

SCOTTISH BIRDS



THE JOURNAL OF THE
SCOTTISH ORNITHOLOGISTS' CLUB

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SUMMER 1976

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Volume 9 No. 2

Summer 1976

Edited by D. J. Bates

Editorial

Local Recorders An amended list of Local Recorders is given near the end of this issue, following the official section. We are pleased to welcome Mr W. A. J. Cunningham for the Outer Hebrides, who rejoins the ranks after a short break, and Mr M. I. Harvey, who is already well known in the Inverness area. Everyone concerned would like to thank the retiring Recorders for so ably fulfilling these onerous duties: Dr Rusk, who has covered Inverness since the system began in 1968, and Dr Hopkins, who represented the Outer Hebrides, always a difficult area to manage, both during his residence there and for some time after. It will be noticed that Kinross-shire is no longer covered by Miss B. H. Moore; however, there is no essential change here, since we are delighted to offer our congratulations to Mrs Gray on her recent marriage.

Scottish Bird Report We regret we have missed the boat again—the 1975 Bird Report has been held over until the winter number. Circumstances are still against us—the compiler, Roy Dennis, was ill for some weeks at the crucial period when material for the Report was submitted by the Local Recorders. We are glad he is now well and the Report is nearing completion, but meanwhile his full-time RSPB work has made great demands on his spare time in the spring. We are exploring ways of avoiding delays to future Bird Reports but it is too early to say more of this yet.

Branch and Group News A new feature under this title begins in the official SOC section near the end of this issue. We are grateful to Branch Secretaries and others who contributed these items and look forward to regular instalments from all Branches and Groups. We hope members can thus be kept more closely in touch with the Club.

Corrections The following additions and corrections should be made to “Waterfowl at effluent discharges in Scottish coastal waters” published in the spring (9: 5-36):

Table 1 (p. 16) under Seafield the February total should be 4,500 (not 4,200);

Table 5 (p. 22) under Dundee-Monifieth the outfall codes should be F5, C6, M9-11;

Table 7 (p. 25) under Islay the outfall code should be F17.

Current literature Recent material of Scottish interest includes :

Biorec 75: Conference on Biological Recording in Scotland 11-13 April 1975. Adam Ritchie (editor), 1975. Dundee Museum.

Ovenbird in Shetland : a species new to Britain and Ireland. Iain S. Robertson, 1975. *British Birds* 68 : 453-455.

Birds of the Stirling region. D. M. Bryant, 1974. In Timms, D. W. G. (ed.). *The Stirling Region*: 123-146. Stirling, British Association.

Dotterel points the way. 1975. *BTO News* 76: 5. (Tay Ringing Group's work).

Puffins on St Kilda in 1972. Peter Schofield, 1975. *Bird Study* 22: 233-237.

Gulls and Puffins on North Rona. P. G. H. Evans, 1975. *Bird Study* 22: 239-247.

Fulmars at colonies: time of day and weather. H. E. M. Dott, 1975. *Bird Study* 22: 255-259. (Scottish studies).

Talon-grappling by Snowy Owls. R. A. Hume, 1975. *Bird Study* 22: 260. (Record from Fetlar).

Changes in incubation patch and weight in the nesting House Martin. D. M. Bryant, 1975. *Ringing and Migration* 1: 33-36. (Study in Perthshire).

Seasonal variations in suburban Blackbird roosts in Aberdeen. R. L. Swann, 1975. *Ringing and Migration* 1: 37-42.

Catching and ageing Dippers. Tony Parsons and Dave Reid, 1975. *Ringing and Migration* 1: 56. (Note from Invernessshire).

Feeding distribution and behaviour of Shelduck in relation to food supply. D. M. Bryant and J. Leng, 1975. *Wildfowl* 26: 20-29. (Study at Skinflats, Firth of Forth).

Further cases of poisoning of wild geese by an organophosphorus winter wheat seed treatment. G. A. Hamilton and P. I. Stanley, 1975. *Wildfowl* 26: 49-54. (Includes several incidents in east Scotland).

A method of sexing Moorhens. A. Anderson, 1975. *Wildfowl* 26: 77-82. (Much data from Aberdeenshire).

Breeding of ducks are Loch Leven, Kinross. I. Newton and C. R. G. Campbell, 1975. *Wildfowl* 26: 83-103.

Greenland Barnacle Geese in the British Isles. M. A. Ogilvie

and H. Boyd, 1975. *Wildfowl* 26: 139-147. (Most of this population winters in Scotland).

Structure and regulation of a Shelduck (*Tadorna tadorna* L.) population. D. Jenkins, M. G. Murray and P. Hall, 1975. *Journal of Animal Ecology* 44: 201-231. (Study in Firth of Forth).

Flight behaviour of Starlings at a winter roost. James Brodie, 1976. *British Birds* 69: 51-60. (West Lothian study).

Peregrine and Raven possibly contaminated by Fulmar oil. C. J. Booth, 1976. *British Birds* 69: 61. (Records from Orkney).

Maternal nutrition and breeding success in Red Grouse (*Lagopus lagopus scoticus*). Robert Moss, Adam Watson and Raymond Parr, 1975. *J. Anim. Ecol.* 44: 233-244. (Study based on Banchory, Kincardineshire).

The Clyde Wader Group Report No. 2, 1975. Price 25p. (No address given).

Loch Lomond Bird Report No. 4, 1975. J. Mitchell (comp.) 1976. (contains *The Breeding Status of the Rook (Corvus frugilegus) in the Loch Lomond Area* by J. Mitchell which is also issued as a separate reprint. No address given).

Report on the Heronry at Gartfairn Wood, West Stirlingshire, for 1975. J. Mitchell, 1975. Nature Conservancy Council.

A Report on the Peregrine Falcon in the Loch Lomond/Trossachs Area of Scotland in 1975. J. Mitchell, 1975. Nature Conservancy Council.

Edinburgh Ringing Group, 3, 1975. D. R. Langslow (ed.). Price 25p. (No address given).

Index The index to volume 8 will not be ready until the autumn number.

Current Notes

These notes include unchecked reports and are not intended as a permanent record. Please send items of interest to Local Recorders at the end of January, April, July and October.

Beginning with the late winter period and the departure of winter visitors, **Divers**, probably all **Red-throated**, totalled 112 at Gullane (E Loth) in March, but the only **White-billed Diver** reported was in Orkney in Apr. A **Green-winged Teal** was at Unifirth (Shet) during Feb. **Long-tailed Ducks** reached at least 300 in Dunnet Bay (Caith) on 25 Apr. The L Fleet (Suth) **Surf Scoter** was present until at least 18 Apr, and one at Lossiemouth (Moray) in March was perhaps the same bird haunting both sides of the Moray Firth as the **King Eider** was thought to have done earlier. Three **King Eiders** were at L Fleet on 18 Apr, but the only other reported was a ♂ from L Ryan (Wig) on 22 March. A few **Smews** wintered from Shetland to the Tay estuary, with 3 in the Tay for some weeks and 2 at

Strathbeg (Aber) on 17 Feb. The ♂ in Inverness harbour left in early Apr. The only **Bean Goose** noted since Jan was again from Aberdeenshire: a late migrant from Strathbeg on 6 May with a **Barnacle Goose** and 2 **Bewick's Swans**. The **Snow Goose** in the Southerness (Kirk) area from Feb-Apr was seen by some SOC visitors on the Dumfries Goose Weekend. A blue-phase specimen was at L Indaal (Islay) on 13 Apr. On 28 Feb a **Pale-bellied Brent Goose** was at Corsewall Point (Wig) and a **Dark-bellied** bird at West Preston (Kirk); a **Pale-bellied** bird was at West Preston on 17 Apr. Six **Rough-legged Buzzards** were found in the spring: one in Orkney, a dead one near Dumfries, and 4 in upper Deeside (Aber) in early Apr. Up to 10 **Ruffs** were at Cotehill (Aber) from mid-Feb to mid-Apr. The usual **Glaucous Gulls** were about, with as many as 19 at Fraserburgh (Aber) in late March. Two hybrid **Glaucous x Herring** or leucistic **Herring Gulls** were also there at that time and another was at Inverness in Apr. **Iceland Gulls** totalled 6 in Shetland in early spring, 6 sightings on the Aberdeenshire coast from 24 Mar-8 May, and singles at St Margaret's Loch (Edinburgh) in early Apr and L Indaal on 17 Apr. The **Little Auk** wreck produced 13 on the Aber/Kinc coast from 31 Jan-29 Feb, all but 2 picked up on the beaches, the majority between 7-14 Feb, just after the gales. Another was off Girdle Ness on 3 May. The last **Fieldfare** was at Tynninghame (E Loth) on 16 May. Perhaps the most remarkable occurrence of the winter was a **Firecrest** found dying in Wick (Caith) on 11 Feb that had been ringed in Norfolk in Oct 1975. A few **Waxwings** remained in Apr, mostly near the east coast. Latest records were c12 at L Garten (Inv) on 8 May and one at Kincorth (Moray) on the 12th. Few **Great Grey Shrikes** were reported, the last in Aberdeen on 23 Apr. A few **Bramblings** lingered in the north-east until early May.

Turning to summer migrants, a **Cory's Shearwater** passed Aberlady (E Loth) on 5 May, and other rarities, **Purple Heron** and **Goshawk**, visited Orkney about the same period. A pair of **Garganeys** remained at Aberlady for two months, raising hopes of breeding until they vanished in early May. A ♂ was on the Don (Aber) on 7 May and another at Gladhouse (Midl) throughout the second half of May. Some of the five sightings of **Marsh Harrier** in East Lothian (three at Aberlady) between late Apr-mid May may refer to one bird, but 2 lingered at Strathbeg from 21 Apr into May. The only migrant **Osprey** reported was flying north over the motorway in Glasgow! The breeding situation is reported below. Easterly winds in mid-April brought **Cranes** to Tynninghame, Newburgh (Aber), and Insh Marshes (Inv), where there was a **Green Sandpiper** earlier in the month. A **Wood Sandpiper** was at Tynninghame on 30 May. A **Grey Phalarope** at Thurso (Caith) from 26 Mar-6 Apr was at an unexpected time of year. A **Shore Lark** was on the Isle of May in early May. **Black Redstarts** were few: Njuggles Water (Shet) on 11 Apr, St Abbs (Ber) from 13-19th, and Seaton Park (Aber) on 29th.

First dates of some summer migrants were: **Ring Ouzel** early March, **Lammermuirs** (E Loth/Ber), **Wheatear** 23rd, **Garlieston** (Wig), **Swallow** 26th, **Carlingwark Loch** (Kirk), **Sandwich Tern** 28th, **Girdle Ness**, **Whinchat** 9 Apr, upper Deeside, **House Martin** 15th, Thornton (Kinc), **Swift** end of April, **Duddingston** (Midl).

A rush of migrants occurred in anticyclonic weather at the weekend of 8/9 May. Outstanding among these were 2 **Dotterels** at Girdle Ness, and 2 **Wrynecks** and 3 **Red-backed Shrikes** between Newburgh and Cruden Bay (Aber).

Following their disastrous 1975 breeding season, it is a relief to know that 13 pairs of **Ospreys** have occupied breeding sites, including L Garten. At L of Lowes (Perth) there is an extraordinary triangle of ♂ and 2 ♀♀ sharing one nest quite amicably—there seems to be no doubt that eggs are being incubated, but it is not yet clear whether both ♀♀ have laid, nor how duties are being shared. After a nine-years-wonder, **Snowy Owls** are non-starters on Fetlar this year, with no ♂ but as many as 5 ♀♀

Isle of May Bird Observatory and Field Station Report for 1975*

Prepared for the Observatory Committee
by J. M. S. ARNOTT, *Honorary Secretary*

The observatory was manned for a total of 198 days from 28th March to 1st November with the exception of 5th April, 3rd and 4th May, 13th to 20th and 27th to 29th June, 17th August and 25th to 28th October. On most of these dates and for the second half of March, however, there was some other observer cover on the island.

There were two large falls of migrants in the spring—in April and in May—and in the autumn there was considerable passage during the prolonged spell of easterly winds in October. Three new birds for the island were recorded: Gadwall *Anas strepera*, Red-flanked Bluetail *Tarsiger cyanurus*, and Pallas's Leaf Warbler *Phylloscopus proregulus*. Pallas's Sandgrouse† were recorded for the first time since 1888. There were 4,233 birds ringed and 210 recoveries. A census was again carried out of the breeding seabirds, and various research projects were continued or started.

Migration

March-April Though some spring migrants were late in appearing, an exceptionally early arrival was a Whinchat from 14th to 20th March. Also on the 14th 15 Twite arrived, and numbers increased to a record 50 on 25th March. The flock left on 16th April. There were few arrivals in the cold northerly winds of the end of March and the first week of April, but they included Black Redstarts on 25th and 30th March, and on 1st April the first flock of Meadow Pipits and the first Dunnock (a species that did not breed this year). There was a small movement on 6th April when the wind backed to the west, and arrivals included the first Chiffchaff, the only spring Stonechat, 2 Pied Wagtails, 3 Robins, and one of only 3 spring Kestrels. Offshore there was an exceptionally heavy passage of over 300 Common Gulls flying east-north-east.

The wind returned to northerly on the 7th, and apart from a few Meadow Pipits, a Jack Snipe and a Greenfinch, there were no further migrants until the wind changed to westerly

*Reports since 1958 have been published annually in *Scottish Birds*.

