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# Scottish Birds

## The Journal of the Scottish Ornithologists' Club

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## Amendments to the Scottish list

RONALD W FORRESTER

**The Scottish Birds Records Committee is responsible for the maintenance of the Scottish List first published in 1994. This is the first subsequent report of the Committee and contains additions, corrections and modifications to the original list**

Readers should refer to the introduction to the full list (Scottish Birds 17:146-159) for the explanation of the principles used in establishing it. These include following the categories used by the British Ornithologists' Union and also being guided by any decisions which they make that in turn affect the Scottish List. In addition we will not add a species to the Scottish List unless the record has first been accepted by the appropriate assessment committee.

**Green-backed Heron** *Butorides striatus* add to Category A

Category D3 was incorrectly described in the introduction to the Scottish List (Scottish Birds 17:146), and should correctly be defined as covering "species which would otherwise appear in category A or B except that they have only even been found dead on the tideline".

There are 4 species which have only occurred as corpses in Scotland: Green-backed Heron, Red-necked Stint *Calidris ruficollis*, Cetti's Warbler *Cettia cetti*, and Black and White Warbler *Mniotilta varia*. There is one record for each species. Red-necked Stint, Cetti's Warbler and Black and White Warbler were all found away from the tideline and, therefore, were placed in Category A. Green-backed Heron was omitted from the Scottish List in error. The bird was found near the tideline on

the shore at Tynninghame, Lothian on 25 October 1987, but was described as having been found "freshly dead, probably killed by a Fox, *Vulpes vulpes* (British Birds 81:542). It apparently showed no signs of having been washed ashore and therefore should be placed in Category A.

**Crested Lark** *Galerida cristata* transfer to Category B from Category A.

**Buff-bellied Pipit** *Anthus rubescens* transfer to Category B from Category A.

In the original list we placed Crested Lark and Buff-bellied Pipit in Category A. There is only one Scottish record of Crested Lark and 2 Buff-bellied Pipit records and all are prior to 1958. Both species should therefore appear in Category B.

**Hudsonian Godwit** *Limosa haemastica* add to Category A

A Hudsonian Godwit was seen near Collieston, Grampian on 26 September 1988 (British Birds 83:463) and should therefore be in Category A. This species was omitted in error from the original list.

**White Pelican** *Pelecanus onocrotalus* delete from Category D

This species was included in our original list

on the basis that there have been a few published records e.g. two separate wandering groups in May 1973 (Scottish Birds 8: 221). Records since 1958 require to be accepted by the British Birds Rarities Committee, who have now accepted 16 records, none of which are from Scotland. It appears that no Scottish record has even been submitted to them for acceptance and therefore we require to delete this species from Category D of the Scottish List. We would urge observers of free flying birds in Scotland to submit details to BBRC to enable the species to be re-instated.

As a result of decisions in the Twentieth and Twenty first Reports of the Records Committee of the BOU (Ibis 136:253-256; 136:497), 3 amendments now require to be made.

**Asian Brown Flycatcher** *Muscicapa dauurica* add to Category D1  
Fair Isle, Shetland 1-2 July 1992

The BOU agreed to place the species in category D1 pending further information on patterns of vagrancy and its status in captivity.

**Painted Bunting** *Passerina ciris* delete from Category D1

The BOU consider the species to be an unlikely natural vagrant to Britain and the species has been common in captivity. They, therefore, now do not consider it likely that any have reached Britain naturally.

**Daurian Starling** *Sturnus sturninus* delete from Category A and transfer to Category D1

The only accepted record was of a bird on Fair Isle on 7-28 May 1985. The BOU now considers that natural vagrancy to Britain is not very likely and it is considered particularly unlikely in spring. In the 1980s the species

occurred in captivity in Britain and on the Continent, therefore escape would have been possible.

There have recently been several first records in Scotland of species previously recorded within Britain, which have now been accepted by the British Birds Records Committee, being detailed in their annual reports which are published in British Birds.

**Lesser Scaup** *Aythya affinis* add to Category A

Male, Milton Loch, Dumfries & Galloway 29 December 1990 (British Birds 85:516). This was the first of 3 accepted records in recent years.

**Red-necked Stint** *Calidris ruficollis* add to Category A

Juvenile recently dead, Fair Isle, Shetland 31 August 1994 (British Birds 88:512)

**Grey-tailed Tattler** *Heteroscelus brevipes* add to Category A

Juvenile, Burghead, Grampian 27 November - 27 December 1994 (British Birds 88:517).

**Marmora's Warbler** *Sylvia sarda* add to Category A.

Male, in song, St Abb's Head, Borders 23-27 May 1993 (British Birds 87:554).

**Spanish Sparrow** *Passer hispaniolensis* add to Category A

Male, North Ronaldsay, Orkney 11-19 August 1993 (British Birds 87:561).

**Pallid Harrier** *Circus macrourus* transfer to Category A from Category B

The first of 2 1993 records was of a male, Tayside (locality withheld) 5-7 May 1993 (British Birds 88:505). The only previously acceptable Scottish record was of a male shot on Fair Isle in 1931.

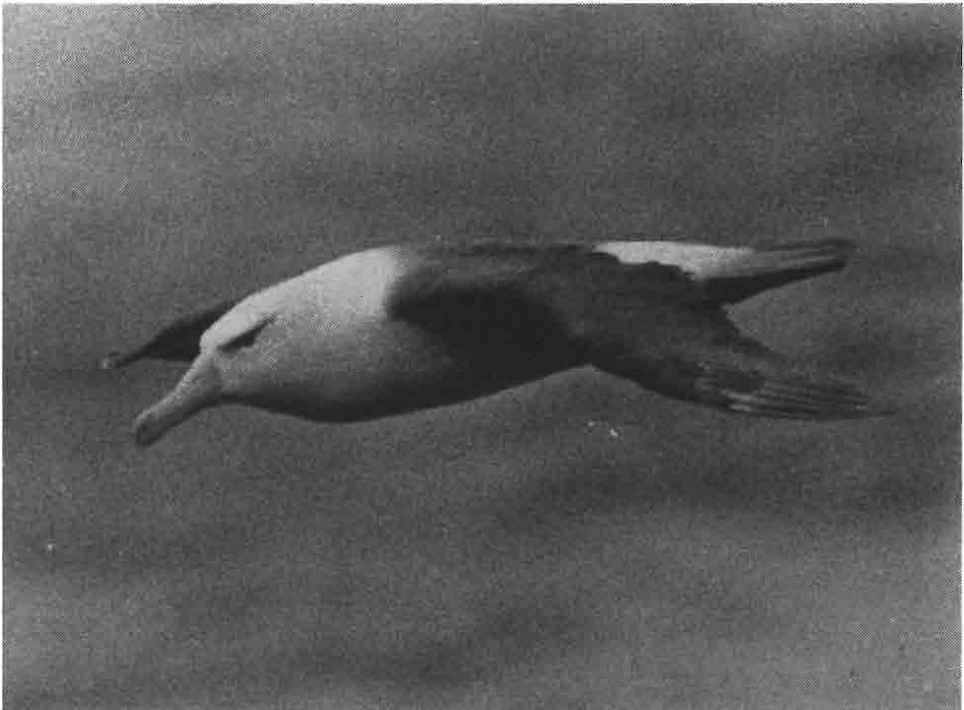
The above changes bring the totals in the various categories to:

Category A	454
Category B	15
Category C	6
	-----
	475
Category D	12
	-----
	487

Among the decisions which are still awaited are those concerning Eastern Phoebe on St Kilda and Blyth's Pipit on Fair Isle, both potential further additions to Category A.

The Scottish Birds Records Committee, which is responsible for maintaining the Scottish List, now consists of Ken Shaw (Chairman), Peter Gordon, Eric Meek, Kevin Osborn, David Clugston, Bruce Forrester and Ron Forrester (Secretary).

**Ronald W Forrester, Secretary,  
Scottish Birds Records Committee  
31 Argyle Terrace, Rothesay, Isle of Bute, PA20 0BD**



Black-browed Albatross

Malte Andersson

## Records of species recorded in Scotland on 5 or fewer occasions

PETER R GORDON & DAVID CLUGSTON

**When compiling the Scottish List it became apparent that there was no single source to which the Scottish Birds Records Committee could refer for a summary of acceptable records of rare Scottish species. Following the publication of the official Scottish List it therefore seems appropriate that an annotated list should appear of those records which are considered acceptable and on which the Scottish List is based**

This first attempt at publishing a systematic list of all occurrences of the rarest birds in Scotland has been confined to those species for which the SBRC can establish no more than 5 acceptable records, published prior to 31st December 1995. E V Baxter & L J Rintoul 1953, *The Birds of Scotland*, Oliver & Boyd, Edinburgh and V M Thom 1986, *Birds in Scotland*, Poyser, Calton, did much groundwork and documented most relevant records, but the purpose of those publications was rather different than to provide a list of records. In this list SBRC has used the following principles in deciding which records are acceptable and which are not:

1 We have not accepted any record of a species which does not appear on the British List, which is compiled by the Records Committee of The British Ornithologists' Union (BOU).

