgh from square behind National Gallery 10.30 a.m. for Hirsell at 12 noon (lunch and tea). Applications to J. A. Stewart, 109 Greenbank Crescent, Edinburgh EH10 5TA (tel. 031-447 4210), stating number of seats available or required.

Saturday 5th June. ISLE OF MAY. Leader: Alastair Macdonald. Boats leave Crail Harbour 10.30 a.m. prompt (lunch and tea). Applications with s.a.e. and boat fare of £1.00 to Peter Kerr, 41 Craigmount Park, Edinburgh EH12 8EF, stating number of car seats available or required.

Saturday 24th July. BASS ROCK (by kind permission of Sir Hew Hamilton-Dalrymple). Leader: J. H. B. Munro. Numbers limited to 24. Boat leaves North Berwick Harbour 2.30 p.m. (tea). Applications with s.a.e. and boat fare of 70p to Mrs J. H. B. Munro, 9 Capelaw Road, Edinburgh EH13 0HG (tel. 031-441 2381).

Saturday 4th September. ABERLADY BAY NATURE RESERVE. Leader: K. S. Macgregor. Meet Timber Bridge 2 p.m. (tea).

GLASGOW

Sunday 9th May. ISLE OF MAY. Meet Anstruther Centre Pier 11.15 a.m. (lunch and tea). Return from Isle of May 4.30 p.m. Boat fare 75p. Applications with fare and s.a.e. to Mrs Muriel Draper, 6 Southview Drive, Blanefield, by Glasgow, not later than 22nd April.

Saturday 15th May. LOCH OF LOWES, PERTSHIRE (by permission of the Scottish Wildlife Trust). Private bus leaves Glasgow Museum and Art Gallery, Kelvingrove, 9 a.m. and returns 7 p.m. approx. (lunch and tea). Fare 87p. Numbers limited. Applications to John Findlay, 1 Westbank Quadrant, Glasgow W.2. (tel. 041-339 4330).

Saturday 29th May. GLEN FYNE (Square NN21). Survey of the square for BTO Atlas. Applications by 15th May to the BTO Regional Organiser, John Mitchell, 22 Muirpark Way, Drymen, by Glasgow. Please state if car seats available (lunch and tea).

Saturday 12th June. FARNE ISLANDS. Limited numbers by private bus. Applications by 31st May to John Findlay, 1 Westbank Quadrant, Glasgow W.2. (tel. 041-339 4330). Further details will be available on application (lunch and tea).

Sunday 20th June. LITTLE CUMBRAE. Meet Largs Harbour (Dick's Stance) 10.45 a.m. Return to Largs 5.30 p.m. Boat fare 50p. Applications enclosing fare and s.a.e. to Ronald Jeffrey, 4 Victoria Road, Paisley, Renfrewshire, by 5th June (lunch and tea).

Saturday 26th June. BASS ROCK (by kind permission of Sir Hew Hamilton-Dalrymple). Meet at North Berwick Harbour 12.15 p.m. Boat fare 80p. Applications enclosing boat fare and s.a.e. to Robert Caldwell, 63 Southwold Road, Ralston, Paisley, Renfrewshire, by 12th June (lunch and tea).

INVERNESS

Excursions by private car. Applications to Outings Secretary, Mrs W. Morrison, 83 Dochfour Drive, Inverness (tel. 0463 32666).

Friday 21st May to Sunday 23rd May. SPEYSIDE WEEKEND. See special notice on p. 289.

Saturday 29th May. ABRIACHAN AND LOCH LAIDE. Meet Neth Bank Church 2 p.m. (tea).

Sunday 6th June. CULTERTY, NEWBURGH. Leader: J. A. Love. Meet at Station Square, Inverness 9 a.m. (lunch and tea).

Sunday 27th June. LOCH FLEET. Leader: D. Macdonald. Meet at Station Square, Inverness 9.30 a.m. (lunch and tea).

ST ANDREWS

Applications, not later than one week before each excursion, to Miss M. M. Spires, 4 Kinburn Place, St Andrews (tel. 033-481 3523).

Saturday 8th May. KILCONQUHAR LOCH (by kind permission of Elie Estates). Meet North Lodge, 2.30 p.m. (tea).

Saturday 12th June. ANGUS CLIFFS. Cars leave St Andrews bus station 2 p.m. (tea).

Sunday 20th June. AN ANGUS GLEN. Cars leave St Andrews bus station 9.30 a.m. (lunch and tea).