†Scientific names can be found in *The Birds of the Isle of May* by W. J. Eggeling (1974), Special Supplement to *Scottish Birds* volume 8.

on the 11th, when a Grey Wagtail came in (only the tenth spring occurrence), and to south-easterly on the 12th, when the first belated Wheatear arrived, together with 2 Goldcrests, 6 Blackbirds, a Redwing, and a Chaffinch. The south-east wind continued for two days, bringing on the 13th "many hundreds, perhaps thousands" of Meadow Pipits, at least 50 Goldcrests, 19 Fieldfares, another Wheatear, and a few Robins and Wrens. These had mostly left by the 14th, which brought a Black Redstart, 5 Wheatears, 20 Robins, 30 Blackbirds, and on the 16th only the fourth spring record of a Treecreeper.

The Blackbird numbers built up to a spring maximum of 400 on the 18th, during another spell of south-easterly winds which started on the 17th and lasted until the 21st. The first Swallow appeared on the 17th with a Woodcock, 2 Bramblings, 2 Ring Ouzels, 200 Blackbirds, over 50 Redwings, and about 20 Fieldfares, though Fieldfare numbers built up to 400 on the 18th, an unusually high spring figure. This movement also included on the 18th the spring's highest count of 6 Chiffchaffs, and also 2 Black Redstarts, 70 Goldcrests, and a Firecrest, the first recorded in spring. On the 19th, a misty day, there was a further early build up of thrush numbers, including 500 Fieldfares and 150 Redwings, but they decreased later in the day in spite of arriving flocks. Other arrivals were a flock of 50 Bramblings, 5 Ring Ouzels, 6 Chiffchaffs, the first Willow Warbler, and 2 unusually early Whimbrels.

With the weather clearing and the wind falling away, almost all these migrants had departed by the 20th, though the Firecrest stayed to the 21st. There were 2 early "comic" terns on the 20th and a Gadwall, a species never previously seen on the island. The wind veered to the west on the 22nd and stayed in that quarter for most of the rest of the month, during which there was a steady trickle of Swallows, Meadow Pipits, Wheatears, Goldcrests, Skylarks, Linnets, and thrushes. A Goldfinch (a species very scarce on the May prior to 1967) appeared on the 24th, the first of six observed until 17th May, and another unusual visitor was a Long-eared Owl on the 24th and 25th—only the twelfth in spring.

The first sightings of some migrants were: March—14th, Whinchat; 15th, Black Redstart; April—6th, Chiffchaff; 12th, Wheatear; 17th, Swallow, Ring Ouzel and Brambling; 19th Whimbrel and Willow Warbler; 20th, "comic" tern.

May The month started with a Blackcap and little else in the westerly winds that prevailed to the 5th, when they changed to south-east, and the first Lesser Whitethroat arrived. The easterly wind then persisted for a week, bringing in virtually nothing during the next two days. However, following the 7th, a day of north-easterly wind rising to force 7, the 8th

produced a spectacular fall of birds in a blustery day of force 8 north-easterly wind, decreasing to force 6, with moderate visibility and occasional rain. A Bluethroat at 12.45 was the forerunner of many hundreds of birds that began arriving about 14.00. Among the first to be noticed were large numbers of Tree Pipits which built up to an extraordinary total of about 500. Hundreds of Wheatears were also arriving, and by dusk were estimated at 350. A steady stream of Redstarts came in throughout the afternoon and evening, giving a total of about 110, and other approximate totals were: 40 Whinchats, 35 Song Thrushes, 25 Ring Ouzels, 250 Willow Warblers, 25 Robins, 20 Pied Flycatchers, 9 Pied Wagtails, 70 Reed Buntings, and 6 Fieldfares. There were also 3 Bluethroats, 3 Wrynecks, an Ortolan Bunting, a Blackcap, a Whitethroat, a Lesser Whitethroat, a Yellow (*flavissima*) and another *flava* Wagtail, a Brambling, 2 Greenfinches, 2 House Martins, a Green Sandpiper and a Whimbrel.

Most of these had departed by the following day, although Redstart numbers remained at 70, and Tree Pipits at 150, and by the 10th little remained, with only 5 Ring Ouzels and a Whitethroat arriving in the light and variable wind. The 11th began with the startling discovery of two Pallas's Sandgrouse on the South Plateau (a species last seen on the island in 1888) and the day also produced 2 Blackcaps, the spring's last Skylarks and the only Common Sandpiper of the spring. The light and variable winds continued through the 12th, which brought a Bluethroat, and 13th, which saw a slight movement of Willow Warblers, Wheatears, Redstarts, Pied Flycatchers, and an Ortolan Bunting. After a north-east gale on the 14th, there were a few arrivals on the calm 16th, including the only 3 spring Sand Martins, the first Garden Warbler, and the first two of very few Sedge Warblers this spring. These were followed by a Goldcrest on the 17th—a late straggler.

Swallows continued to pass through at the rate of about 10 a day, with a spring maximum of 16 on the 21st, and on the 20th there were 2 Mistle Thrushes, an irregular visitor not seen again this year, and the spring's only Cuckoo, together with a trickle of Willow Warblers, Whitethroats, Lesser Whitethroats, and Sedge Warblers, which continued until the end of the month. Two Red-backed Shrikes appeared on the 26th and stayed until the 27th, which also saw the late arrival of the first Spotted Flycatcher, and the year's only Nightingale. There was then little movement in the northerly winds until the end of the month, though the 31st did produce half a dozen warblers and the island's second record of Thrush Nightingale, a bird which stayed until 7th June.

First sightings of migrants in May included: 1st, Blackcap; 5th, Lesser Whitethroat; 8th, House Martin, Whitethroat,

Pied Flycatcher, Tree Pipits and Wryneck; 16th, Sand Martin; 20th, Cuckoo; 27th, Spotted Flycatcher.

June-July June started with a Swift on the 1st (the first recorded since 1973) and the spring migration continued until about the 10th with very small numbers, mostly of warblers, flycatchers and Whinchats and including stragglers like Blackcap on the 4th, and Robin and Chiffchaff on the 5th. There were 2 Red-backed Shrikes on the 3rd, 3 on the 4th, and another on the 10th and 11th. A late Tree Sparrow turned up on the 19th, and on the 21st there was a second Firecrest for the year, a species first seen on the May only in 1959. With it was a grey Willow Warbler, probably *acredula*, one of several seen during the spring. No Golden Plovers were seen in spring.

A party of 12 Purple Sandpipers on 5th July heralded the autumn migration and their numbers built up to 52 by the 20th July and a very high total of 322 by 17th September. The first of two autumn Cuckoos went through on 6th July (the second on the 28th) followed by a wandering Willow Warbler on the 8th and the return of the Turnstones on the 12th. An unusual visitor on the 13th was a Corn Bunting, only the tenth occurrence and the first for July. A Sedge Warbler arrived on the 20th with a scarce visitor, a Wood Warbler. Swallows started passing on the 21st, and built up to 100 on the 30th.

August The first week of August saw the southward return of five species of migrants in moderate westerly winds: Sky-lark on the 1st, Snipe on the 2nd, Pied Flycatcher on the 5th, and Common Sandpiper and Whinchat on the 6th. Pied Flycatchers increased to an autumn maximum of 40 by the 7th, by which time light winds and fog or mist had settled in until the 14th. The first Garden Warbler appeared on the 9th, followed by ones or twos on many days until 23rd October, with a peak of 16 on 30th August. With it on the 9th were 25 more Pied Flycatchers, 2 Willow Warblers and a Lesser Whitethroat. Scarcely any movement was observed in the thick fog until it lifted late on the 13th, when an Icterine Warbler was trapped, the first 4 Dunlins appeared, and off-shore the first Great Skua and first 2 Arctic Skuas were seen. These two species did not reappear until the end of the month but were then seen regularly in ones and twos until the end of October.

The fog returned on the 14th, out of which emerged the first Barred Warbler, 6 Pied Flycatchers, 3 Willow Warblers and 3 Green Sandpipers, followed on the 15th by the autumn's second Wood Warbler. The wind freshened from the south-east on the 18th, and on the 19th the first Whitethroat appeared in an autumn passage that never exceeded two in a day—still very depressed numbers. On the same day there was an immature Iceland Gull, the first seen since 1961. A Grey Wagtail,

the forerunner of a dozen (an unusually large number) over the next two months was seen on the 21st. There was a small influx on the 24th with the first House and Sand Martins and Goldcrest, with 40 Swallows, 9 Willow Warblers, and one Garden Warbler, Barred Warbler and Whitethroat. This trickle of migration continued in mostly westerly winds until the 29th. On the 26th 11 Shovelers were seen, the largest number ever recorded, and on the following day the first autumn Sedge Warbler and Spotted Flycatcher arrived, followed by 3 early Fieldfares on the 28th, and 7 on the 29th with a north-easterly wind. This increased to force 7 on the 30th when autumn peaks of 40 Willow Warblers and 16 Garden Warblers came in, together with 7 Barred Warblers, single Blackcap, Whitethroat and Sedge Warbler, 4 Pied Flycatchers, 4 Whinchats, 2 White Wagtails and a Wryneck, among others. A sea-watch produced three autumn peaks of 7 Manx Shearwaters, 7 Arctic and 3 Great Skuas, as well as 5 Sooty Shearwaters. Most of the passerines had moved on by the calm 31st.

September The westerly winds returned for the first five days of the month, during which there was little movement, but the island's fourth Arctic Warbler was trapped on the 6th. The autumn peak of 25 Wheatears was reached on the 7th, a day of fresh south-easterly winds which also produced an early Brambling, a Great Spotted Woodpecker, the first Wigeon and an Ortolan Bunting. Over the next four days a southward coasting movement of up to 100 each of Swallows and Meadow Pipits was observed, but little other movement.

This lull in migration continued in mostly westerly winds until the 17th, though the first Snow Bunting arrived on the 12th, and the first Redstart on the 13th. There was a fairly steady movement of Sooty Shearwaters on the 15th, giving a total of over 30, as well as 5 Manx Shearwaters, and on the 16th 2 Little Gulls were observed, only the fifteenth occurrence of a species that appears regularly and in considerable numbers in the Forth. Two more were seen on the 27th, one on 6th October, and a record 5 on 22nd October. A wader count on 17th revealed 404 Turnstones, 322 Purple Sandpipers, 37 Redshanks, 45 Curlews, 25 Oystercatchers, 2 Dunlins and 1 Snipe. Great Black-backed Gull numbers had built up to 200.

There was a small fall of passerines on the 18th in a fresh north-easterly wind, including another Icterine Warbler, 3 Whinchats, and a flock of 14 Siskins. On the 19th there was a coasting movement of Meadow Pipits and Swallows. A Grey and two *flava* Wagtails were seen, and among the few arrivals were two Barred Warblers. After these there was hardly any movement for the following ten days of strong westerly winds (though the two earliest recorded Long-tailed Ducks were seen on 23rd).

but on the evening of the 28th the wind backed to south-east force 6, staying in that quarter for two days, though decreasing with fog on the 29th. This produced a fall of about 60 birds, half of them Goldcrests, but including a Richard's Pipit, an Icterine Warbler, and a Red-breasted Flycatcher, as well as the autumn's first 2 Ring Ouzels and Chiffchaffs and a peak of 5 Whinchats, also 2 Redstarts, a Blackcap and a Brambling. The influx continued on the 30th in a light south-easterly wind with, among others, 10 Fieldfares, 60 Song Thrushes, 2 Blackbirds, 3 Redwings, an autumn peak of 5 Stonechats, and a Rustic Bunting.

October There was intermittent movement during the westerly winds of the first eight days of the month, starting with 100 Song Thrushes, but few other thrushes, and including on the 6th a heavy passage of more than 800 Meadow Pipits, compared with 50 present on the adjacent days. Locally rare occurrences on the 5th were a Black Tern, the first since 1967, and a Grey Plover, and on the 8th a party of 3 Whooper Swans.

The start of a fortnight of easterly winds on the 9th brought a large fall of thrushes by dawn, estimated during the day as 200 Fieldfares, 200 Song Thrushes, 1,500 Redwings and 200 Blackbirds. Also present in the early morning were the first 2 Woodcocks, 9 Lapwings, 2 Blackcaps, 2 Garden Warblers, 3 Snipes, and a Jack Snipe. By midday 4 Pied Flycatchers, a late Wryneck, several Goldcrests, 3 Redstarts, 2 Yellow-browed Warblers, and the autumn's first Lesser Whitethroat were in evidence. Lesser Whitethroats had an exceptionally short and late passage lasting from 9th to 13th October. By the 10th most of these migrants had moved on, but the few new arrivals in a north-east wind included 2 Red-breasted Flycatchers, a Barred Warbler, the autumn peak of 6 Chiffchaffs, a Greenfinch and a Lapland Bunting. On the 11th 100 each of Blackbirds and Redwings arrived with 150 Goldcrests, 30 Redpolls, a Bluethroat, 4 Snipes, 15 Blackcaps, and a Great Grey Shrike which stayed until the 13th.

There was a general departure on the morning of the 12th, but later 65 Redpolls and an unusually large flock of 28 Tree Sparrows arrived with 2 Short-eared Owls, 15 Linnets, and a Yellow-browed Warbler. There was a lull on the 13th, but the continuing easterly winds that had borne such an extraordinary variety and number of vagrants to all parts of Britain brought the May its share on the 14th in the form of a Red-flanked Bluetail, Brambling numbers increased to over 90 that day, and Blackbirds to 150. Most of these had gone by the 15th, when the few arrivals included a Danish-ringed Starling, followed on the 16th by a Danish-ringed Blackbird, and among the few other newcomers, a Glaucous Gull. A Peregrine, a Merlin and a Kestrel arrived on the 17th with a slight passage of

thrushes, Redpolls, Goldcrests, Greenfinches, and Skylarks. The last Swallow and House Martin went through on the 18th, coinciding with the modest October peak of 3 Snow Buntings. There was a steady movement of Blackbirds (200), Fieldfares (200), Redwings (500) and Skylarks on the 19th and early part of the 20th, on which day there came in an exceptionally late Wryneck, a Great Grey Shrike, 5 Greenfinches and a Yellowhammer.