2 No record has been accepted by us which would be the first British record unless it has been accepted as such by the BOU.

3 Records since 1958 of species appearing on the British Birds Rarities List must be accepted by the British Birds Rarities Committee (BBRC).

From this it can be seen that the only decisions which have been required on our part have been in connection with pre 1958 records and records since 1958 of birds that are rare in Scotland but not dealt with by the BBRC. For pre 1958 records, only those considered acceptable at the time, and which have not since been examined again and found wanting, are included. There has been no further examination of records specifically for this paper. These records have mostly been well documented, but we would welcome any constructive criticism of any of the records which we have accepted and also would be pleased to learn of any records omitted for which a strong case could be put forward for acceptance. All of the records since 1958 have been examined and accepted by the BBRC, except for those concerning Lesser Spotted Woodpecker, Cetti's Warbler and Dartford Warbler, each being represented by a single acceptable record, plus Egyptian Goose in the supplementary Category D list.

The categories are defined as follows:

**Category A.** Species which have been recorded in an apparently wild state in Scotland at least once since 1958.

**Category B.** Species which were recorded in an apparently wild state in Scotland at least once up to 31 December 1957, but have not been recorded subsequently.

**Category C.** Species which, although originally introduced by man, have now established a regular feral breeding stock which apparently maintains itself without recourse to further introduction.

**Category D.** Species which would otherwise appear in Category A or B except that:

D1 there is a reasonable doubt that they have ever occurred in a wild state, or

D2 they have certainly arrived with a combination of ship or human assistance, including provision of food and shelter, or

D3 they have only ever been found dead on the tideline, or

D4 species that would otherwise appear in category C except that the feral population may or may not be self supporting.

There are now only 15 species appearing in Category B of the Scottish List. Of these White-faced Petrel (1 record), Magnificent Frigatebird (1), Squacco Heron (4), Houbara Bustard (1), Eskimo Curlew (3), Sooty Tern (2), Whiskered Tern (1), Black-billed Cuckoo (2), Eagle Owl (4), Crested Lark (1), Buff-bellied Pipit (2) and Black and White Warbler (1) have been recorded on 5 or fewer occasions and we therefore list all records for these species. There are more than 5 records for Ruddy Shelduck, Capercaillie (the original

population became extinct during the eighteenth century and the species was established again from 1837, but there is no record of any bird having reached this country by natural means within the last 200 years and the present Scottish population is therefore Category C) and Great Auk.

References are generally given only for the first record. In cases where the reference for the first species does not contain a published description, but a useful article describing a subsequent occurrence is available, this is cited as well. The taxonomy and nomenclature used are as in the Scottish List (Scottish Birds 17:146-159) which follows that in the British Ornithologists' Union's Checklist of Birds of Britain and Ireland sixth edition, 1992. This is based on K H Voous's List of recent holarctic bird species, 1977, revised edition, BOU. We have, however, not followed the BOU's lead in introducing major changes to the English names, in most cases, retaining those in more general usage.

Peter Gordon has been responsible for researching and tabulating the records since 1958. David Clugston completed the same task with the pre 1958 records. Now that this initial compilation of records has been published, SBRC intend, over a period of time, to examine the pre 1958 records again with a view to assessing their validity in more detail. It is hoped that this and future work will lead to a more accurate understanding of the status of rarer species in Scotland.

**Ronald W Forrester, Secretary, Scottish Birds Records Committee**

## Systematic list

### **A Pied-billed Grebe** *Podilymbus podiceps*

1-8 October 1975, Carlingwark Loch, Kirkcudbright, Dumfries & Galloway (Scottish Birds 9:297-8)

9 January - 27 March 1977, Loch of Strathbeg, Grampian

8 June 1983 - 22 August 1985, Askernish, South Uist, Western Isles

24-25 April 1987, Lochmaben, Dumfries & Galloway

### **A Black-browed Albatross** *Diomedea melanophris*

A bird summered on the Bass Rock, East Lothian 18 May - 28 September 1967, 13 April - about 20 July 1968 and again 10 April - 3 May 1969 (British Birds 61:22-27)

Other sightings, probably relating to this bird, are:

7 or 8 February 1968, at sea, 10-14 miles off Eyemouth, Berwickshire

28 February 1969, 6 miles off St Abbs Head, Berwickshire

23 August 1969, off Elie Ness, Fife

13 August 1969, Hoy, Orkney

What was probably the same bird was at Hermaness, Shetland 21 July - 4 August 1972 and again in the summers of 1974-1994 (but not 1989 or 1990). Earliest and latest dates there are 14 February and 20 September. Other sightings, the majority of which are probably attributable to this bird, are:

8 August 1972, Fife Ness, Fife (4 days after last Hermaness sighting)

21 August 1975, adult, Scapa Flow, Orkney (3 days after last Hermaness sighting)

27 July 1976, at sea, south of Lerwick, Shetland

21 and 26 July 1978, Yell Sound, Shetland  
16 March 1980, near Rockall, Western Isles (the day after first Shetland sighting that season)

7 August 1984, at sea, 10 km west of Corsewall Point, Dumfries & Galloway (reported at Hermaness from 27 February but no last date given)

30 January 1990, sea area Viking 60°00'N 02°00'E

### **A Little Shearwater** *Puffinus assimilis*

30 June 1974, off Islay, Argyll (Scottish Birds 9:380-1)

14 September 1985, Corsewall Point, Dumfries & Galloway

29 July 1990, Butt of Lewis, Western Isles

9 December 1990, dead, Musselburgh, Lothian

### **A Wilson's Petrel** *Oceanites oceanicus*

1 October 1891, caught alive, Jura, Argyll (Annals of Scottish Natural History 1892:18)

30 August 1988, at sea, Little Minch, about 5 km SE of Renish Point, Harris, Western Isles

8 August 1993, at sea, about 50 km NW of Ramna Stacks, Shetland

### **B White-faced (Frigate) Petrel**

*Pelagodroma marina*

1 January 1897, young female, caught alive, Colonsay, Argyll (Annals of Scottish Natural History 1897:88)

### **B Magnificent Frigatebird** *Fregata magnificens*

10 July 1953, immature female, caught alive, later died, Tiree, Argyll (British Birds 47:58)

Unidentified frigatebird off Forvie, Aberdeen

20 August 1960



**A Green-backed Heron** *Butorides striatus*

25 October 1987, first-winter, freshly dead, Tynninghame, Lothian (Lothian Bird Report 1987:80)

**B Squacco Heron** *Ardeola ralloides*

9 October 1852, shot, near Stockton, Forth-Clyde Canal, Lanark (D A Bannerman 1957 The Birds of the British Isles 6:97 Oliver and Boyd, London)

pre 1877, shot, Dalmahoy, Midlothian

7 September 1896, adult male, shot, North Ronaldsay, Orkney

5 June 1913 for over a week, Butt of Lewis, Outer Hebrides

**A Cattle Egret** *Bubulcus ibis*

10-19 May 1979, Loch of Kinnordy, Tayside (British Birds 73:494)

14 October - 20 November 1986 and 6-14 December 1986, near Stranraer and Crockettford, Dumfries & Galloway

**A Red-breasted Goose** *Branta ruficollis*

Winter 1956/57 Beauly Firth, Inverness-shire (Scottish Naturalist 69:118)

One bird seen in Dumfries & Galloway winters 1991-92 - 1993-94 as follows:

2 October 1991 - 7 March 1992, Caerlaverock and Mersehead; 5 October - 7 November 1992 Caerlaverock and Mersehead; 18 November - 31 December 1992 Caulkerbush and Mersehead; 1 January - 11 February 1993 Southwick, Mersehead, Caulkerbush and Caerlaverock; 25 September - 24 November 1993 Caerlaverock; 10 November 1993 - 10 January 1994, near Dumfries

5 December 1994, Endrick Mouth, Central/Strathclyde

**A Black Duck** *Anas rubripes*

22 -28 December 1979, adult male, Stanley Dam, Paisley, Strathclyde (British Birds 73:499)