Saturday 3rd July. TENTSMUIR. Cars leave St Andrews bus station 2 p.m. (tea).

STIRLING

The Stirling Branch will be holding a number of excursions in Stirlingshire and East Perthshire during the summer in connection with the BTO Atlas. Details can be obtained from Henry Robb, 27 Victoria Road, Stirling (tel. 0786 3618).

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, Dumfries, Dundee, Edinburgh, Glasgow, Inverness, St Andrews, Stirling and elsewhere 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 and direct the study of Scottish ornithology; (b) co-ordinate the efforts of Scottish Ornithologists; (c) encourage ornithological research in Scotland; (d) hold meetings at which Lectures are given, films exhibited and discussions held, and (e) publish information regarding Scottish ornithology.

There are no entry fees for Membership. The Annual subscription is 40s, or 10s in the case of Members under twenty one years of age or University undergraduates who satisfy Council of their status as such at the times at which their subscriptions fall due. The Life subscription is £50. Joint Membership is available to married couples at an Annual subscription of 60s, or a Life subscription of £75. 'Scottish Birds' is issued free to Members but Joint Members will receive only one copy between them. Subscriptions are payable on 1st October annually.

'Scottish Birds' is the Journal of the Club. Published quarterly it includes papers, articles and short notes on all aspects of ornithology in Scotland. The Scottish Bird Report is published in the Journal.

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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1. General notes (not of sufficient importance to be published on their own as Short Notes) should be sent to the appropriate local recorders for inclusion in their summary for the annual Scottish Bird Report, not to the editor. A list of local recorders is published from time to time, but in cases of doubt the editor will be glad to forward notes to the right person. All other material should be sent to the editor, Tom Delaney, 27 Trinity Crescent, Edinburgh. EH5 3EE. Attention to the following points greatly simplifies the work of producing the journal and is much appreciated.

2. If not sent earlier, all general notes for January to October each year should be sent to the local recorders early in November, and any for November and December should be sent at the beginning of January. In addition, local recorders will be glad to have brief reports on matters of special current interest at the end of March, June, September and December for the journal. All other material should of course be sent as soon as it is ready.

3. All contributions should be on one side of the paper only. Papers, especially, should be typed if possible, with double spacing. Proofs will normally be sent to authors of papers, but not of shorter items. Such proofs should be returned without delay. If alterations are made at this stage it may be necessary to ask the author to bear the cost.

4. Authors of full-length papers who want copies for their own use MUST ASK FOR THESE when returning the proofs. If requested we will supply 25 free copies of the issue in which the paper is published. Reprints can be obtained but a charge will be made for these.

5. Particular care should be taken to avoid mistakes in lists of references and to lay them out in the following way, italics being indicated where appropriate by underlining.

DICK, G. & POTTER, J. 1960. Goshawk in East Stirling. *Scot. Birds* 1: 329.

EGGELING, W. J. 1960. *The Isle of May*. Edinburgh and London.

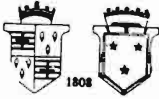
6. English names should follow *The Handbook of British Birds* with the alterations detailed in *British Birds* in January 1953 (46:2-3) and January 1956 (49:5). Initial capitals are used for names of species (e.g. Blue Tit, Long-tailed Tit) but not for group names (e.g. diving ducks, tits). Scientific names should be used sparingly (see editorial *Scottish Birds* 2:1-3) and follow the 1952 B.O.U. *Check-List of the Birds of Great Britain and Ireland* with the changes recommended in 1956 by the Taxonomic Sub-Committee (*Ibis* 98:158-68), and the 1957 decisions of the International Commission on Zoological Nomenclature (*Ibis* 99:396). When used with the English names they should follow them, underlined to indicate italics, and with no surrounding brackets.

7. Dates should normally be in the form "1st January 1962", with no commas round the year. Old fashioned conventions should be avoided—e.g. use Arabic numerals rather than Roman, and avoid unnecessary full stops after abbreviations such as "Dr" and "St".

8. Tables must be designed to fit into the page, preferably not sideways, and be self-explanatory.

9. Headings and sub-headings should not be underlined as this may lead the printer to use the wrong type.

10. Illustrations of any kind are welcomed. Drawings and figures should be up to twice the size they will finally appear, and on separate sheets from the text. They should be in Indian ink on good quality paper, with neat lettering by a skilled draughtsman. Photographs should either have a Scottish interest or illustrate contributions. They should be sharp and clear, with good contrast, and preferably large glossy prints.



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