Another new bird for the island, a Pallas's Leaf Warbler, arrived on the 21st during a south-easterly gale. With it were several hundred thrushes, 7 Blackcaps, a Black Redstart and a Sparrowhawk, and on the following day a Finnish-ringed Goldcrest came in, together with the autumn peak numbers of 7 Mealy Redpolls, 15 Blackcaps, 6 Dunnocks, and 9 Woodcocks. Many of the thrushes had moved on by the 23rd, but others and Redpolls were reported to be exhausted. There was a break in observer cover until 29th-31st, by which time there was only a trickle of thrushes, Blackcaps and Chiffchaffs.

Last dates for some autumn migrants were: September—9th, Swift; 23rd, Spotted Flycatcher and Sedge Warbler; 29th, Common Sandpiper; October—1st, Ring Ouzel; 9th, Pied Flycatcher; 12th, Whinchat; 13th, Willow Warbler; 15th, "comic" tern; 18th, Swallow and House Martin; 19th, Wheatear; 21st, Redstart; 22nd, Arctic Skua; 23rd, Garden Warbler; 24th, Great Skua and Woodcock.

Unusual occurrences

Great Northern Diver One, 15th October—ninth record.
Gadwall One, 20th April—first record.
Shoveler 11 on 26th August—most in a day.
Grey Plover One, 6th October—seventh occurrence.
Glaucous Gull One, 16th, 17th October—scarce.
Iceland Gull One, 19th August—first since 1961.
Little Gull Five, 22nd October—most in a day.
Black Tern One, 5th October—first since 1967.
Pallas's Sandgrouse Two, 11th May—second occurrence (first 1888).
Wryneck One, 20th October—latest date.
Treecreeper One, 16th, 17th April—fourth spring occurrence.
Wheatear 350 on 8th May—exceptionally high figure.
Whinchat One, 14th-20th March—earliest date.
Red-flanked Bluetail One, 14th, 15th October—first record.
Redstart 110 on 8th May—highest spring count.
Thrush Nightingale One, 31st May-7th June—second occurrence.
Bluethroat Three, 8th May.
Icterine Warbler One, 13th August; one, 18th-21st September, another on 29th—both latest dates.
Arctic Warbler One, 6th September—fourth record.
Yellow-browed Warbler Two, 9th October.
Pallas's Leaf Warbler One, 21st, 22nd October—first record.
Firecrest One, 18th-21st April—seventh occurrence, first before June.
Richard's Pipit One, 29th September—fourth record.

Tree Pipit 500 on 8th May, 150 on 9th—previous highest count 80.

Corn Bunting One, 13th July—tenth occurrence and first for July.

Rustic Bunting One, 30th September—eighth record.

Reed Bunting 70 on 8th May—highest daily count.

Tree Sparrow 28 on 12th October—highest autumn count for over four decades.

Breeding populations

The main breeding populations of seabirds had mixed fortunes during the year with some increases and some decreases. Once again Hector Galbraith carried out a thorough survey in early June, and his figures show that Fulmars were down again with 72 pairs (91 pairs in 1974). This may have been due partly to a late breeding season and the figure is still above that of 68 pairs in 1973. The largest decrease (31%) was in Shags, with 676 pairs compared with 979 in 1974. Since 1973 the Shag population has decreased by 38%. Kittiwakes, having been slightly down from 1973 to 3,059 pairs in 1974, jumped by 26% in 1975 to 3,870 pairs. The population from the Pilgrims' Haven to Rona cliffs has been fairly steady over the last three years, while the numbers on the cliffs from South Ness to Pilgrims' Haven and from Colms Hole to Tarbet have been increasing at an average rate of 34% per annum.

Razorbill numbers increased by 16% to 525 pairs with a build-up on the South Ness to Pilgrims' Haven cliffs. Guillemots were down by just 1% at 4,264 pairs. About 15 pairs of Oystercatchers bred, there were 45-50 pairs of Rock Pipits on territories and two pairs of Meadow Pipits and one pair of Swallows bred.

Ringling and recoveries

The ringing total was 4,233 (4,405 in 1974). Red-flanked Bluetail was ringed for the first time on the island. By far the highest total was again for Puffins with 1,265. Record ringing figures were: Wren 84, Fieldfare 53, Barred Warbler 17, Goldcrest 268, Pied Flycatcher 94, Tree Pipit 43, Starling 115. Other high totals were: Song Thrush 94, Redwing 142, Blackbird 567, Stonechat 7, Blackcap 67, Redpoll 43, Brambling 88. Low figures for the year included: Spotted Flycatcher 6, Chaffinch 8, and Whitethroat 23.

There was a total of 210 recoveries of 18 species, excluding gulls from the cull. As usual the two highest figures were for Herring Gulls with 98 recoveries and Shags with 85.

The foreign recoveries were as follows (species followed by age code in parentheses):

	Ringed	Recovered	
Herring Gull (1)	10. 7.73	28. 5.75	Kroonspolders, Vlieland, Frisland Islands, Netherlands.
Blackbird (3♂)	31.10.67	14.12.74 (7 years old)	Havra, Osteroy, Hordaland, Norway.
Blackbird (4♂)	21. 3.75	1. 4.75 (11 days)	Store Faerder, Tjome, Vestfold, Norway.
Blackbird (6♀)	15. 4.75	24. 4.75 (9 days)	Insel Scharhorn, Elbe Estuary, West Germany.
Blackbird (4♂)	13.10.74	24. 6.75	Pyterlahti, Virolahti, Kymi, Finland.
Blackbird (6♂)	15. 4.73	15. 7.75	Molen, Brunlanes, Vestfold, Norway.
Garden Warbler (2)	7. 9.74	15. 9.74 (8 days)	Kettering, Northants (270 miles/435 km).
		19. 5.75	Kornwerderzand, Friesland, Netherlands.
Pied Flycatcher (3)	30. 8.74	25. 9.74 (27 days)	Douar, Laguachate, Oualidia, El Jadida, Morocco.
Willow Warbler (4)	12. 5.75	27. 5.75 (15 days)	Den Helder, Noord Holland, Netherlands.

The great majority of Herring Gull recoveries were in the Forth area or north-east England, but others were from Norfolk, Essex, Anglesey, and Copeland Island, Northern Ireland. Shag recoveries were all from the Forth to the Farnes area, except for three in Angus, two near Fraserburgh and one near Banff. Three of the four Puffin recoveries were in March, between the Forth and Northumberland, and the other was locally in June. The Willow Warbler, having crossed or re-crossed the North Sea, was 400 km further south a fortnight after being ringed in May. Of the controls of birds ringed abroad, the most interesting was of a Red-breasted Flycatcher from Finland, the first foreign-ringed one to be recovered in Britain and a species for which there has been no recovery of a British-ringed bird. The ringing details are not yet known. Others were a Goldcrest, also from Finland, two Blackbird from Heligoland, and a Starling and a Blackbird from Denmark

Research

Gulls Neil Duncan of Durham University continued his study of breeding success among Herring and Lesser Black-backed Gulls, recruitment associated with the cull, and his analysis of ringed cull birds. Miss J. Anderson of St Andrews University carried out a study of development of colour preference of Herring Gull chicks.

Puffins Dr M. P. Harris of the Institute of Terrestrial Ecology continued his study of the status and breeding biology of the population of about 3,000 pairs, including a large-scale ringing programme. K. Taylor and Miss S. Simpson of St Andrews University made behavioural studies of Puffins from hides and of hand-reared birds.

Rabbits I. Sneddon of St Andrews University made a survey of burrows and transect counts and a study of the course of myxomatosis outbreaks.

Seals Dr R. Prescott and J. Gray of St Andrews University carried out a survey of population changes.

Marine fauna Dr J. L. S. Cobb of St Andrews University made an annotated list from a survey in March at the start of the monitoring programme.

Vegetation Monitoring of the changes following the gull culls was continued by Dr Rosalind Smith of the NCC.

Management

Gulls Following the main cull of Herring and Lesser Black-backed Gulls in 1972-74, a smaller cull of 4,000 birds was carried out in May by Nature Conservancy Council staff to maintain the combined population at its target level of 3,000 pairs. It would otherwise increase again, particularly with the arrival of young birds returning to breed for the first time.

NCC Warden The Nature Conservancy Council employed a part-time Reserve Warden on the island during the summer months to monitor and supervise the considerable number of day visitors.

Heligoland trap A new Heligoland trap was built in May in McLeod's Garden and several observers gave valuable assistance both in its construction and in providing plant cover. The cost of materials was provided by a grant from the Nature Conservancy Council. Some observers also gave valuable help in repairing other traps.

Low Light After its major overhaul last year, the Low Light required little maintenance apart from some plumbing work and thanks are given to those who helped with this.

It is sad to record that Alastair Macdonald died during the year. For a decade until 1974 he had dealt with the booking and travel arrangements for the May with unfailing efficiency and good humour.

Throughout the year assistance in various ways was given by the Principal Lightkeeper, Mr George Robertson, and the other Lightkeepers, which is much appreciated. And thanks are also expressed to Mr Smith and Mr Meldrum for the helpful way in which they have continued to operate the boat service.

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The Manx Shearwaters of Rhum

P. WORMELL

(Plates 9 - 11)

Introduction

The Inner Hebrides are the chief breeding stronghold of the Manx Shearwater *Puffinus puffinus* in Scotland. Although Rhum undoubtedly contains the largest single breeding population, estimated by Bourne (1957) to number many tens of thousands of pairs, the more accessible but smaller colonies on Eigg and Canna received, until the 1950s, much greater attention.

There must have been shearwaters on Rhum for centuries. We learn from *The Birds of Scotland* (Baxter and Rintoul 1953) that "in notes attributable to Timothy Pont, written about 1640, mention is made of a bird on Rhum, which appears to be the shearwater". Martin Martin (1703) wrote of the island about 1695 that "there is plenty of land and sea-fowl; some of the latter, especially the puffin, build in the hills as well as in the rocks on the coast"; he too was almost certainly alluding to the Manx Shearwater. Since that time there has been a series of records of this as a breeding species on the island.

The conical peaks of Hallival and Askival, their connecting ridge, and Trallival with its steep summit tower are the home of the great majority of Rhum's Manx Shearwaters. The population of Barkeval is more diffuse. There are some scattered groups of holes on Ainshval, a few on Fionchra and a small number on the north-east slopes of Ruinsival above Loch Fiachanis. The ground is rugged and steep, comprising extensive rocky outcrops, crags, boulder field, bare eroded slopes, screes and terraces.

Climate

The nesting areas are subject to extremes of wind, rain, cloudiness and humidity. Storms from the Atlantic can reach Rhum unimpeded by intervening land, and the prevailing south-westerlies strike the Hallival-Askival ridge to cause violent upthrusts and downthrusts of air. The mountains are frequently blanketed in cloud for long periods and the relative humidity probably averages nearly 100% for weeks on end. The average rainfall exceeds 100 inches. Drifted snow may be covering the ground when the birds return to the breeding area in the third week of March, and patches of snow frequently remain throughout April and occasionally well into May. The soil is often still frozen to a depth of several inches during April. If patchy snow is lying when the birds arrive, they clear it away to gain access to their burrows.

Geology and soil

Almost all the shearwater colonies are found on the ultrabasic complex of tertiary igneous rocks which comprises peridotites, allivalites, eucrites and gabbros. These break down through frost action and sub-aerial weathering into a brown, olivine-rich sand; it is in this sandy material that the shearwaters excavate their holes.

The ultrabasic rocks contain very little calcium and almost no phosphorus. Because of this and the severe leaching resulting from the heavy rainfall the soils derived from them are far from fertile. They are, moreover, subject to recurrent erosion by frost, wind and rainwash. Terraces are sparsely vegetated with heathland plants and arctic-alpine flora including Northern Rockcress *Cardaminopsis petraea*, Mossy Cyphel *Cherleria sedoides*, Moss Campion *Silene acaulis*, Stone Bramble *Rubus saxatilis* and Scottish Asphodel *Tofieldia pusilla*. On the steeper ground it is only on the turf of the bird-manured soils around the burrows of the shearwaters that there is real soil stability.

Shearwater greens

An experiment conducted from 1965 to 1969 on exposed erosion terraces on the Barkeval-Hallival ridge has demonstrated the nutrient deficiency of the bare, unstable ultrabasic soils. Repeated applications of NPK fertiliser led to an increase in the vegetative cover from 5% to over 60% in five years. Almost bare ground dotted with a few plant tussocks became changed within that time to herb-rich *Agrostis/Festuca* grassland (Ferreira and Wormell 1971).

On the shearwater breeding grounds conditions similar to those produced artificially by this experiment are maintained naturally by the annual return of the birds to the same area. Their nutrient-rich droppings have produced a grassland of high grazing quality. Bird-produced vegetation of this type may be found elsewhere on coastal sites, but the short, springy turf produced by the Manx Shearwater on the upper slopes of the Rhum mountains may be unique in Britain.