11 October 1981 - 2 March 1982, male, North Kessock, Inverness, Highland

9 February - 31 August 1985, female, Tynninghame, Lothian and, again, 8 February - 27 April 1986

26 November 1989 - 6 March 1990, first winter male, Barr and Castle Semple Lochs, Strathclyde

4 February - 29 April 1990, male, Loch of Spiggie, Shetland

**A Lesser Scaup** *Aythya affinis*

29 December 1990, male, Milton Loch, Dumfries & Galloway; same 31 December - 25 January 1991, Auchenreoch Loch, Dumfries & Galloway (Birding World 4:29)

9-13 May 1993, first year male, Loch of Spiggie, Shetland

**A Bufflehead** *Bucephala albeola*

14 March 1980 - at least 18th, male, West Loch Bee, South Uist, Western Isles (British Birds 74:464)

**A Barrow's Goldeneye** *Bucephala islandica*

4 November - 28 December 1979, adult male, Irvine, Strathclyde (British Birds 88:104-106)

**A Pallid Harrier** *Circus macrourus*

24 April (at least)-8 May 1931, second year male, shot, Fair Isle, Shetland (Scottish Naturalist 1932:1)

5-7 May 1993, male, probably 2nd summer, locality withheld, Tayside

15-16 September 1993, juvenile, Exnaboe area, Shetland

**A Lesser Kestrel** *Falco naumanni*

25 October 1897, female, shot, Boyndlie, Aberdeenshire (Annals of Scottish Natural History 1898:51)

23 June 1987, male, Fair Isle, Shetland

- A American Kestrel** *Falco sparverius*  
25-27 May 1976, male, Fair Isle, Shetland  
(Scottish Birds 10:90, British Birds 74:199-203)
- A Eleonora's Falcon** *Falco eleonora*  
14 June 1985, male, Bornish, South Uist, Western Isles (British Birds 83:459)
- A Sora** *Porzana carolina*  
25 October 1901, male, shot, Tíree, Argyll (Bulletin of the British Ornithologists' Club 12:26)  
12 November 1913, immature male, shot, near Ness, Lewis, Outer Hebrides  
30 October 1982, adult, Foula, Shetland
- A Little Crake** *Porzana parva*  
March 1852, found dead, Thornton, Banff (Zoologist 1860:6968)  
29 March 1909, Girvan Harbour, Ayr, found alive, later collected  
29 September 1911, caught, Loch Scamadale, Argyll  
April 1959, male, dead, Uyeasound, Unst, Shetland  
11 May 1970, male, trapped, Fair Isle, Shetland
- A Sandhill Crane** *Grus canadensis*  
26-27 April 1981, first summer, Fair Isle, Shetland (British Birds 76:105-109)  
17-26 September 1991, first winter moulting to second winter, Exnaboe and Sumburgh, Shetland
- B Houbara Bustard** *Chlamydotis undulata*  
24 October 1898, immature female, shot, St Fergus, Aberdeen (Annals of Scottish Natural History 1899:51, 73)
- A Cream-coloured Courser** *Cursorius cursor*  
8 October 1868, male, shot, near Lanark, Lanarkshire (Zoologist 1868:1459)  
10 October 1949, 3 near Luggiebank, North Lanark, Lanarkshire (Scottish Birds 5:28)  
9-21 October 1965, Gullane Point, East Lothian (Scottish Birds 4:230-232)
- A Black-winged Pratincole** *Glareola nordmanni*  
18-19 May 1927, female, exhausted, later died, Fair Isle, Shetland (Scottish Naturalist 1927:111)  
11 July 1976, Loch of Strathbeg, Grampian (Scottish Birds 10:314-15)
- A Greater Sand Plover** *Charadrius leschenaultii*  
9 June 1979 - at least 14th, Sandside Bay, Deerness, Orkney (British Birds 73:568-573)  
24 June 1982, Aberlady Bay, Lothian  
18-19 August 1991, adult or first summer, Don Estuary, Grampian
- A Caspian Plover** *Charadrius asiaticus*  
12-13 July 1988, adult, sex indeterminate, Aberlady, Lothian (Lothian Bird Report 1988:87-88)
- A Sociable Plover** *Chettusia gregaria*  
3 November 1926, first winter female, shot, North Ronaldsay, Orkney (Scottish Naturalist 1927:127)  
Early December 1949, Isbister, Rendall, Orkney  
for about a week around 15 January 1969, Eday, Orkney
- A Great Knot** *Calidris tenuirostris*  
15 September 1989, adult, Scatness and Pool of Virkie, Shetland (British Birds 85:426-429)
- A Semipalmated Sandpiper** *Calidris pusilla*  
13-15 May 1992, Fair Isle, Shetland (Scottish Birds 16:277-9)

7-8 June 1993, Stronsay, Orkney

**A Western Sandpiper** *Calidris mauri*  
27 May - 3 June 1956, trapped, Fair Isle,  
Shetland (British Birds 56:55-58)  
25 September 1988, juvenile, Pool of Virkie,  
Shetland

**A Red-necked Stint** *Calidris ruficollis*  
31 August 1994, juvenile, recently dead, Fair  
Isle, Shetland (Birding World 7:355-358)

**A Least Sandpiper** *Calidris minutilla*  
14 August 1955, shot, Virkie, Shetland  
(Scottish Naturalist 1957:170)  
11-14 September 1965, Cadder, near Lenzie,  
Lanark (Scottish Birds 4:506)  
31 July - 4 August 1988, adult, Cove, near  
Aberdeen, Grampian

**A Sharp-tailed Sandpiper** *Calidris*  
*acuminata*  
13-21 October 1956, Hamilton, Lanark  
(Scottish Birds 1:94-96, 254, 256-7)  
17 August 1985, adult, Aberlady Bay, Lothian  
(Scottish Birds 14:124)  
13-15 September 1993, adult, Scatness,  
Shetland

**A Stilt Sandpiper** *Micropalama*  
*himantopus*  
18 April 1970, Dornoch, Sutherland (British  
Birds 64:350)  
11-18 September 1976, Garth's Loch,  
Scatness, near Sumburgh, Shetland

**B Eskimo Curlew** *Numenius borealis*  
6 September 1855, shot, Cairn Monearn,  
near Stonehaven, Kincardine (The Naturalist  
1855:265)  
29 September 1878, shot, Slains, Aberdeen  
21 September 1880, Forest of Birse,  
Kincardine

**A Hudsonian Godwit** *Limosa*  
*haemastica*  
26 September 1988, near Collieston,  
Grampian (British Birds 83:463)

**A Upland Sandpiper** *Bartramia*  
*longicauda*  
13 October 1933, adult female, shot, Ruthwell,  
Dumfries (British Birds 27:205-6)  
5 October 1970, Fair Isle, Shetland  
25 September 1975, Fair Isle, Shetland  
24 April 1980, Hirta, St. Kilda, Western Isles  
22 September - 6 October 1993, juvenile,  
found dead on 18 November, Foula, Shetland

**A Greater Yellowlegs** *Tringa*  
*melanoleuca*  
26-27 May 1953, Dunrossness, Shetland  
(British Birds 48: 363)  
25 October 1957, immature male moulting  
into winter plumage, subsequently found dead,  
Ythan Estuary, Aberdeen  
14 August 1978, Peninerine, South Uist,  
Western Isles  
19 May 1985, Loch Sligachan, Skye, Highland  
25 October 1985, Glenegedale, Islay,  
Strathclyde

**A Solitary Sandpiper** *Tringa solitaria*  
A few years previous to 1870, shot, Banks of  
Clyde, Lanark (Ibis 1870:292)  
20 October 1990, juvenile, Malaclete, North  
Uist, Western Isles  
13 - 15 September 1992, juvenile, Fair Isle,  
Shetland (Scottish Birds 17:62-64)

**A Terek Sandpiper** *Xenus cinereus*  
20-21 June 1975, Whalsay, Shetland (Scottish  
Birds 10:53-5)  
5-12 June 1977, Sandside Bay, Highland  
5-8 June 1987, Tankerness, Orkney  
25 May 1991, male, song heard, Mid Yell  
Voe, Shetland