The breeding biology and winter migration of Manx Shearwaters are now well-known (Lockley 1942, Harris 1966 (a) and (b), and Perrins, Harris and Britton 1973). They pair for life and return to the same nest holes year after year. They have a long life span. Some ringed on Rhum as adult breeding birds in 1958 were still returning to the same nest holes in 1972. They also have long incubation and fledging periods, 53 days and around 73 days respectively, and the birds are on the breeding grounds from the third week of March until the sec-

ond week of October. Their droppings manure the ground around the holes continuously from spring to autumn whilst the vegetation is in full growth. Nutrients can be directly absorbed by the growing plants and losses through leaching and erosion are probably very small.

When the adults return in the spring from their wintering grounds off the coast of Brazil they clean out their holes, removing the previous year's nesting material which consists of a compost derived from moss and grass, dipterous fly larvae and the droppings of the previous year's nestling. This compost adds a top dressing to the grassland.

Material for the new nest consists mostly of mosses, which are abundant in the grass sward, and these are raked together and dragged into the holes. The bill of a shearwater is well designed for this operation, having a curved tip which serves very well as a lawn rake. The raking action not only removes the moss from the turf but also aerates the ground.

This bird-induced vegetation, the shearwater greens, constitutes a substantial area of summer grazing for Red Deer *Cervus elaphus* which crop it to a short turf. Heavy deposits of deer dung further improve the grassland and dung beetles and flies are abundant throughout the summer. Dead shearwaters attract burying and carrion beetles (Silphidae) and bluebottles (Calliphoridae) and the turf itself supports the larvae of click beetles (Elatidae) and crane flies (Tipulidae). The bibionid fly *Biblio pomponae*, whose larvae are often gregarious in the turf, sometimes swarms over the greens. Certain insects, including the pyralid moth *Catoptria furcatellus* which is confined to grassy slopes near the summits of high mountains, occur on Rhum only on the high-level shearwater greens. Earthworms (Lumbricidae) are numerous in the soil and migrant Song Thrushes *Turdus philomelos* have been observed hopping over the greens and listening for earthworms at 2,000 feet on Hallival as though they were feeding on a garden lawn. Meadow Pipits *Anthus pratensis* often flock over the greens and Ring Ouzels *Turdus torquatus* and Wheatears *Oenanthe oenanthe* benefit from the abundance of invertebrates. Wrens *Troglodytes troglodytes* breed amongst boulder fields adjoining the shearwater colonies close to the top of Askival and the Pygmy Shrew *Sorex minutus* is often recorded in the colonies during the summer months. A distinct habitat has developed by the deposition of marine material transported by shearwaters; the resulting vegetation supports animals that could not otherwise exist at these altitudes.

The plant association of the shearwater greens resembles the herb-rich *Agrostis/Festuca* grassland of lower elevations.

It contains fewer herbs but characteristically a greater abundance of mosses to which its springiness is due. The grasses most abundant in the sward are Sheep's Fescue *Festuca vivipara*, Red Fescue *F. rubra*, Common Bent *Agrostis tenuis* and Creeping Bent *A. stolonifera* (the latter usually confined to the entrance to the burrows). Sweet Vernal Grass *Anthoxanthum odoratum* is often abundant and small tussocks of Mat Grass *Nardus stricta* are sometimes present. Flea Sedge *Carex pulicaris* occurs on the margins of the greens. Other herbs include Wild Thyme *Thymus drucei*, Common Violet *Viola riviniana*, Common Speedwell *Veronica officinalis*, Common Mouse-ear *Cerastium holosteoides*, Heath Bedstraw *Galium saxatile*, Blaeberry *Vaccinium myrtillus* and occasional Alpine Meadow Rue *Thalictrum alpinum*, Common Meadow Buttercup *Ranunculus acris*, Primrose *Primula vulgaris* and Common Tormentil *Potentilla erecta*. *Rhytidiadelphus squarrosus* is the most abundant moss and associated with it are *Atrichum undulatum*, *Thuidium tamariscinum*, and *Hypnum cupressiforme*. *Polytrichum alpinum* is often present as a marginal species.

Newly excavated holes, and those that have been substantially extended, result in areas of bare soil debris below the entrance. This is first colonized by *Poa annua*, a plant usually considered to be a lowland species; its presence in such a situation is unexpected. The seed probably derives from deer dung.

By the autumn *Agrostis* and *Festuca* spp. are colonizing and these gradually take over from the annual species in forming a turf.

Predators and scavengers

The Brown Rat *Rattus norvegicus* has often been blamed for destruction of petrel colonies and it has been suggested that it has been responsible for the great decline in the Manx Shearwater population on the neighbouring island of Eigg.

Brown Rats occur in large numbers on Rhum. They have been recorded at all altitudes from sea level to the highest tops. Dead shearwaters have occasionally been found in the early spring partly eaten by rats. Notwithstanding this, there has been no evidence of damage by rats to the shearwaters during the breeding season. Eggs that have failed to hatch frequently remain in the holes unbroken until the shearwaters depart, but as soon as the colonies are vacated in the autumn the rats move in in force to feed on these and any shearwater carcasses underground. By the second week of October, rat droppings are abundant throughout the shearwater greens and some rats may remain on the mountains throughout the winter.

Their tracks and droppings have been seen in February in snow around the summit cairn of Hallival.

Golden Eagles *Aquila chrysaetos* and Peregrines *Falco peregrinus* have been proved to prey on the shearwaters (Wormell 1965). Castings and samples of food collected from eagle eyries on Rhum in 1958, 1960, 1962 and 1963 contained shearwater remains. Gulls have not been seen behaving as potential predators around the colonies, but Ravens *Corvus corax* and Hooded Crows *Corvus corone cornix* frequently search the hills for dead shearwaters and any eggs that may have been thrown out of the burrows.

There have been a few reports of shearwaters being killed and partly eaten by Red Deer (Wormell 1969). These were probably all juveniles picked up outside the burrows just before their first flight.

Shearwater numbers

Attempts have been made to census the populations of Manx Shearwaters on the Pembrokeshire islands of Skokholm and Skomer using the ringing/recapture method and difficulties involved in estimating the breeding population of nocturnal burrowing birds have been discussed (Harris 1966(a) and (b), Perrins 1967 and Corkhill 1973). Because of the mountainous terrain and scattered nature of the Rhum colonies this method was considered impracticable.

Between 1961 and 1964 the vegetation of Rhum was surveyed in detail by Dr R. E. C. Ferreira with the help of aerial photographs, and a vegetation map has been published (1970). The shearwater greens are included in his *Agrostis/Festuca* grassland community.

During the course of the vegetation survey particular care was taken to map the shearwater greens accurately, notwithstanding the scale of the final map (1: 20,000) would not permit them to be shown as a separate association. They were marked distinctly on the field overlays of the aerial photographs and were later transferred from the main survey sheets to separate traces which together provide a complete picture of the distribution of the breeding areas of the shearwaters (figs. 1 and 2).

When it became apparent that the extent of shearwater greens could be measured with reasonable accuracy from the findings of the survey the way was open to obtain an estimate of the number of shearwaters frequenting Rhum. All that was necessary was to determine the number of occupied burrows in a representative series of plots and to apply the results to

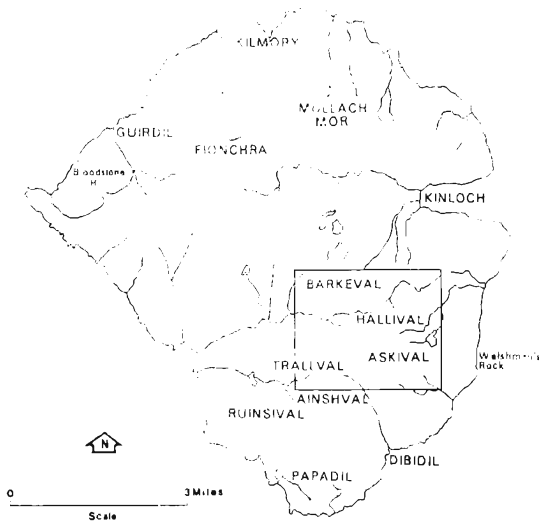


FIG. 1. Rhum, with study area inset.

the total area of shearwater greens. The field work connected with this assessment was carried out in July and August 1965-1969.

There are no Rabbits *Oryctolagus cuniculus* on Rhum, so the shearwaters have to rely entirely on their own efforts for hole-making. They use their beaks to loosen the soil, shuffle it back with their wings and kick it out of the hole with their webbed feet, often throwing it several yards downhill from the entrance. The tunnels are deep and winding, and usually longer than a man's arm. Most pairs occupy separate holes; occasionally there are two entrances but only one is regularly used. The burrows of two separate pairs occasionally join, but each pair normally uses its own entrance. In the course of counting the burrows, partly excavated and unoccupied holes were ignored. Occupied holes could be recognized by the flattened soil and vegetation at the entrance, the occurrence of droppings and feathers, and by smell.

There is a wide diversity in the size of greens, depending on topographical features and altitude. At lower altitudes and in broken terrain the greens are small and dispersed, whereas on ideal terrain, particularly above the 1,900 feet contour, they are larger, varying between one-tenth and one acre in area. Sample plots for counting were selected from each of the three major peaks, Hallival, Askival and Trallival. On each peak six one-tenth acre plots were randomly placed on the larger

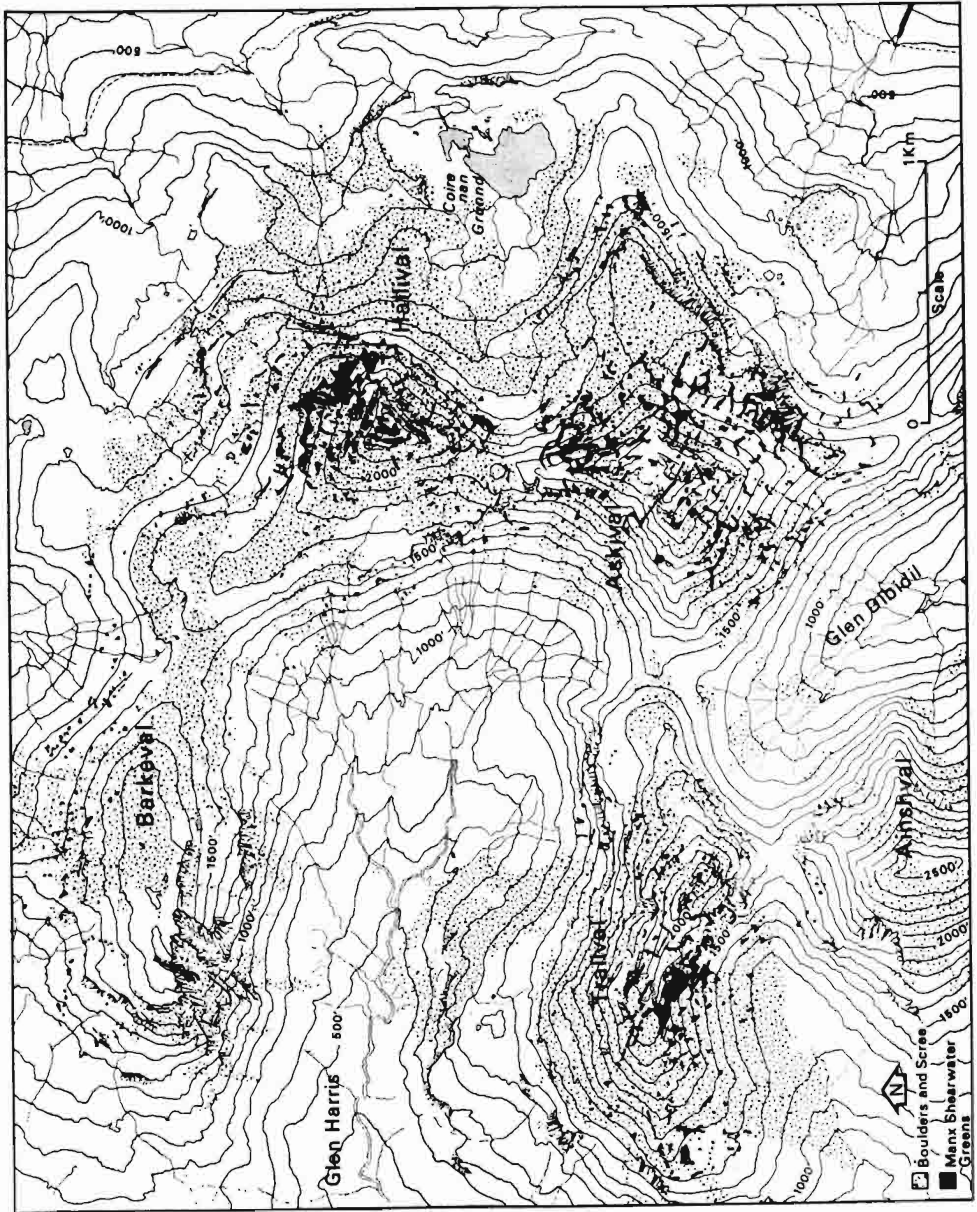


FIG. 2. Manx Shearwater greens on Rhum.