- A Grey-tailed Tattler** *Heteroscelus brevipes*  
27 November - 27 December 1994, juvenile, Burghead, Grampian (Birding World 7:469-472)
- A Lesser Crested Tern** *Sterna bengalensis*  
21-22 August 1987, Musselburgh, Lothian (Lothian Bird Report 1987:79)  
7-16 August 1989, adult, Musselburgh, Lothian - presumed same bird; juvenile hybrid x Sandwich tern *S. sandvicensis* Musselburgh, Lothian 8-12 and 25 August 1989, same 2 September, Aberlady Bay, Lothian  
16 May 1993, adult, St Abbs Head, Borders - presumed same as earlier bird
- A Forster's Tern** *Sterna forsteri*  
6 October - 9 November 1985, age uncertain, Musselburgh and Granton Harbour, Lothian (Scottish Birds 14:126)
- A Bridled Tern** *Sterna anaethetus*  
6-7 August 1979, first summer, Stromness, Orkney (British Birds 73:513)  
2 August 1988, Sands of Forvie, Grampian  
21 July 1993, Eigg, Highland
- B Sooty Tern** *Sterna fuscata*  
End of May 1939, moulting into 2nd winter, dead, Myatt Hill, near Denny, Stirling (British Birds 33:197-8)  
22 April 1954, Isbister, Rendall, Orkney
- B Whiskered Tern** *Chlidonias hybridus*  
29 May 1894, adult male, shot, Nithsdale, Dumfries (Annals of Scottish Natural History 1894:179)
- A Rufous Turtle Dove** *Streptopelia orientalis*  
31 October - 1 November 1974, first year, Fair Isle, Shetland (Scottish Birds 10:55)
- A Great Spotted Cuckoo** *Clamator glandarius*  
14-30 August 1959, immature, Rendall, Orkney (Scottish Birds 1:152)
- B Black-billed Cuckoo** *Coccyzus erythrophthalmus*  
6 November 1950, first winter, dead, Southend, Kintyre, Argyll (Scottish Naturalist 1951:131)  
11 October 1953, died 12th, Foula, Shetland (Scottish Naturalist 1953:196)
- B Eagle Owl** *Bubo bubo*  
1830, shot, Sanday, Orkney (T E Buckley and J A Harvie-Brown 1891 A Vertebrate Fauna of the Orkney Islands p140 Douglas, Edinburgh)  
Autumn 1863, near Haroldswick, Unst, Shetland  
Early March 1871, Baltasound and Huney, Unst, Shetland  
February 1883, Duntrune, Kilmartin, Argyll
- A Hawk Owl** *Surnia ulula*  
Winter 1860/61, shot, Skaw, Unst, Shetland (H L Saxby 1894 The Birds of Shetland p 54-55 McLaren and Stewart, Edinburgh)  
December 1863, shot, Maryhill, Lanark  
November 1868, shot, Greenock, Renfrew  
21 November 1898, adult female, shot, Gight, Aberdeen  
12-13 September 1983, near Lerwick, Shetland and 20-21 September 1983, same bird, Bressay, Shetland
- A Common Nighthawk** *Chordeiles minor*  
12 September 1978, trapped, near Kirkwall, Orkney (Scottish Birds 11:85)
- A Chimney Swift** *Chaetura pelagica*  
8-10 November 1991, St Andrews, Fife (Scottish Birds 16:216-218)

**A Needle-tailed Swift** *Hirundapus caudacutus*

11-12 June 1983, South Ronaldsay, Orkney (Scottish Birds 13: Scottish Bird Report 1984:50)

25 May - 6 June 1984, Quendale, Shetland  
28 May - 8 June 1988, Hoy, Orkney  
11-14 June 1991, Noss, Shetland

**A Little Swift** *Apus affinis*

29 May 1985, St Andrews, Fife (Scottish Birds 14:257-8)

1 November 1991, Fair Isle, Shetland

**A Lesser Spotted Woodpecker** *Dendrocopos minor*

23 September 1968, Stirling/Perth boundary, 2 birds at site where suspected during previous 2 years, not seen 1969, 3 seen there early January 1970 (Scottish Birds 6:210-12)

Other records (such as those mentioned in V M Thom 1986 Birds in Scotland p254 Poyser Calton) are undocumented and therefore unsatisfactory.

**A Calandra Lark** *Melanocorypha calandra*

28 April 1978, Fair Isle, Shetland (Scottish Birds 11:25-6)

21 September 1994, St Kilda, Western Isles

**A Bimaculated Lark** *Melanocorypha bimaculata*

8 June 1976, Fair Isle, Shetland (British Birds 72:462-63)

**B Crested Lark** *Galerida cristata*

2 November 1952, Fair Isle, Shetland (British Birds 46:211)

**B Buff-bellied Pipit** *Anthus rubescens*

30 September 1910, immature male, caught, St Kilda, Outer Hebrides (Annals of Scottish

Natural History 1911:51-2)

17 September 1953, immature, Fair Isle, Shetland

**A Alpine Accentor** *Prunella collaris*

6 October 1908, Fair Isle, Shetland (WE Clark 1912 Studies in Bird Migration Vol 2 p146 Gurney and Jackson, London)

27-28 June 1959, Fair Isle, Shetland

**A Siberian Rubythroat** *Luscinia calliope*

9-11 October 1975, first winter male, trapped, Fair Isle, Shetland (British Birds 72:89-94)

**A Isabelline Wheatear** *Oenanthe isabellina*

At least 17 October - 10 November 1979, trapped 23 October, Girdleness, Grampian (British Birds 74:182-85)

20-21 September 1993, Whalsay, Shetland

**A Rock Thrush** *Monticola saxatilis*

17 May 1910, adult male, trapped, Pentland Skerries, Orkney (Annals of Scottish Natural History 1910:148-149)

8 November 1931, Fair Isle, Shetland

16 October 1936, Fair Isle, Shetland

17 June 1962, female, St Kilda

30 June 1970, first summer male, trapped, Fair Isle, Shetland (Scottish Birds 6:336)

**A Blue Rock Thrush** *Monticola solitarius*

4-7 June 1985, found dead on 8 June, first summer male, Skerryvore Lighthouse, Strathclyde (British Birds 88:130-32)

**A Siberian Thrush** *Zoothera sibirica*

1-4 October 1954, adult male, Isle of May, Fife (Scottish Birds 8:114, British Birds 48:21-25)

13 November 1984, male, South Ronaldsay, Orkney

1-8 October 1992, trapped, first winter female, North Ronaldsay, Orkney

- A Hermit Thrush** *Catharus guttatus*  
2 June 1975, Fair Isle, Shetland (British Birds 72:414-17)
- A Swainson's Thrush** *Catharus ustulatus*  
25-29 October 1980, Scatness, Shetland (British Birds 74:484)  
30 September - 6 October 1990, Fair Isle, Shetland  
21 October 1993, trapped, Holm, Orkney
- A Dusky Thrush** *Turdus naumanni*  
18-21 October 1961, first winter female, trapped, Fair Isle, Shetland (British Birds 55:577)  
24 September 1968, Whalsay, Shetland (Scottish Birds 5:392-94)  
6-13 November 1975, Firth, Shetland  
16-17 October 1993, probably since 15th, first winter male, Fair Isle with another first winter male 17 October 1993.
- A Cetti's Warbler** *Cettia cetti*  
5 October 1993, freshly dead, Leith, Edinburgh (Scottish Birds 17:176-7)
- A Thick-billed Warbler** *Acrocephalus aedon*  
6 October 1955, trapped, Fair Isle, Shetland (British Birds 49:89-93)  
23 September 1971, trapped, Whalsay, Shetland, died Lerwick 25 September
- A Olivaceous Warbler** *Hippolais pallida*  
24-26 September 1967, trapped, Isle of May, Fife, killed by Great Grey Shrike *Lanius excubitor* (Scottish Birds 10:24-5)
- A Dartford Warbler** *Sylvia undata*  
18 May 1983, St Abbs Head, Borders (Scottish Birds 13:52-3)
- A Marmora's Warbler** *Sylvia sarda*  
23-27 May 1993, in song, St Abbs Head, Borders (Birding World 6:182)
- A Ruppell's Warbler** *Sylvia rueppelli*  
13 August - 16 September 1977, male, Dunrossness, Shetland (British Birds 74:279-283)  
3-19 October 1990, male, trapped 3rd, Whalsay, Shetland
- A Orphean Warbler** *Sylvia hortensis*  
10 October 1982, immature, trapped Seton Park, Aberdeen (British Birds 77:552)
- A Brown Shrike** *Lanius cristatus*  
30 September - 2 October 1985, adult, Sumburgh, Shetland (British Birds 86:600-604)
- A Nutcracker** *Nucifraga caryocatactes*  
1 October 1868, shot, Sanday, (T E Buckley & J A Harvey-Brown 1891 A Vertebrate Fauna of the Orkney Islands p125 Douglas, Edinburgh)  
October 1868, shot, Invergarry, Inverness  
early September 1891, Corsemalzie, Wigtownshire  
21-23 August 1968, Lerwick, Shetland
- A Red-eyed Vireo** *Vireo olivaceus*  
13 - 16 October 1985, first winter, Wick, Highland (British Birds 81:588)  
1-7 October 1988, Newton Plantation, North Uist, Western Isles  
8 November 1988, Thurso, Highland  
13-14 October 1991, Barns Ness, Lothian  
3 October 1992, Arinagour, Coll, Strathclyde
- A Trumpeter Finch** *Bucanetes githagineus*  
8-9 June 1971, Handa, Sutherland (British Birds 70:45-49)  
26-28 May 1981, male, Sanday, Orkney  
4 June 1992, male, Balnakeil, near Durness, Highland