Table 1. Occupied burrow counts on sample plots

Plot	Minor greens			Main colony greens				No. of burrows in horizontal projection	
	Area (sq. yds.)	No. of burrows	Area per burrow (sq. yds.)	Area (sq. yds.)	No. of burrows (n)	Area per burrow (sq. yds.)	Slope (degrees)		
								$\frac{n}{(\cos \theta)}$	
Hallival	1)	8	2	4.0	484	171	2.8	32	201.6
	2)	24	5	4.8	484	106	4.6	28	120.1
	3)	48	11	4.4	484	144	3.4	26	160.2
	4)	66	16	4.1	484	113	4.3	29	129.2
	5)	84	20	4.2	484	194	2.5	32	228.8
	6)	50	12	4.2	484	79	6.1	26	87.9
Total	<u>280</u>	<u>66</u>			<u>807</u>				
Mean value of x (\bar{x})			4.2	484		3.6			154.633
Askival	1)	28	6	4.7	484	115	4.2	35	140.4
	2)	27	5	5.4	484	113	4.3	36	139.7
	3)	56	15	3.7	484	110	4.4	35	134.3
	4)	30	8	3.8	484	92	5.3	32	108.5
	5)	70	17	3.8	484	92	5.3	34	111.0
	6)	<u>36</u>	<u>9</u>	4.0	484	<u>117</u>	4.1	32	138.0
Total	<u>247</u>	<u>60</u>			<u>639</u>				
Mean value of x (\bar{x})			4.1	484		4.5			128.65
Trallival	1)	48	13	3.7	484	209	2.3	40	272.8
	2)	24	6	4.0	484	196	2.5	35	239.3
	3)	12	3	4.0	484	132	3.7	34	159.2
	4)	60	17	3.5	484	147	3.3	39	189.2
	5)	32	7	4.6	484	117	4.1	37	146.5
	6)	<u>21</u>	<u>5</u>	4.2	484	<u>94</u>	5.1	39	121.0
Total	<u>197</u>	<u>51</u>			<u>895</u>				
Mean value of x (\bar{x})			3.9	484		3.2			188.0

greens, and in addition six smaller greens were selected for total enumeration. The one-tenth acre (square chain) plots were measured on the ground surface with no slope correction. Since the slopes are both steep and variable, from 26° to 40° inclination, the uncorrected plot area was incompatible with map area measurements for total population calculations. Therefore slope measurements were taken using an Abney level and on each of the square chain plots, the hole counts



PLATE 9. Manx Shearwater breeding grounds on Askival, photographed from Hallival, Rhum (see pages 103-118).

Photograph by P. Wormell



PLATE 10(a). Adult Manx Shearwater, Rhum (see pages 103-118). *Photograph by W. J. Eggeling*



PLATE 10(b). Young Manx Shearwater held outside burrow on Hallival (see pages 103-118). *Photograph by J. Wormell*



PLATE 11(a). Shearwater greens on the north face of Hallival.



PLATE 11(b). Manx Shearwaters' nest-hole at 2,000 feet on Hallival, showing rich vegetation.

Photographs by P. Wormell



PLATE 12. Probable drake hybrid Scaup x Tufted Duck, Bownmore Harbour, Islay, 27th January 1974: (a) showing dark mantle; (b) top left, with Scaup, showing small head tuft; (c) bottom right, in front of drake Scaup, showing contrast of mantle colour between the two and high crested appearance of the former.

Photographs by Gordon Booth

were adjusted to those corresponding to its horizontal projection, using the formula

$$n_2 = \frac{n_1}{\cos \theta}$$

n_1 = number of holes/square chain inclined.

n_2 = number of holes/square chain horizontal.

θ = angle of slope.

The sample plot data are shown in table 1.

Since it was impractical to take slope measurements on the small greens, the burrow counts for these plots have been omitted from population calculations. However, they are included in table 1 in order to demonstrate comparability and variation of burrow density between the large and small greens.

An estimate of the total area of shearwater greens was made by aggregating area measurements of all greens from the aerial photograph traces.

An important potential source of error in these measurements derives from differences in photograph scale with altitude and camera height, the higher greens and greens closer to the camera being at a larger scale than the lower greens. Scale corrections were made for two altitude classes, above and below 1,900 feet, separately for each of the three main peaks. Traces of the greens were blocked together in the two altitude classes, the blocks transferred to a 1:10,560 scale

Table 2. Area of Manx Shearwater greens

		Photo scale	Area of greens (sq. chains)		Total area (A)
			Above 1900'	Below 1900'	(sq. chains)
Hallival	Above 1900'	1/9.208	109.0		
	Below 1900'	1/9.242		143.5	
Barkeval	Below 1900'	Not measured		22.3	
					275.7
Askival	Above 1900'	1/9.398	213.4		
	Below 1900'	1/9.470		119.2	
					332.6
Trallival	Above 1900'	1/9.434	85.8		
	Below 1900'	1/9.597		77.2	
			<hr/>	<hr/>	<hr/>
			409.1	362.2	771.3

grid and the aggregate areas measured with a planimeter. These results are shown in table 2. Since greens on Barkeval amount to only 22.3 square chains, they were simply added to the Hallival area estimates for the purpose of calculating the total population. Greens on other hills cover a negligible area and were omitted from the survey.

Results

The number of occupied shearwater burrows on the major peaks Hallival (with Barkeval), Askival and Trallval was calculated by multiplying the mean density of occupied burrows by the area of the greens, using hole-density figures corrected for inclination of green surfaces, and area figures corrected for altitude and camera height. These data, with an analysis of variance are shown in table 3.

Table 3. Population estimates

	Total area of greens (A) in sq. chains	Mean No. of burrows sq. chain	Total No. of burrows (A \bar{x})	Standard deviation (S) of \bar{x}	Estimated variance (V) of total population $\left(\frac{A'S'}{6}\right)$	Standard error (\sqrt{V})
Hallival (with Barkeval)	275.7	154.633	42,632	52.972	35.548×10^6	
Askival	332.6	128.65	42,789	14.813	4.046×10^6	
Trallval	<u>163.0</u>	188.0	<u>30,644</u>	58.077	<u>14.936×10^6</u>	
Total	771.3		116,065		54.530×10^6	7,384

From table 3:

Total estimate of occupied burrows = 116,065

For 95% Confidence Limits, critical value of student's t-distribution on 5 degrees of freedom is $\pm 2.6 \times$ standard error = $\pm 19,200$

\therefore At 95% Confidence Limits, the number of occupied burrows = $116,100 \pm 19,200$

Discussion

Because of the great variability in the Manx Shearwater colonies due to varying topography, altitude, slope and the interrupted dispersion of soil suitable for excavation near boulder fields and bedrock, the errors involved in estimating the total area of many small areas on a map and the effects of possible tilt in the aerial photography, only an approximate

estimate of the colony size is possible, even with a good sampling technique. Even if reliable estimates of occupied burrows are obtained it is still not possible to infer precise breeding population figures. Little is yet known about the size of the non-breeding population, and since immature non-breeding birds may occupy burrows, even a highly accurate hole count would not measure breeding population exactly. Nevertheless, a count such as mine does indicate an order of size and might be of value for monitoring population change in course of time. If, as has happened on the neighbouring Isle of Eigg, the shearwater population should markedly decrease, it ought to be possible to assess the extent of this by measuring the reduction in the number of occupied burrows. If, on the other hand, the numbers increase, there will either be an increase in the density of burrows on existing greens, or new greens will be produced.

Acknowledgments

Thanks are due to R. Fenton and A. Cooper of the Nature Conservancy Council Maps Office, Roughmoor, Taunton, for the painstaking task of calculating the area of shearwater greens and also for their assistance in the production of the map.

I am grateful to Dr W. J. Eggeling and M. E. Ball who encouraged the progress of the study and read and made helpful criticisms of an earlier draft of this paper.

Summary

The large mountain top colonies of Manx Shearwaters on Rhum are concentrated on the main peaks of Hallival, Askival and Trallval. The fertile *Agrostis/Festuca* grasslands associated with the colonies provide specialized habitats for a variety of fauna and flora. An estimate of the size of the population was made by measuring the extent of the colony from aerial photographs coupled with the density of nest burrows on sample plots. This gave a figure of 116,000 \pm 19,000 for the number of occupied burrows.

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Short Notes

Fulmars entangled in barbed wire and Gorse

The Fulmar *Fulmarus glacialis* is noted for its mastery of cliff-top updraughts, but it seems that the colonization of less open types of nesting areas may present certain hazards.

In the early 1960s, Fulmars colonized the grassy edge of a raised beach a short distance from the sea at Pittenheath, Aberdeenshire. Along this slope was a barbed wire fence on which a dead Fulmar was found in the spring of 1961 with its wing impaled on a barb.

During the spring of 1975, the body of a Fulmar was noted hanging by a wing, this time on a dead Gorse *Ulex europaeus* branch in the Fairy Glen, Rosemarkie, Ross-shire, in the Black Isle. At this location Fulmars nest above a wooded glen, on a high morainic cliff. The growth of Gorse at the cliff-top poses problems for the birds, and on 31st January 1976, from a short distance away, I noted a Fulmar trying to approach a ledge behind a Gorse bush. It eventually settled on top of the bush for a few minutes. This bird, or another, later attempted to come in from below, alighted on the cliff-face and, struggling to get a toe-hold, became entangled with a dead Gorse branch. In a few seconds it extricated itself and flew off, but the incident indicated how a Fulmar could impale itself by vigorous wing flapping in attempting to approach a difficult site.

DOUGLAS P. WILLIS.

Probable Scaup x Tufted Duck hybrids

Whilst counting Pochard *Aythya ferina* on Duddingston Loch, Edinburgh, on the morning of 3rd October 1974 I noticed

a bird like a drake Scaup *A. marila* sleeping amongst the flock. Initially I assumed the bird was one of the occasional Scaup that arrives with the Pochard after feeding on the sea. However, the bird appeared to have a much darker back. The following notes were taken from about 300 yards, using a x60 telescope in fair light.

Description Slightly larger than male Tufted Duck *A. fuligula*, smaller than female Scaup present. More rotund than Tufted with relatively longer bill and a rounded head as in Scaup. Colour pattern as male Scaup but instead of a light grey back the black of the head merged into the upper back and the blackish rear merged into the lower back, giving a very dark backed appearance. The flanks were light grey. Bill light grey with a black tip immediately preceded by a whitish area, similar to a drake Tufted Duck; iris yellow.

For the most part the bird was sleeping with its head tucked into its back feathers but it occasionally swam across the loch.

The same or a very similar bird was seen at long range on the loch on 25th October in the afternoon.

DAVID BULLOCK

At 10.00 on 27th January 1974 D. M. Bryant, E. Green, R. Youngman and myself were observing a small raft of Scaup at Bowmore harbour, Isle of Islay, from about 60 yards. Two in this small group were behaving as a pair and were consistently slightly apart from the main flotilla and, at this time, nearer to the observers by 20 or 30 yards. At first glance they were passed off as a pair of Scaup until closer examination by E. Green indicated that both birds were different in several respects to nearby male and female Scaup. Observations involving close range telescope work for 30 minutes following the initial discovery showed the male at least to be sufficiently distinct from male Scaup to be easily relocated when intermixed with the main group; the female was less easily distinguished but her habit of remaining near the male aided location.

Critical evaluation of the differences between the Scaup and these birds was helped by the calm conditions in the harbour and good light behind the observers. Identification was to prove difficult but it was eventually concluded that the pair were probably Scaup x Tufted Duck hybrids (plate 12).

Descriptions Both birds were of the same size, being slightly smaller than Scaup but larger than Tufted Duck. The head shape was distinctly different in both sexes, not being rounded with a gently sloping nape (fig. c) as in Scaup, but clearly peaked and squarer. The male exhibited this more than the female, to the extent of possessing a high-crested appearance reminiscent of drake Ring-necked Duck *Aythya collaris* (fig., a). The forehead of each sex was less steeply inclined than that of Scaup and the bill was slightly less spatulate. The neck of both sexes

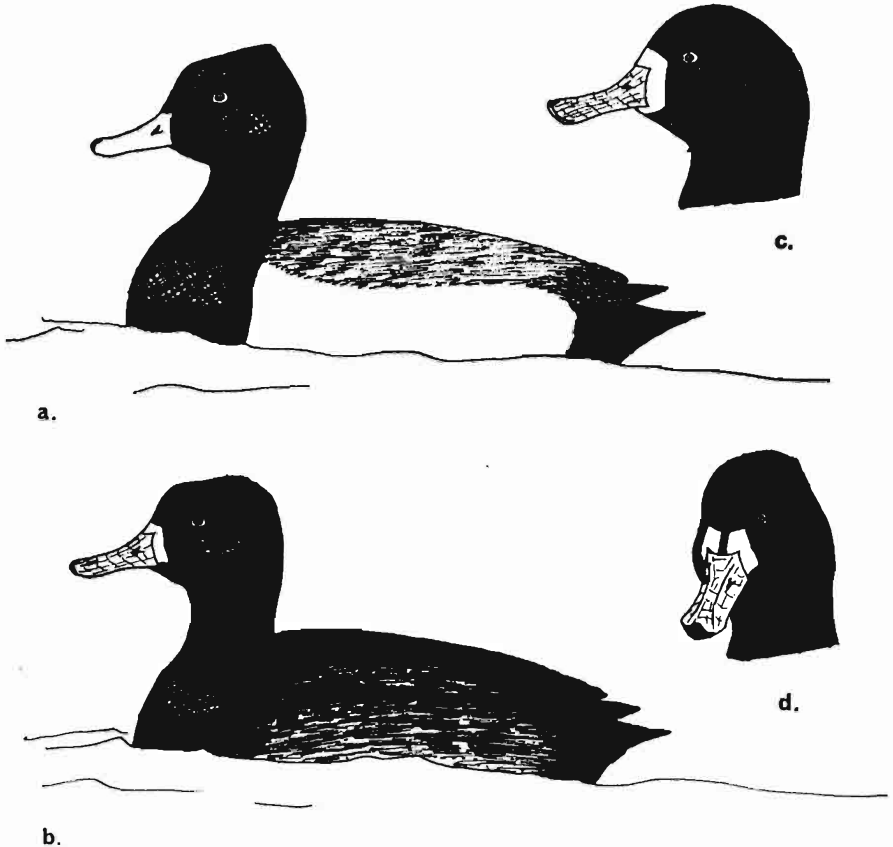


FIG. a) Drake Scaup x Tufted Duck hybrid—note the high-crested appearance of the head; b) presumed female Scaup x Tufted hybrid; c) head of female Scaup *Aythya marila* showing head and bill shape and extent of white on the face; d) head of female hybrid showing the pattern of white on the face and the shape of the black area around the nail of the bill.

was more slender and the body appeared slighter and shorter than that of Scaup. They also sat higher on the water.