- A Pine Grosbeak** *Pinicola enucleator*  
8-9 November 1954, adult female, trapped, Isle of May, Fife (British Birds 48:133-4)  
25 March - at least 25 April 1992, male, probably first year, in song, Lerwick, Shetland
- A Evening Grosbeak** *Hesperiphona vespertina*  
26 March 1969, male, St Kilda, Outer Hebrides (British Birds 64:189-194)  
10-25 March 1980, adult female, Nethy Bridge, Highland
- A Spanish Sparrow** *Passer hispaniolensis*  
11-19 August 1993, male, trapped, North Ronaldsay, Orkney (Birding World 6:309-311)
- B Black-and-white Warbler** *Mniotilta varia*  
Mid-October 1936, dead, Scalloway, Shetland (British Birds 53:98)
- A Tennessee Warbler** *Vermivora peregrina*  
6-20 September 1975, immature, trapped, Fair Isle, Shetland (British Birds 74:90-94)  
24 September 1975, immature, trapped, Fair Isle, Shetland (different bird)  
5-7 September 1982, trapped, Holm, Orkney
- A Yellow Warbler** *Dendroica petechia*  
3-4 November 1990, male, Helendale, Lerwick, Shetland (British Birds 84:500; 86:530)  
24 August 1992, first winter male, trapped, North Ronaldsay, Orkney
- A Chestnut-sided Warbler** *Dendroica pensylvanica*  
20 September 1985, first year, Fetlar, Shetland (British Birds 86:57-61)
- A Blackburnian Warbler** *Dendroica fusca*  
7 October 1988, first winter male, Fair Isle, Shetland (British Birds 83:489)
- A Cape May Warbler** *Dendroica tigrina*  
17 June 1977, singing male, Paisley Glen, Renfrew, Strathclyde (British Birds 73:2-5)
- A Yellow-rumped Warbler** *Dendroica coronata*  
18 May 1977, male, Fair Isle, Shetland (British Birds 71:526)  
22-23 October 1982, Newton, North Uist, Western Isles
- A Blackpoll Warbler** *Dendroica striata*  
30 September - 3 October 1985, first winter, trapped, Whalsay, Shetland (Scottish Birds 15 :Scottish Bird Report 1987:50)  
6 October 1990, Sumburgh, Shetland  
30 September 1991, Fair Isle, Shetland
- A American Redstart** *Setophaga ruticilla*  
1 November 1982, female/immature, Portnahaven, Islay, Strathclyde (British Birds 76:525)
- A Ovenbird** *Seiurus aurocapillus*  
7-8 October 1973, trapped, Out Skerries, Shetland (British Birds 68:453-455)
- A Common Yellowthroat** *Geothlypis trichas*  
7-11 June 1984, male, Fetlar, Shetland (British Birds 78:582, Scottish Birds 14:124)
- A Hooded Warbler** *Wilsonia citrina*  
10 September 1992, Hirta, St Kilda, Western Isles (British Birds 86:530, Birding World 5:380)

**A Savannah Sparrow** *Ammodramus sandwichensis*

30 September - 1 October 1987, trapped, Fair Isle, Shetland (British Birds 85:561-564)

**A Song Sparrow** *Zonotrichia melodia*

27 April - 10 May 1959, male, Fair Isle, Shetland (British Birds 53:429)

17 April - 7 May 1979, male, trapped, Fair Isle, Shetland and 10 June 1979, (no sign of a ring), Sumburgh, Shetland

11-26 April 1989, male, trapped, Fair Isle, Shetland

**A White-crowned Sparrow** *Zonotrichia leucophrys*

15-16 May 1977, trapped, Fair Isle, Shetland (British Birds 73:466-470)

**A Dark-eyed Junco** *Junco hyemalis*

1 May 1966, Foula, Shetland (British Birds 60:332)

10 May 1967, Foula, Shetland

7 May 1969, Out Skerries, Shetland

19 May 1977, Glen Affric, Highland

3-4 May 1992, Hamilton, Strathclyde

**A Cretzschmar's Bunting** *Emberiza caesia*

10-20 June 1967, male, Fair Isle, Shetland (British Birds 62:144-148)

9-10 June 1979, male, Fair Isle, Shetland

**A Yellow-browed Bunting** *Emberiza chrysophrys*

12-23 October 1980, male, age uncertain, Fair Isle, Shetland (British Birds 76:217-225)

22-23 September 1992, North Ronaldsay, Orkney

**A Pallas's Reed Bunting** *Emberiza pallasi*

29 September - 11 October 1976, adult female, Fair Isle, Shetland (British Birds 73:402-408)

17-18 September 1981, first year, trapped, Fair Isle, Shetland

**A Rose-breasted Grosbeak**

*Pheucticus ludovicianus*

7 October 1983, first winter male, South Uist, Western Isles, taken into care and died next day (British Birds 77:560)

**A Bobolink** *Dolichonyx oryzivorus*

18 September 1975, Out Skerries, Shetland (British Birds 70:222)

28 September 1986, St Kilda, Western Isles

29 September - 2 October 1986, Fair Isle, Shetland

**A Brown-headed Cowbird** *Molothrus ater*

24 April 1988, male, Ardnave, Islay, Strathclyde (British Birds 87:284-288)

**A Northern Oriole** *Icterus galbula*

19-20 September 1974, immature, Fair Isle, Shetland (Scottish Birds 10:58-9)

30 September - 3 October 1988, female or first winter male, trapped, Benbecula, Western Isles, probably present since about 22-24th

**CATEGORY D****D1 Greater Flamingo** *Phoenicopterus ruber*

27-31 May 1988, Pool of Virkie, Shetland (Shetland Bird Report 1988:13)

31 May - 28 June 1994, adult, Ythan estuary, Grampian

These 2 records are the only ones, so far, to be admitted to this Category by the BOU.

**D1 Egyptian Goose** *Alopochen aegyptiacus*

16 March - 4 April 1977, Levenmouth - Grahamston, Fife (Scottish Birds 10:124)

21-30 April 1977, Coulmore, Black Isle, Highland



March - May 1980 and 15-19 April 1981,  
 Linlithgow, Lothian  
 1-14 February 1992, 2, Torven, Highland

**D1 Baikal Teal** *Anas formosa*  
 5 February 1958, female, shot, Loch Spynie,  
 Morayshire (British Birds 74:321, 460)  
 19 February - 7 April 1973, male,  
 Caerlaverock, Dumfries

**D1 Saker Falcon** *Falco cherrug*  
 1-5 October 1976, Out Skerries, Shetland  
 (British Birds 73:530)  
 27-29 May 1978, Fetlar, Shetland  
 23 October - 3 December 1986, first winter,  
 Fair Isle, Shetland

**D2 Northern Flicker** *Colaptes auratus*  
 July 1981, corpse found, probably died on  
 boardship and decomposed in dry conditions,  
 Caithness, Highland (British Birds 75:531)

**D1 Cedar Waxwing** *Bombycilla cedrorum*  
 25-26 June 1985, Noss, Shetland (Ibis  
 135:221, British Birds 86:538)

**D1 Asian Brown Flycatcher** *Muscicapa  
 dauurica*  
 1-2 July 1992, first summer, trapped, Fair

Isle, Shetland (Ibis 136:254, Birding World  
 5:252-255, British Birds 87:247-252)

**D1 Daurian Starling** *Sturnus sturninus*  
 7-28 May 1985, male, trapped, Fair Isle,  
 Shetland (British Birds 82:603-612, Ibis  
 136:497)

**D1 Chestnut Bunting** *Emberiza rutila*  
 9-13 July 1974, adult male, Foula, Shetland  
 (British Birds 70:444)  
 11 June 1985, first year female, trapped, Isle  
 of May, Fife  
 15-16 June 1986, first summer male, trapped,  
 Fair Isle, Shetland  
 2-5 September 1994, female, trapped, Out  
 Skerries, Shetland