The male's head and neck appeared black but showed a marked green gloss which altered in certain lights to purplish-brown. The mantle was distinctly greyer than that of drake Scaup and was undoubtedly the best field character. The cause of this darker grey could not be determined due to the distance of observation but may have been formed either by finer and more closely packed vermiculations than in Scaup or by broader dark feather bands. The mantle became darker towards

the mid-line of the back and also anteriorly until it merged into the near black of the shoulder region. The breast, tail and under-tail coverts were black contrasting with pure white flanks. A noticeable feature was the distinct division between the white of the flanks and the grey of the mantle. The tips of the primaries appeared to be black and those of the secondaries very dark grey. The bill colour was overall blue-grey with black on the nail extending laterally into a fan shape (fig., d) similar to that described by Gillham, Harrison and Harrison (1966). The iris was yellow.

The female (fig., b) was generally brown, being darker on the head, neck, primary tips and tail. The white around the base of the bill was as conspicuous as that of female Scaup but it did not extend round to the lower mandible as in that species. In addition there was a noticeable break in the white patch of this bird, being in direct line with the culmen of the bill (fig., d). The breast showed some paling, and was approximately the same shade as the mantle. The flanks were a much paler brown with many of the feather tips almost buff and this became more noticeable towards the underside of the bird. The bill was greyer and darker than that of the male hybrid but the extent of black on the tip was constant. The iris was also yellow.

No details of wing-pattern were forthcoming since neither bird was seen to spread its wings.

Due to the presence of the observers, the male was seen to raise the tiny tuft on his head on at least two separate occasions. After spending some time in the shelter of the harbour the birds moved out to begin feeding in the surf on the windward side of the pier. Both dived at regular intervals and always remained in the shallows when doing so. The following day they were far less active and stayed with the Scaup raft.

It is of interest to note how the general appearance of the drake fits published descriptions of male Scaup x Tufted Duck hybrids. The description given by Sage (1963) of a captive bird of known parentage (male Scaup x female Tufted Duck) shows it to have been almost identical. However, Sage notes that the bill of his hybrid was as spatulate as that of Scaup but, although bill size is more likely to be a constant character than plumage pattern, the bills of these two birds were definitely slightly less spatulate. Further descriptions of the drake progenies of male Scaup x female Tufted Duck crosses by Gillham, Harrison and Harrison (1966) show this present drake to fit into their 'Scaup Type' category. The absence of vermiculations on the flanks would be a useful additional character in distinguishing such a hybrid from drake Lesser Scaup *A. affinis*.

As is to be expected, the female is far more difficult to identify and assign to a particular parentage. The number of described *Aythya* hybrids still remains very small and perhaps the only reliable Scaup x Tufted Duck hybrid description is again that of a captive bird (male Scaup x female Tufted Duck) (Sage 1963). Unlike this captive bird, the Islay female definitely

showed a head tuft, if only very small, and this resulted in a slightly peaked head outline. Hence, by this character, confusion with female Tufted Duck could be far greater than with female Scaup. However, the white around the bill of this presumed hybrid female was closer to the female Scaup pattern and more extensive than I have seen in any Tufted Duck female. I suggest that the differences between this bird and that described by Sage lie well within the range of variation to be expected from such a hybridization.

It is often the case that behavioural aspects are useful in identification of a particular species and in accordance with this it is important to note firstly that both birds were observed with Scaup on the sea although they had the alternative of nearby fresh-water lochs with flocks of Tufted Ducks, secondly they were diving for food with apparent ease in the heavy surf and finally they remained paired throughout observation.

The scarcity of wild *Aythya* hybrid records has been described (Gillham, Harrison and Harrison 1966) and there appear to be no previous records for Scaup x Tufted Duck in Scotland. This probably arises partly from the difficulties of identification of these hybrids. Perhaps the most puzzling aspect is why two presumed hybrids should occur, a male and female, apparently paired, and the question is therefore posed as to whether or not they may have been reared from the same brood. This seems probable when one attempts to calculate the odds of isolated hybrids of different sexes, reared on breeding grounds probably in Iceland, meeting and pairing. However, since Scaup do breed sporadically in Scotland it may be that these hybrids were Scottish reared and did not travel far, thereby weighting the odds in favour of their staying together. They did not behave in a manner which indicated they could have originated from a collection but of course this possibility cannot be altogether dismissed.

I am most grateful to Mr Gordon Booth for taking the photographs and allowing me to publish them. Also thanks to Dr D. M. Bryant for helpful criticism of the manuscript.

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D. R. WAUGH.

On 3rd April 1976 K. Verrall noticed a pair of similar birds with five Scaups off Bowmore pier. The male was also thought to be similar to a Lesser Scaup but lacked the full wing-bar in flight. The predominantly purple sheen on the head, which also reflected some green, a small but distinct crest at the back of the head and a much darker back than the other drake Scaups were also noted. The female appeared slightly smaller than the other females, with less white on the face, although more than a normal Tufted Duck, and a very small crest. The male only was seen on three more dates until the 13th.—Ed.

[D. J. Bates saw a probable hybrid on Kilconquhar Loch, Fife, on 22nd March 1975 but it was too distant to accurately assess its parentage. It resembled a male Tufted Duck but its crest was hardly more than a tuft, its back dark grey and the flanks greyish with an indistinct demarcation. Its size, the purple gloss on the head, the yellow eye and the bill pattern seemed normal. It consorted with Pochards although there were Tufteds nearby. A drake Scaup was present some distance away.

Wildfowl hybridize more freely than most other groups, usually in captivity but also in the wild. Many hybrids are fertile and the situation may be further complicated by back-crossing with one of the parent species. A. P. Gray (1964. Article 'Hybrid' in Thomson, A. L. (ed.) *New Dictionary of Birds*), presumably referring to ducks in captivity, says that multiple hybrids involving as many as six or seven species sometimes occur!

Gillham, Harrison and Harrison (*op. cit.*) discuss six distinct types of drake *Aythya* hybrid, resulting from four species, that may be seen in Britain and they give full descriptions and photographs of living birds and museum specimens. Some females are also described but these are even less likely to be noticed in the wild. They warn that some hybrids are liable to be, and indeed have been, mistaken for such rarities as Ferruginous Duck *A. nyroca*, Ring-necked Duck, Lesser Scaup and Baer's Pochard *A. baeri*. This is the fullest and most recent discussion of an identification problem that was highlighted by the notorious Sutton Courtenay duck—a bird that was alleged to be the first British record of a Lesser Scaup when it was discovered at Sutton Courtenay in Berkshire in December 1957 and whose identity as a drake hybrid Pochard x Tufted Duck was only confirmed when the specimen was collected in March 1960.

Despite the publicity of the Lesser Scaup affair and the current popular interest in spotting rare birds, not to mention the scientific interest of hybridization, the problem is largely ignored in identification manuals and wildfowl monographs.

Doubtless much remains to be learned about the characteristics and status of the various wild hybrids. At this stage the parentage can perhaps only be known with certainty in captive birds, in which case the father is by convention the first-named of the parents. All records of wild hybrids can be regarded as no more than probable only.—Ed.]

Flightless Shelducks on the Forth

The Birds of Estuaries Inquiry (1969-75) has shown that in early autumn several hundred Shelducks *Tadorna tadorna* may be on the upper Firth of Forth near Grangemouth. In 1974 between 40% and 60% of the August and September numbers were considered to be adult or second year birds. It is usually accepted that most Shelducks are on the moulting grounds of the Heligoland Bight at this time. It thus appeared that the upper Forth was either (1) an important migration stop-over site, (2) a sizeable nursery area, with many attendant parent Shelducks, or (3) a moulting ground. An effort was therefore made to determine more accurately the age structure of these flocks. Attention was concentrated in the Kinneil area between Grangemouth Docks and Bo'ness, and an inflatable boat with an outboard motor was used to see if moulting birds were actually present. On 28th July 1975 575 Shelducks were counted from the shore of which about half were adult (including second year birds). On 10th August there were 520 including 400 adults (77%). When some of these birds were chased we managed to locate a discrete flock of 80 within an area of sufficiently calm water for the boat to operate. As we approached, 45 Shelducks (mixed adults and birds of the year), flew off without difficulty but about 20 adults flapped along the surface for 20 to 50 yards before getting into the air. Our attention however was drawn mainly towards about 15 Shelducks which dived as we approached. Individuals stayed underwater for about 30 seconds and then rose briefly before diving again. All these birds were adults or second year birds with clearly marked chestnut pectoral bands and mantles and dark green heads (some with a little white feathering at the base of their red bills). We followed a few birds for about five minutes until this small part of the flock had fully dispersed. None of them showed any sign of oiling or other debilitating condition visible externally. No clear view of the state of wing moult of these birds was possible because of spray when the boat was moving, and due to the diving activity of the birds. In the individuals which flew only with difficulty, however, the wing appeared rounded and relatively stubby as though re-growth of feathers was occurring. It was concluded that

between 15 and 35 Shelducks were in active wing moult. It is just possible that the birds were exhibiting the symptoms of poisoning, although a search of the shoreline did not reveal any carcasses (or incidentally any moulted feathers). On a follow-up visit on the 24th August 320 Shelducks were seen but none of the 150 birds that were chased, under poor observation conditions, were found to be flightless. If the Kinneil area proves on subsequent investigation to be a regular moulting ground it is unlikely to hold more than 400 adults. When an arbitrary allowance is made for transients and the birds of the year are of course excluded, a moult flock of 30 to 200 Shelducks seems likely to cover the range of possibilities. It is probable therefore that even if the existence of this moult in the Forth is proved beyond doubt it would be a minor one in a European context. Nevertheless it would be only the third known west European site, apart from those of Heligoland Bight and Bridgewater Bay, and of considerable interest for this reason.

D. M. BRYANT, D. R. WAUGH.

Ringed Plover swimming

On 12th July 1975 on the beach just beyond the ternery at Aberlady, East Lothian, we saw what we at first took to be a young auk about 50 yards out, swimming towards the shore on a fairly calm incoming tide that was already far up the beach. It was submerged several times by overtaking waves. As it came closer we saw that it was a fully grown juvenile Ringed Plover *Charadrius hiaticula*. After shaking itself it raced off along the beach, apparently none the worse for its adventure.

W. G. and Mrs H. L. HARPER.

Great Skuas probably killing Mountain Hare and Rabbits

On 9th July 1973, while walking over Mel Fea, Hoy, Orkney, I found a freshly dead and already partially eaten Mountain Hare *Lepus timidus*. The body was close to an empty Great Skua *Stercorarius skua* nest and two yards away was crouched a three-week-old skua chick. A hare track crossed the hill within a yard of the nest and I assumed that the hare was killed as it was using this track and ventured too close.

In 1975 I examined about a hundred Great Skua nests on Hoy and found dead Rabbits *Oryctolagus cuniculus*, some very fresh, at about six of them. I feel certain that they had been killed at the nearby warren.

I can find no previous records of Great Skuas killing mammals, apart from possibly lambs.

C. J. BOOTH.

Rock Pipits rearing young Robin

In May 1975 a well-intentioned action by three boys (Stewart Drummond, Stuart Strachan and Mark Thomas) searching for nests for the BTO Nest Record Scheme resulted in a pair of Rock Pipits *Anthus spinoletta* rearing a young Robin *Erithacus rubecula* in Corpach, Inverness-shire.

They found both the Robins' and Rock Pipits' nests at approximately the same stage of incubation, the Robins' nest in a bramble-covered embankment among houses, the pipits' nest in a bank about a mile away just above high water level. About one or two days prior to hatching the Robins' nest was destroyed by a dog. One egg remained intact and the boys tried to save it by putting it into the pipits' nest, both species being similar in size, egg colour, insectivorous diet and stage of incubation. Unfortunately it hatched a day or two before the pipits'. The young pipits disappeared a few days after hatching—presumably either edged out by the growing Robin or starved and removed after death by their parents. The Robin thrived and was seen a few days after fledging, hopping about the beach being fed by its foster parents.

ANDREW D. K. RAMSAY.

Reviews

The Naturalist in Scotland. By D. Knowlton. David and Charles, Newton Abbot 1974. Pp 228; 30 photographs; 7 figures. 22 x 14 cm. £5.25.

The book is one of *The Regional Naturalist* series aimed at introducing both visitor and resident to the wildlife of a region. The title of this volume is however misleading. Mr Knowlton's definition of Scotland (although never explicitly stated) excludes the Shetlands, Orkneys, Inner and Outer Hebrides and Caithness. Hence the true subject is most of mainland Scotland plus some of the small inshore islands.

The book begins with a brief description of Scottish scenery, climate, history and geology. Different habitats or places, with some curious distinctions between them, are then discussed in turn. Under these headings, the author deals systematically with the mammals, birds, fishes, plants and invertebrates which can be found in each defined habitat or area. Many of these later chapters read as a turgid list of species and this leads to many chapters being cluttered with unnecessary detail. Perhaps this is inevitable with the varied wildlife of such a large area. Paradoxically a consequence of this detail is that much of the information is of little help in guiding a visitor to Scotland or in assisting someone with little knowledge of wildlife. General statements such as that "Craigleith lies nearly a mile out to sea from North Berwick and its steep cliffs have many sea birds" or that birch, ash and alder woods have "the common birds of woodland in summer" are not very helpful either. The aim of providing a useful guide book is thus not achieved.

There is too little emphasis on what Scotland, rather than other parts of Britain, can offer the individual interested in wildlife. For example, the reader who wants to know where to find that Scottish speciality the Crested Tit will discover that it is not even indexed. Few readers, however, will be surprised to learn that Blackbirds, Wrens and Chaffinches are found in Scottish broad-leaved woodland, or in many other places for that matter. The author frequently betrays a lack of intimate knowledge of the flora and fauna he describes. For example, his belief that Stonechats are associated with rocky shores or that Crossbills reach no further south than Perthshire. His many other errors on ornithological subjects are too numerous to detail. Sometimes these are of little consequence but nevertheless should not occur. Is there any relevance in discussing a guide book designed to introduce people to wildlife, the rare birds, mammals or plants which have been recorded only once or twice in Scotland?

The author's affection for Scotland is not in doubt but his prose often fails to capture the atmosphere of a locality as, for example, in his description of Aberlady Bay (p. 80). For a guide to Scotland, maps of areas to which reference is made are too infrequent. The book concludes with a useful appendix listing the sites of natural history interest, the nature trails and nature reserves in Scotland. This section is worthy of greater prominence. There is also a list of organizations concerned with wildlife in Scotland and their addresses and a list of museums with their opening hours. It is the specific information in these last ten pages that is most likely to help the tourist unfamiliar with Scotland although the author provides little information about the wildlife of the sites. The book is illustrated with about thirty photographs although their reproduction is sometimes indifferent. The index is short and the bibliography is shorter. It is especially annoying when his more obvious sources of information are not listed. I think that few people will find the book readable or useful.

D. R. LANGSLOW.

Birds in Islay. By C. Gordon Booth. Port Charlotte, Argyll Reproductions Ltd, 1975. Pp 55; 22 x 15 cm; 25 black-and-white photos. £1.20.

This booklet is intended for the general run of country-lovers as well as for the more specialized visiting bird-watcher. The photographs, by Arthur Gilpin and Morley Hedley, many of them seen before, are mostly portraits and as such useful for identification. The ones with particular reference to Islay, notably those of Whooper Swans, Greenland White-fronted Geese and Barnacle Geese (perhaps especially the roost of Barnacles at Bridgend), all by Morley Hedley, will receive the closest attention of ornithologists. For the latter, the real meat of the publication is undoubtedly to be found on pp 16-47, which contain a well-documented list of the birds recorded from Islay. By the author's reckoning, 224 species had occurred up to the autumn of 1974 and about 110 had bred in recent years.

There are very few regular bird-watchers on the island so records of birds seen by visitors are very welcome, not least because there can be little doubt that certain species are commoner than presently appears and that the status of others needs some amendment. It is very improbable that the Wood Warbler, for example, does not sometimes breed and the same is likely to be true of Wigeon, Long-eared Owl and Grasshopper Warbler.

W. J. EGGELING.

A Field Guide to Nests, Eggs and Nestlings of British and European Birds, with North Africa and the Middle East. By Colin Harrison. London, Collins, 1975. Pp 432, 48 colour plates of eggs, 16 colour plates of nestlings and numerous black and white drawings. 20 x 13 cm. £3.50.

This book has demanded knowledge and courage. It is far more difficult to compress plates and descriptions of eggs, nests and nestlings into a single handy pocket guide than to produce a similar volume with paintings and descriptions of the birds.

As scientist in charge of the national egg collection at Tring, Dr Colin Harrison was better placed to prepare this book than any living British ornithologist. In my lifetime, Francis Jourdain alone could have hoped to achieve equal success.

There are 19 pages of introduction to the study of breeding-biology, illustrated by Dr Philip Burton's excellent line drawings. Every ornithologist can read these pages with pleasure and profit.

For me, the concise descriptions of nestlings, supplemented by Dr Burton's beautiful drawings and paintings, along with the introduction, are the best features of the book. For these alone it is worth the money. One small point. The colours of legs and soft parts of wader chicks vary greatly, but I have never seen a newly-hatched Lapwing chick with the salmon-pink legs shown on the cover and repeated on plate 11. I still remember the field work which Harry Witherby and I undertook which led to the correction in the Addenda to *The Handbook*. The descriptions and paintings of the nestlings, however, will stimulate bird watchers to make their own observations and thus add to our knowledge of a neglected but always fascinating subject.

Over 700 eggs are shown in colour—at least one example from almost every bird known to breed in this vast area. In such a small volume this is an almost incredible achievement. The very scope of the subject, however, has not surprisingly led to problems, most of which were quite outside the author's control. Eggs are shown in sizes varying from $\frac{2}{3}$ life-size to life-size. On plate 59, for example, the eggs of Fieldfare, Ring Ouzel and Blackbird are shown as nine-tenths life-size, and on the next page those of Redwing, Song and Mistle Thrush are given life-size.

White, off-white and immaculate eggs apparently reproduce badly from colour photographs. Those showing swans, ducks and geese are among the least successful. It might have been better to give uncoloured outlines of these eggs, supplemented with colour photographs of the flank feathers of geese and down and feathers of ducks, which are much better aids to identification than eggs. Greens and blues also often came out rather badly. But many photographs of the eggs of divers, waders and birds of prey are excellent. I particularly liked the mouth-watering Black Vulture's egg which, along with that of the Lammergeier, vividly reminded me of Willoughby Verner's nest-hunting exploits in Spain early in the century.

The main body of text gives concise information about habitat, nest, breeding season, incubation, nestling and fledging periods. This is a tall order. For birds on the British list the author has relied greatly on the original text of *The Handbook*, to the neglect of the two important sections of addition and revision and more recent specialist work on the breeding biology of birds like Sanderling, Temminck's Stint and many others.

The extremes of clutch-size and incubation period are often lumped together. The clutch of Crested Tit, for example, is given as "usually 4 to 8, rarely up to 11" and the incubation period for Hen Harrier as "29 to 39 days", which is not particularly helpful to those in Britain who may wish to know the mean or the usual. The Woodcock chapter states

that "claims that adults carry their young are not substantiated and may be faulty observation of distraction displays". I have never seen a Woodcock carry its chicks, but many first-class and reliable ornithologists, including the Chief Scientist of the Nature Conservancy Council, have done so.

There is no bibliography and, in the modern style, no space for credits or authorities.

"A book for bird lovers not for egg collectors" is printed in large letters on the back cover of above the blurb. Is such publisher's primness really necessary? I doubt whether many youngsters will send away for drill and blowpipe, even if these are still manufactured. Few will wish to turn back the clock, but this book could hardly have been written without the great national and some private egg collections, or indeed without the fieldwork and observations of many former egg collectors.

But these are small matters in the context of a challenging project on which I congratulate the author and his publishers.

DESMOND NETHERSOLE-THOMPSON.

Animals and their Colours. By Michael and Patricia Fogden. London, Peter Lowe, 1974. Pp. 172; more than 180 colour illustrations and diagrams. £3.50.

This book is concerned with problems of camouflage, warning colouration, courtship and territorial display, and mimicry in animals. It is thus as much about animal ecology and behaviour as about colour as such and covers a wide and complex field. The text is well written, accurate and lucid, and should be easily understood by a non-zoologist. In fact, it is a pleasure these days to find a popular book written by someone who really understands the field. But the main feature of the book is an outstanding collection of about 180 colour photographs, beautifully reproduced and well captioned. Adorning almost every page, these pictures show a great variety of animals in their natural surroundings, and many were taken by the authors themselves. On the whole, birds play a fairly small part, being the subjects of 35 illustrations and figuring chiefly in discussions of nest camouflage and social signals. There is a useful bibliography and glossary and a full index. The book should appeal especially to those who enjoy reading about general biological problems from accurate sources, or to those who like looking at good pictures of animals.

I. NEWTON.

Ducks of Britain and Europe. By M. A. Ogilvie. Berkhamsted, T. & A. D. Poyser, 1975. Pp 206; 15 colour plates; numerous text figures. 26 x 14½ cm. £5.00.

As the preface to this book states, "Sooner or later every bird watcher becomes drawn to water". This would be sufficient to make ducks an unusually interesting group. Their diversity and the comparative ease with which they may be observed and identified adds to the interest. Furthermore they attract aviculturalists and sportsmen as well as bird watchers. All things considered, it is not surprising that the Wildfowl Trust was the first specialist group to be established inside ornithology. What does surprise one is that ducks should not lately have received the attention they deserve in the form of a book. Mr Ogilvie has rectified the situation.

The central part of the book, and perhaps the most satisfactory, is the

section on identification. We are not fobbed off with a few brief words on the key characters of the adults, but are given detailed descriptions of the adult plumages of both sexes, including eclipse plumage, and of the immature stages. The colour plates illustrating this section are most useful: some will object that the birds look rather stiff and unnatural—so they do, but these pictures are meant to be aids to identification, not pretty portraits.

To introduce the detailed account of the features of each species there is a chapter on classification, which gives a useful general summary of the characteristics of each group, and another on behaviour and ecology. The latter starts with a general section and then goes on to an individual treatment of each species. A later chapter on distribution and status is organized in the same way. It is a useful approach, for it allows the author to make general and comparative points and the reader to look up quickly any particular species. The other chapters, on breeding, migrations, and exploitation and conservation, are presented in an entirely integrated and comparative fashion, rather little detailed information on individual species being presented. This lack of detailed information is perhaps the most disappointing feature of the book. Population dynamics, particularly in terms of resource management, must have been studied more extensively in wildfowl than in any other group of birds, yet very little of the available material is presented. Many topics are not mentioned, others are merely glossed over, and even for topics discussed in more detail the information included is often incomplete. This is not a book for those interested in a detailed study of ducks, whether birdwatchers, aviculturalists, sportsmen, or wild-life managers, though it will certainly whet the appetite of the non-specialist.

As an exception to the lack of details, useful summaries of the characteristics of eggs and nests, clutch sizes, incubation periods, etc. are provided in tabular form. Unfortunately, one has to say that their value is much less than it could have been. One reads that the Pintail has an average clutch size of 9.3, with a "normal range" of 7-9 and an "extreme range" of 6-12: but what is a "normal range"? What is the sample size involved? Are these figures meaningfully different from the similar, but not identical, ones for the Wigeon? We cannot tell. The standard deviation was invented long ago as a precise measure of variation in a sample: why not use it? It is true that the data given on egg dimensions have sample sizes, so one may estimate the standard deviations from the ranges, but why should we be forced to make do with estimates? Ranges belong in the *Guinness Book of Records*, not in books on bird biology.

One last question, this time addressed to the publishers. Is there really so much money about that there is a sale for books costing 2½ pence per page? This book is attractively presented and packaged but that is not the only factor determining one's decisions to purchase.

J. J. D. GREENWOOD

The Migration of the Swallow. By Collingwood Ingram. London, Witherby, 1974. Pp 83; 4 plates. 14 x 21 cms. £1.80.

The relaxed style and large print make this book easy to read. The first two chapters deal with the systematics and breeding biology of the Swallow. The third chapter outlines a highly personal view of bird navigation. The following sections on flyways, wintering areas, moult and some other results of ringing studies are the book's strength. They remain idiosyncratic, but are liberally scattered with anecdotes, quotations, personal observations and ideas that make for entertaining reading. There are many points throughout the book with which the serious ornitholo-

gist will argue, such as "no other bird has such a wide distribution" and the suggested irrelevance of celestial cues in passerine navigation. It is probably the final chapter however that will most stimulate the field ornithologist to search his notes, memory and library for examples which support, or otherwise, the suggestion that "... a head wind... is the direction favoured by most passerines for their migration".

I am inclined to buy books that have a strong factual content. Books without detailed data tables and appendices, which may thus fall short as useful reference works, do not easily find their way onto my shelves. I would not buy Mr Ingram's book on Swallow migration for this reason. It is however a pleasant evening's read, and brings together many items of interest about this "best loved species in the world". Just the job to while away a couple of quiet hours on the Isle of May or Fair Isle.

DAVID M. BRYANT.

Wild Endeavour. By Don and Bridget MacCaskill. Glasgow and London, Blackie, 1975. Pp 150; 12 pages of monochrome photographs and four of colour. 23½ x 15½ cm. £4.25.

Don MacCaskill has spent most of his life in the forests of Argyll and Perthshire where his work as a forester and hobby of natural history are an enviable combination. Well known as a naturalist and photographer he has made regular contributions to periodicals. He combines with his wife Bridget in producing this, their first book, a very readable account of their experiences with animals and birds in the Highland forests. The book concentrates on Don's photographic exploits, each chapter relating to encounters with particular animals and birds of the forest and forest fringe. The text is attractively illustrated but the high standard of photography is spoiled by poor reproduction of one or two plates. Much of their work was carried out from the hide where time was well spent as there are several appealing behavioural descriptions. I particularly liked the chapters on Golden Eagle, Hen Harrier and Red Deer which are factual and emotive without being melodramatic. The authors also deserve praise for their frank admissions when certain subjects proved unco-operative with a hide. This disturbance factor is rarely mentioned in similar books and there are lessons here for photographers as well as those of us who turn to the hills for pleasure.

I dislike the way in which many of the animals and birds are humanized, particularly as in many instances no real subject bond would appear to have been established. In the closing chapter the authors appear to come to the defence of the much criticized modern forestry policies and I was disappointed that more space had not been devoted to elaborating the various arguments.