**D1 Blue Grosbeak** *Gurialca caerulea*  
 mid - 26 August 1970, male, Out Skerries,  
 Shetland (Scottish Birds 8: Scottish Bird  
 Report 1970:397)  
 10-11 March 1972, Kiltarlity, Inverness  
 22 May 1977, male, dead, Ettrick, Borders

**D1 Indigo Bunting** *Passerina cyanea*  
 3-7 August 1964, male, Fair Isle, Shetland  
 (British Birds 73:531)

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## Changes since 1890 in the size of Pink-footed Geese wintering in Britain

H BOYD & J BERRY

**Weights and linear measurements of Pink-footed Geese shot in Fife between 1891 and 1953 are compared with measurements of geese shot in 1966-68 and caught for ringing in 1953-59 and 1987-94. Before 1948, adult females tended to be heavier and longer-winged than those now living. In 1891-1909, when mean weights were higher than in any recent period, they were lowest in October and increased gradually until April, without a dip in midwinter, as has been found in recent winters. More historical records are needed to determine whether the pattern has really changed**

### Introduction

It has been shown recently that individuals of Arctic nesting Snow Geese *Anser caerulescens* are decreasing in size, the decreases being associated with reductions of preferred food plants due to heavy grazing near breeding colonies, following large increases in the total numbers of geese (Jefferies et al 1979, Kerbes et al 1990, Cooch et al 1991, 1993). This paper examines the possibility that, before 1950, when the Pink-footed Geese *Anser brachyrhynchus* breeding in Iceland and east Greenland were much scarcer (<40,000) than they are now (>200,000), their sizes and seasonal changes in weight might have differed from those of geese now living.

### Materials and methods

One of us (JB) weighed and measured most of the geese which he shot in 1928-53, and has records of weights of geese shot by William Berry between 1891 and 1929. HB helped weigh large numbers of Pink-footed Geese caught in rocket nets between 1953 and 1959 (Beer & Boyd 1962). In 1966-68 C R G Campbell weighted and measured geese

shot in Kinross and Perth. Mr Carl Mitchell has provided us with preliminary results from weighing and measuring Pink-footed Geese caught by the Wildfowl and Wetlands Trust for ringing at several sites in England and Scotland in 1987-94. This makes it possible to compare the weights of Pink-footed Geese in 5 different periods during the last 100 years; wing lengths in 1929-48 with those in 1966-68 and 1987-94; and tarsus lengths in 1929-48 and 1987-94. Although very few geese were handled in any one year between 1891 and 1953, the pooled samples are sufficient to demonstrate several differences in size over the last 100 years.

From 1891 to 1948, and in 1953, the weights of geese were recorded in Imperial measure, to the nearest half ounce (W Berry) or ounce. These records have been converted metrically (to 10g). In 1957-59, 1966-68 and 1987-94, metric balances were used. Because live geese need to be restrained while being weighed, and some persist in being active, the accuracy of live weighings may be less than that achievable with dead birds. This may help to account for the high variability in the recorded weights of live geese discussed by Beer & Boyd (1962).

Comparisons of dead and live weights might be affected by different biases in the choice of targets by catchers and shooters. Almost all the geese shot by William and John Berry were Pink-footed, so that they were not selecting that species from mixed flocks by size. Whether they were aiming at small individuals (as Cree Indians would, knowing that young geese are better to eat), or exceptionally large ones (as trophy hunters try to do), can only be determined now by tests for skewness and kurtosis in the distributions of the weights and measurements about the period means. Though the linear measurements show some right skewing, this does not exceed that generally found in sets of biological measurements (Simpson and Roe 1939), so that it is reasonable to believe that selection by size was not achieved, even if it had been attempted.

Catches for ringing are also potentially biased; for example, geese caught early in the morning tend to be lighter, and to include more first winter birds, than those taken later in the day, because families with young geese tend to arrive first at feeding sites. As the exact records of times of catch in 1953-59 have been lost this source of bias cannot be explored.

## Results

### Linear measurements

Table 1 summarises the measurements of total length, wing, exposed culmen and tarsus made on geese taken in Fife between 1929 and 1948. A few taken in later years are not included in Table 1. Not all measurements were made on all individuals. Tables 2 and 3

**Table 1 Linear measurements of Pink-footed Geese in Fife, 1929-1948. n = sample size (standard deviation in brackets)**

measurement (mm)	adult male		adult female		1st winter male		1st winter female	
	n	mean	n	mean	n	mean	n	mean
total length	27 (25.0)	751	34 (34.4)	724	3 (39.7)	685	11 (56.7)	694
wing	21 (10.5)	441	35 (18.5)	434	4 (17.1)	402	10 (16.4)	420
culmen (from feathers)	22 (2.2)	46.1	23 (2.2)	44.5	1	40	14 (2.9)	44.1
tarsus	17 (4.8)	70.8	25 (5.8)	69.7	3 (4.4)	66.0	10 (5.9)	67.9

**Table 2 Mean wing and tarsus lengths(mm) of adult Pink-footed Geese in Britain at different periods, 1850-1994. (Standard deviation in brackets)**

	c.1850 (1)	1928-48 (2)	1966-68 (2)	1987-94 (3)
<b>Wing</b>				
males	444	441 (10.5)	452 (16.1)	449 (17.2)
females	419	434 (18.5)	432 (11.6)	427 (16.4)
<b>Tarsus</b>				
males	64.5	70.8 (4.8)	-	74.3 (3.5)
females	59.3	69.7 (5.8)	-	71.3 (3.5)

Sources: (1) MacGillivray (1852); (2) this study; (3) Wildfowl & Wetlands Trust

record comparable measurements from other, later samples and from several published sources. The few first winter males in the Fife sample were smaller than most of the first winter females, an anomaly not found in any other samples. Because all 4 of these linear measurements are liable to be affected by the detailed techniques used by the individuals making them, caution is necessary when comparing samples. For example, it seems very probable that Macgillivray (1852) measured the tarsus in a different way from that used later. Nevertheless, his measurements (of birds obtained from the Edinburgh markets) show a large difference between males and females, resembling those found after 1950, and unlike the Fife sample.

Although the general impression from Tables 1 - 3 is that there have been no substantial

changes in body measurements, the mean wing lengths of both sexes in 1929-48 were different from those measured more recently. In later samples, the wings of males have tended to be longer, and those of females shorter, than those of the geese taken in Fife. The mean tarsus length of males has also been greater.

Bauer and Glutz (1968) claimed that the Pink-footed Geese breeding in Spitzbergen and wintering in western continental Europe are smaller than those from Iceland and Greenland, while Ogilvie (1978) noted that "It has been claimed that the Svalbard birds are a little larger than the others but insufficient measurements have been obtained to show this conclusively". Samples of adult males and females wintering in Denmark in 1910-21 and in The Netherlands in the 1970s show no

**Table 3** Linear measurements (mm) of adult Pink-footed Geese from Spitzbergen wintering in Denmark, 1910-1921, and in the Netherlands, 1970-1975. (Standard deviations in brackets)

	Males		Females	
	Denmark	Netherlands	Denmark	Netherlands
Wing	442 (11.8)	443 (10.8)	424 (4.8)	420 (9.1)
Culmen	47.1 (2.5)	47.2 (2.1)	44.3 (1.8)	43.2 (1.4)
Tarsus	74.2 (7.5)	76.4 (2.5)	68.5 (3.9)	69.4 (3.0)

significant differences from each other in wing and tarsus length (Table 3). The mean wing length of these European females is much less than those of the Fife birds and of the large samples taken in Britain since 1987. The mean length of males' wings was similar to those in Fife in 1928-48, though much shorter than that of the recent British or the Fife samples. The mean tarsus length of the adult males is similar to that of recent British birds and markedly longer than in those from Fife.

Changes in wing and tarsus length do not necessarily indicate changes in body size. Body length does, but has considerable practical disadvantages, since it can only be measured with some consistency on dead birds, with difficulty on live birds and not at all on museum skins of geese, the necks of which have usually been shortened or bent to reduce the space taken up by the specimen. The Fife sample shows some correlation between body length and wing length, much stronger in adult females ( $r=0.748$ ,  $p<0.001$ ,  $n=28$ ) than adult males ( $r=0.386$ ,  $p=0.05$ ,

$n=25$ ). The correlations were strong after 1940 (females  $r=0.786$ ,  $p<0.001$ ,  $n=15$ ; males  $r=0.804$ ,  $p<0.001$ ,  $n=10$ ) but weak earlier (females  $r=0.328$ , males  $r=0.349$ , neither significant at the 10% level).

### Weights

Although nothing is known of the relative abundance of first winter and older birds, or of females and males, among the geese handled by William Berry in 1891-1909, their mean weight seems to have been greater than that of the geese shot in Fife in 1928-48 and near Loch Leven in 1966-68, and of those caught for ringing in 1953-59 and 1987-94 (Table 5). There are considerable differences between the means of the age and sex classes in the 3 more recent samples (Table 6), so that there is not a simple pattern of decline through these samples.

Although all the monthly samples of adults from Fife are small, Table 7 suggests substantial differences in the pattern of change through the winter in the 4 periods. In 1891-

**Table 4 Differences in mean lengths (mm) of wing and tarsus of adult Pink-footed Geese in Fife, 1929-48 from (a) British wintering adults in later periods and (b) adults wintering in Denmark and the Netherlands**

Statistical significance of t: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Interval	Wing		Tarsus	
	males	females	males	females
(a) Fife, 1929-49 compared to Britain				
1950s	+10***	-6**	+5.6***	-0.3
1966-68	+11*	-2	-	-
1987-94	+8*	-7**	+3.5***	+1.6
(b) Europe compared to				
Fife, 1929-48	-2	+12.4**	-5.0**	-0.05
Britain, 1987-94	+6.3*	+5.4	-1.5	+1.55

**Table 5 Mean weights (kg, to 0.01) of Pink-footed Geese wintering in Britain during 3 periods from 1891 to 1968. Because the records for the first period were not classed by age and sex, the records within each of the 2 later periods are also lumped**

Period	n	mean	SD	significances of differences		
				1928-1948	1966-1968	1987-1994
1891-1909	39	2.84	0.33	NS	***	***
1928-1948	71	2.75	0.40	—	***	***
1966-1968	113	2.49	0.32		—	**
1987-1994	1932	2.59	0.34			

\*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

**Table 6 Mean weights (kg) of Pink-footed Geese wintering in Britain during 3 periods since 1928, grouped by age and sex.**

	1928-1948			1966-1968			1987-1994		
	n	mean	SD	n	mean	SD	n	mean	SD
Adult males	21	2.82	0.31	30	2.77	0.34	577	2.85	0.30
Adult females	21	2.75	0.30	30	2.52	0.23	516	2.56	0.27
1st w. males	4	2.52	0.11	22	2.43	0.39	452	2.54	0.29
1st w. females	6	2.23	0.39	31	2.23	0.32	383	2.29	0.27

1909, the mean monthly weights of the geese shot were rather higher in midwinter than in autumn, before peaking in April. The April means were also highest in those 2 later periods in which some geese were weighed late in the season.

## Discussion

The recent pattern of weights increasing from October (soon after migration) to November, then falling to a midwinter low before rising to a pre migration peak in April, seems to be common in migratory waterfowl, so that the apparent lack of a midwinter drop in 1891-1909 is unexpected. Much of the benefit which modern agricultural practices have conferred on geese stems from improvements in grass production, including the replacement of some permanent grassland by short term leys and the use of varieties that begin growth at low temperatures early in the spring, as well as heavy use of fertilisers to increase yields. With none of those potential advantages available at the end of the 19th century, how might it have been possible for geese wintering in Fife to maintain high weights throughout the winter? No immediate

answer can be offered. Historical records of weights and measurements from other parts of the wintering range might show whether this difference from today in the pattern of weight change through the winter was widespread, or simply the chance outcome of dependence on small samples. Investigations into past variations in climate and agriculture are also needed.

More generally, if we are to learn ecological lessons from the past, rather than supposing (unwisely) that only new data are of use in dealing with current problems, there is an urgent need to rescue manuscript and early published records from oblivion, by establishing suitable archives for their collection and preservation. The Waterston Library already serves this function for Scottish ornithology, but the SOC lacks the resources to search for additional records or to promote the uses to which historical information can be put. A sense of urgency in the search for historical material has been heightened by the advent of computers. Though admirable for dealing with large volumes of data, they tend to suggest a false discontinuity between the present and the past, by discouraging

**Table 7 Monthly mean weights (kg) of Pink-footed Geese from October to April during 4 periods, from 1891-1909 to 1987-1994 Adults and first winter birds pooled**

Period		Oct	Nov	Dec	Jan	Feb	Mar	Apr
1891-1909	mean	2.76	2.74	2.78	2.86	2.86	-	2.94
	SD	0.33	0.24	0.72	0.41	0.26		0.34
1928-1948	mean	2.77	2.84	2.58	2.84	2.95	2.65	2.89
	SD	0.62	0.16	0.24	0.44	0.17	0.18	0.19
1966-1968	mean	2.31	2.34	2.64	2.53	2.66	-	-
	SD	0.33	0.45	0.34	0.33	0.40		
1987-1994	mean	2.59	2.68	2.52	2.40	2.57	2.54	2.79
	SD	0.32	0.35	0.37	0.31	0.33	0.30	0.39

searches for information not already stored in machine readable form: ecology existed long before the 1970s.

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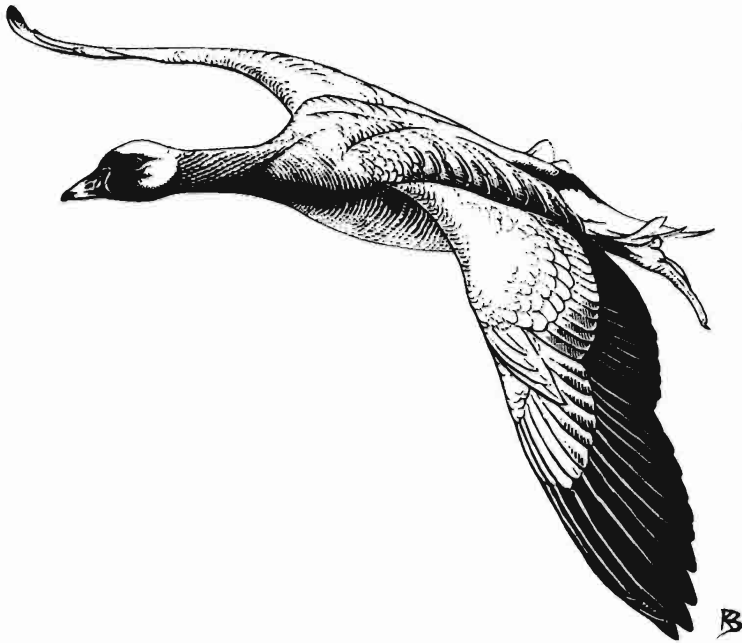
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## A census of the St Kilda gannetry in May 1994

S MURRAY & S WANLESS

An aerial photographic survey of the 3 sub colonies of the St Kilda gannetry was carried out on 15 May 1994. The overall total for St Kilda was 60,428 apparently occupied sites (AOS), with 14,660 AOS on Stac Lee, 12,950 AOS on Stac an Armin and 32,818 AOS on Boreray. Numbers had increased since the last survey in 1985; totals were 8.4%, 9.3% and 33.0% higher on Stac Lee, Stac an Armin and Boreray, respectively. The overall total was 20.7% higher. For Boreray some of this increase was almost certainly due to differences in methodology between the 2 surveys (the 1985 count was made mainly from land or sea based counts and the standard of photographs was generally lower than in 1994). However, increases in some sections were undoubtedly real, and in some cases, were associated with an expansion of breeding distribution. Count methodology and photographic standard were directly comparable for Stac Lee and Stac an Armin and the increases of 0.9% pa and 1.0% pa can be regarded as genuine. The average rate of increase of 3.2% pa for Boreray between 1985-94 is likely to be an overestimate. A comparison with the 1959 Boreray count suggests an average rate of increase of 0.8% pa between 1959-94. We conclude that a slow but sustained increase of c0.9% pa has taken place in the St Kilda gannetry over the last 35 years

### Introduction

There is a long tradition of counting Gannets *Morus bassanus* among British ornithologists with 7 major censuses this century. During this time the number of gannetries in the east Atlantic has increased from 12 to 39 and the number of occupied sites has risen from c91,000 to c223,400 (Wanless 1987). The largest gannetry is on St Kilda, Western Isles where, during the last full survey in 1985, the colony contained 50,050 apparently occupied sites which represented 22% of the total east Atlantic population (Murray & Wanless 1986). Another major census of east Atlantic gannetries was completed between 1994-95 in which obtaining an accurate count of St

Kilda had high priority. The site is also designated as a Special Protection Area (SPA) by virtue of its importance to Gannets and other seabirds.