This book should have a broad appeal among the unconverted although the popular wildlife market is becoming increasingly competitive. Many will be deterred by the price and although the material is attractively presented it is not particularly novel and £4.25 for 150 pages does seem a trifle high. Nonetheless it will find a place on many an ornithologist's bookshelf.

R. L. McMILLAN.

The Birdwatchers' Quiz and Puzzle Book. Written and published by J. T. R. Sharrock. Bedford, 1975. Pp 72; 60 puzzles, crosswords, problems and quizzes. 90p.

Can you change a Snipe into a Raven in 20 minutes? Or make a Swift + Crane + Wren = 24,296? Or do you know what a fern owl is? If you find these challenging and have a suitably devious mind then you'll en-

joy pitting your wits against the puzzles, mazes, mathematical problems and crosswords invented by Tim Sharrock. Most of them require some ornithological knowledge but several do not.

The author has invented a hypothetical expert, very good at all types of problems, and he is allowed just over 31 hours to solve the sixty problems—if you can manage it in twice that time then you are both good at puzzles and ornithologically knowledgeable. Most puzzle instructions are short, simple and clear but a few require expert solving times of their own.

Many families will find hours of amusement in the book and it should be especially suitable to while away wet, cyclonic days on the Isle of May or Fair Isle. One wonders what watching birds on Cape Clear Island does to the mind, or at least, to Tim Sharrock's. Perhaps a dearth of birds stimulated him to invent the problems. To help restore one's sanity, the solutions are given at the end of the book. Maybe they should be sold separately!

The images evoked by Blue Tits manning the police station and the Meadow Pipit as a special agent are brought to life by the expressive line drawings of Robert Gillmor. They show his versatility and wit, include a self-portrait, and provide a pleasing interlude between the puzzles.

To summarize, the book is good value and, above all, good fun.

DEREK R. LANGSLOW.

The Scottish Ornithologists' Club

BRANCH MEETINGS - 1976/77

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

September	16th	New Galloway
	20th	Glasgow
	21st	Edinburgh, Inverness and Wigtown
	22nd	Ayr, St Andrews and Thurso
	23rd	Dundee and Stirling
October	4th	Aberdeen
	6th	Dumfries

The **New Galloway Group** will meet in Kells New School; the **Wigtown Group** will meet in Douglas Ewart High School, Newton Stewart, in September and in Stranraer Academy in October, thereafter alternating monthly at each venue; the **Aberdeen Branch** will meet in the Senior Common Room, Elphinstone Road, Old Aberdeen.

The venue and starting time for meetings of all other Branches is unchanged; full details of all the winter meetings are published in the Syllabus of Lectures sent to members with the autumn number of the journal early in September.

DRY ROT - 21 REGENT TERRACE

The final total of the restoration bill was just over £2850, a slightly lower sum than had been expected. We are very pleased to acknowledge a gift of the paint used in the redecoration of the rooms and the basement passage which had been affected by the dry rot. This was kindly given by John Robertson, Wholesale Decorators Merchants, West Bowling Green Street, Edinburgh, and Pay 'N' Take Furniture, Roslin, Midlothian,

and we are greatly indebted to both firms for their most generous donation. The redecoration was carried out by several members of the Edinburgh Branch to whom we are most grateful.

Since early February over £450 has been donated privately or raised by Branches. Special mention is made of £202 raised at a coffee morning with stalls organised by the Dumfries Branch; £100 raised by the Inverness Branch, also at a coffee morning; £65 raised by the Ayr Branch at several events, including a 'Wine and Cheese' social evening, and £37 at a similar event by the Edinburgh Branch. The Club is very grateful to all these Branches and in particular wishes to thank all those who helped with the organisation of the events. In addition, thanks go to the Dundee Branch for £46 raised at a 'Wine and Cheese' party last December, and a cheque received from a member in Dundee following a private coffee morning in her home.

To date (mid-May) we have raised £1993 by donation, Branch functions, the raffle and an *ex gratia* payment from our Insurance Company. This leaves just over £850 still to be raised to cover the restoration bill. All donations, whether individual or through Branch fund raising activities, should be sent to the Club Secretary; they will be acknowledged and very gratefully accepted.

ANNUAL CONFERENCE

The next Annual Conference and AGM will be held in the University of Stirling from **28th - 30th January 1977**. Full details will be sent to members in the autumn.

Branch and Group News

Ayr

The first of May marks the time when Scottish Ornithologists stop any indoor activities for the summer season. It marks, too, a good time to stop and take stock of the winter's activities. For Ayr Branch the chief event was a very successful wine and cheese party. This was a new form for an already established annual get-together for the Branch members. It was so well enjoyed it may have to be repeated in this form in future years. I didn't know there were so many different cheeses.

The three lectures, "Zaire River Expedition" in February, "Birds of the Serengeti" in March and "Wildlife in Alaska" in April were all well attended. The last of these had to be postponed for a week and some hard work was necessary to tell all members without spending money in postage which was needed for the Dry Rot Fund. This hard work brought out the best attendance of the winter. Is there a moral here?

Outings took place to the Dipple Shore for seabirds and waders and to Stairaird (by kind permission of Lord Glenarthur). Woodpeckers refused to show themselves at Stairaird but instead members saw a Jay, something rare for this part of Ayrshire. Branch members now have permission to use a hide at Martnaham Loch in the grounds of our Branch President, Colonel Bryce Knox. A very pleasant afternoon was spent there, watching Great Crested and Little Crested Grebes with a newly arrived Willow Warbler singing a few feet away.

Our Branch Secretary, Mr A. M. Ramage has now gone to Edinburgh. Mac Ramage has worked hard for the Branch for many years. We wish him luck in his new post and hope that somehow we may fill the gap his going has left among Ayrshire Ornithologists.

J. MILLER

Dundee

The 1975-76 winter session was very successful for the Branch with some particularly large attendances at meetings, no doubt reflecting the excellence and variety of the topics covered on the lecture syllabus. Refreshments served after meetings continued to be popular and have done a lot in fostering a congenial club atmosphere.

Excursions were also well supported, particularly those to Craig a Barns (Dunkeld), Methil, where enormous numbers of wildfowl including Long-tailed Duck were observed under ideal conditions, and in the autumn the Loch of Strathbeg where we renewed acquaintance with the warden, Jim Dunbar, a recent and very active member of the Branch. Alternate Saturday and Sunday excursions have been a feature of our programme this session in an effort to make them appeal to a wider range of membership.

Members' Nights contributions were varied and interesting. They included a film by Dr North, sound recordings by Dave Thomson, a quiz by Mrs Amedro, and talks on wildfowl identification by Bede Pounder and the work of the Tay Ringing Group by Norman Atkinson. The Branch is fortunate to have amongst its membership an active and successful ringing group. Coffee mornings organized by Mrs B. Shepherd and the social highlight of the year, a cheese and wine party organized by our hard-working secretary Ann Noltie, resulted in substantial contributions to the Dry Rot Fund.

B. POUNDER

Edinburgh

In February John Murray led an outing to the Endrick Marshes and the full coach-load of bird-watchers with him saw 62 species during the trip. Pessimists suggested that dress for the outing should be "neck-waders" but in the event the weather was good and wellington boots sufficed! The talk on Hen Harriers by Nick Picozzi was an excellent example of scientific results being presented in a way that interested the whole audience. Sinclair Dunnett's talk was a contrast in style. When a large expedition goes to the Zaire River it seems anything can happen—and it did! The difficulties, disasters major and minor, the chimps, and of course the birds, were among the subjects covered. The winter programme ended with a Members' Night in April. Some members of the audience appeared on the screen when Jimmy Dow showed a film he had made on recent branch outings. John Murray brought a selection of bird skins and discussed identification problems, and an assortment of bird slides was shown.

Daphne Peirse-Duncombe and others organized a wine and cheese party at the end of April to raise money for the Dry Rot Fund and 50 people attended. Conversation turned towards the arrival of the summer migrants and the prospects of summer field trips. The Club premises were on show and photographs of the 1966 Club Cruise were on display. There was a raffle, a splendid selection of cheeses and snacks, and a good supply of wine. A very successful evening, especially as it produced £37.50 towards the cost of repairing the dry rot damage.

H. LANGSLOW

Inverness

The March outing to Dornoch and Loch Fleet can be described as stormy—gale-force winds and poor visibility but enjoyable nevertheless. A very successful coffee morning on 24th April resulted in the contribution of £100 to the Dry Rot Fund. The draw for the raffle caused much amusement when Chairman Roy Dennis's daughter drew her own ticket to win first prize (a bag of tatties). Branch members have been enjoying

excellent views of a ♂ Smew which has spent the last few months in company with Goosanders near Inverness Harbour.

W. G. PREST

St Andrews

We welcomed a pleasing number of new members to the Branch this season, including keen students. During the winter short expeditions to local places of interest were led by Ian Cumming and Tony Backx, and these were much appreciated. Waxwings were seen and our wintering Glaucous Gull was usually visible from the Castle. As usual, members were involved in various counts. We enjoyed the varied programme of lectures arranged for the Branch and are grateful to everyone concerned in producing these interesting and stimulating evenings.

M. SPIRES

Stirling

Argyll Weekend On the evening of 5th March eleven members forgathered in a rented cottage at Ford, Loch Awe. Electricity was the only facility lacking, but somehow candles and paraffin lamps added to the aura of cosiness. A log fire blazed in the hearth as activities of the next two days were planned. On the Saturday some members toured the Crinan area whilst others assisted in the erection of a floating island in a hill loch—an experimental nesting station for divers. It was cool that day, but the Sunday was brighter and the whole party made a pilgrimage to Kintyre where several hours were spent in the bird-rich coastal strip north of Tayinloan. Divers, grebes and scoters were dotted along the offshore, and the fields and sky were filled with clamouring White-fronted and Greylag Geese. Many thousands of smaller birds, from Rock Doves to finches, contributed to the grand finale to a great weekend.

D. MERRIE

Thurso

On 11th February we were lucky enough to intercept David Lea who attended our meeting and provided food for a stimulating discussion on the purpose of conservation. The 10th March meeting found members refreshing memories in preparation for coming spring with taped recordings of calls and song.

Five members, each armed with three or four members of the YOC, took part in the RSPB's Sponsored Birdwatch on 3rd April. Hopes of seeing 50-60 species were well-founded and all five parties' totals fell within this range, the highest being 59. With an increasing number of interested young people in the area, several members are regularly involved with outings, and a short beginners' course was planned for 15th May.

On 4th April an outing to Loch Fleet was blessed with good weather and members enjoyed good views of the ♂ King Eider while some were lucky enough to see, at long range, the ♂ Surf Scoter. The main feature of the last meeting on 7th April was a lengthy discussion on the BTO's Register of Ornithological Sites and the parcelling out to members of the sites still to be surveyed.

S. LAYBOURNE

Requests for Information

Threipmuir Reservoir A checklist of the birds of this Midlothian reservoir is being compiled by Mr David Bain, 8 Highlea Circle, Balerno, EH14 7HG, who will welcome any unpublished information or notes on the locality. All contributions will be acknowledged.

House Martin nests In siphonapteralogy, it is well known that House Martins are hosts to an unusually large number of flea species. One of these, *Ceratophyllus hirundinis*, is normally only found in nests on buildings, while others, *Callopsylla waterstoni* and *Frontopsylla laeta*, rarely occur in such nests but are found instead in nests on cliffs and other natural sites. A further two species, *C. rusticus* and *C. farreni*, occur in both sites but prefer natural ones. Scotland has produced the most interesting of the records from natural sites, and if nests can be obtained at the end of the breeding season it would be of interest to extend the observations with a view to discovering why the two types of nest support different flea faunas. G. H. Harper would therefore be grateful to hear from anyone who knows of accessible nests of House Martins, on buildings, on cliffs, or on intermediate sites such as castle walls. Please contact Mrs H. L. Harper at 1/15 Pentland Drive, Edinburgh EH10 6PU, telephone 031-445 2966.

Birds of Crete A check-list is being prepared. All records would be gratefully received and acknowledged by John Parrott, Department of Zoology, Tillydrone Avenue, Aberdeen AB9 2TN. A *Crete Ringing Group Report 1973-1975* is also available at 41p including postage.

LOCAL RECORDERS

- Shetland (except Fair Isle)** R. J. Tulloch, Lussetter House, Mid Yell, Shetland.
- Fair Isle** R. A. Broad, Bird Observatory, Fair Isle, Shetland.
- Orkney** D. Lea, Easter Sower, Orphir, Orkney, KW17 2RE.
- Outer Hebrides (except St Kilda)** W. A. J. Cunningham, Aros, 10 Barony Square, Stornoway, Lewis.
- St Kilda** Dr I. D. Pennie, Varkasaig, Scourie, Lairg, Sutherland.
- Caithness** Mrs P. M. Collett, Sandyquoy, East Gills, Scrabster, Caithness, KW14 7UH.
- Sutherland, Ross-shire (except Black Isle)** D. Macdonald, Elmbank, Dornoch, Sutherland.
- Inverness-shire (within 18 miles of Inverness) Ross-shire (Black Isle only)**
M. I. Harvey, Clach Bhan, Loaneckheim, Kiltarlity, Inverness-shire.
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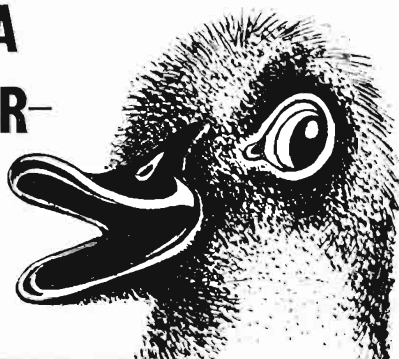
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