Undoubtedly St Kilda is the hardest gannetry in the world to count both because of its size and the complexity of the cliffs. Censusing it presents a formidable logistic challenge and, as a result, past efforts to count the colony from the land and/or sea have been limited. The archipelago is remote and subject to severe and unpredictable weather and an aerial survey offers the most efficient census method. However, this approach is costly and can be fraught with difficulty. Of the 6 attempts to date, the most successful in terms

of coverage and photographic quality have been the first in 1959 (Boyd 1961) and the present survey in 1994.

## Methods

### Aerial Survey

An aerial photographic survey of the St Kilda gannetry was carried out on 15 May 1994 in ideal weather conditions, with good to excellent visibility. The aircraft was in the vicinity of the colony for about 50 minutes; much of this time was spent c5 km offshore while the pilot was briefed on the topography of Boreray and the stacs. Four photographers were on board, which enabled maximum coverage to be achieved in the minimum time. The coverage of both Stac Lee and Stac an Armin was completed on one close circuit of each stac. Boreray required level runs at different altitudes along the east and west cliffs separately. There was no disturbance to breeding Gannets and it was clear from the photographs that no nests were left unattended. However, some non breeding and club birds did leave the cliffs. It was also intended to augment the aerial survey with land and sea counts. However, poor weather meant that few landings were possible in 1994. Fortuitously a photograph of section 89 (the only part of the colony for which there were no usable aerial photographs) was taken in late July.

### Counting protocol

The count was made by projecting the colour slides onto a sheet of paper and blocking out the images with a felt tip pen. The counting unit used was the apparently occupied site (AOS: one or 2 Gannets occupying a site suitable for breeding, irrespective of whether any nest material is visible). The standard of

the slides was sufficiently high to allow sites to be counted directly and there was no need to convert counts of individual birds to AOS by the appropriate attendance ratio for pairs (cf Nelson 1978). To facilitate comparisons with previous counts, the colony was divided into sections. Twenty six were used for Boreray; these were amalgamations of the 89 originally delimited by Boyd (1961) for his 1959 count and have been used in the 1979 and 1985 surveys (Murray 1981, Murray & Wanless 1986). Sections for Stac Lee and Stac an Armin were virtually identical to those used in 1985 (Murray & Wanless 1986) but did not correspond to those adopted by Boyd.

### Photographic coverage

Aerial coverage of Stac Lee and Stac an Armin was 100%, and for both the standard of photographs was extremely high. The one exception was the west face of Stac an Armin for which the slides, although perfectly adequate for counting, were of only moderate standard. Except for a small part of sections 80 and 83-88, which were hidden from the air, complete aerial coverage was achieved for sections 1-88 on Boreray. This represented 97.7% of the total count. Hidden areas were estimated to represent 1.4%. No usable aerial view of section 89 was obtained. This section was counted from slides taken from the sea and represented 0.9% of the total.

Many of the sections were photographed from much closer range than has previously been achieved and were of a very high quality. Forty-eight slides were eventually selected from which to make counts of Boreray, 9 and 13 were used for Stac Lee and Stac an Armin respectively. Copies of the count slides and prints showing the section boundaries are lodged with the Seabird Colony Register at JNCC Aberdeen.

**Table 1 Section by section comparison of counts of the Boreray gannetry in June 1985 and May 1994. Counts for 1985 are taken from Murray and Wanless (1986)**

Section	Occupied sites		% change
	1985	1994	
1-2	106	71	-33.0
3-12	1603	1892	18.0
13-15	984	1756	78.4
16-41	3922	5815	48.3
42-43	1070	1316	23.0
44	57	89	56.1
45	522	500	-4.2
46	522	576	10.3
47	521	784	50.5
48	468	835	78.4
49	529	1063	100.9
50	49	34	-30.6
51-57	2974	4068	36.8
58-63	1865	2447	31.2
64	411	549	33.6
65	308	455	47.7
66	435	463	6.4
67-72	1402	1828	30.4
73	326	426	30.7
74-78	1772	2622	48.0
79	413	381	-7.7
80-82 <sup>1</sup>	1385	1723	24.4
83-88 <sup>1</sup>	2754	2831	2.8
89	279	294	5.4
Total	24676	32818	33.0
Note	1 Corrected totals are given for sections 80 and 83-88 in 1994		

## Results

### Boreray

Counts by the 2 observers gave totals of 31,855 and 32,882 AOS respectively. Taking the average of these counts as the best population estimate and adding on 100 AOS and 349 AOS (based on direct counts in 1985) to allow for known under counts of section 80 and 83-88 respectively, gives an overall corrected total of 32,818 AOS on Boreray in 1994. The standard of the count was considered to be high. The 1994 total of 32,818 AOS was 33.0% higher than the last count made in 1985 of 24,676 AOS and almost all sections of the colony had increased (Table 1). However, methodology for the 2 counts differed markedly with a much higher percentage of aerial coverage in 1994 (98%) compared with 1985 (34%). Moreover, the quality of many of the photographs used to

make the 1985 counts was much lower than in 1994. These differences hinder the interpretation of some of the apparent changes shown in Table 1, but it appears that there have been marked changes in colony extent in sections 13-15, 42-43, 48, 49 and the summit and east side of section 83. The apparent increases in sections 16-41 and 51-57 should be treated cautiously as they are likely to be due to the improved quality of aerial coverage.

### Stac Lee

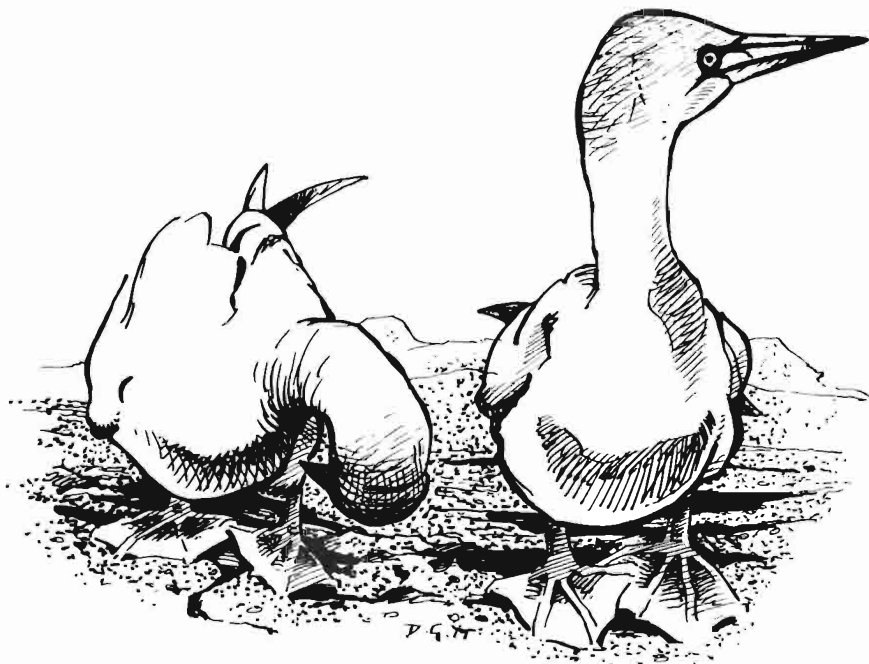
Counts by the 2 observers gave totals of 14,404 and 14,916 AOS respectively indicating an average total of 14,660 AOS. The standard of the count was considered to be high. Comparisons between 1994 and 1985 were not hindered by differences in survey methods or photographic quality. The 1994 total of 14,660 AOS was 8.5% higher

**Table 2 Section by section comparison of counts of the gannetry on Stac Lee in 1985 and 1994. Counts for 1985 are taken from Murray and Wanless (1986)**

Section	Occupied sites		
	1985	1994	% change
Top Table	7098	7141	0.6
Casting Point	2148	2877	33.9
Bothy Face	1063	1525	43.4
North Face	3212	3117	-2.9
Total	13521	14660	8.4

**Table 3 Section by section comparison of counts of the gannetry on Stac an Armin in 1985 and 1994. Counts for 1985 are taken from Murray and Wanless (1986)**

Section	Occupied sites		% change
	1985	1994	
East face and south summit	8241	9089	10.3
Lower east face	1554	1398	-10.0
South centre and lower south ledge	1043	1259	20.7
West face	1013	1204	18.8
Total	11851	12950	9.3



than the 1985 count of 13,521 AOS (Table 2). Most of the increase had occurred on the lower part of the south face ie on Bothy Face and Casting Point. The prominent empty area in front of and above the bothy adjacent to Top Table was still unoccupied. Numbers on Top Table and North Face were very similar to those in 1985 and the very obvious Gannet free ledge on the latter remained uncolonised. There were no obvious changes in distribution suggesting that the observed increase was due to an increase in breeding density.

### **Stac an Armin**

Counts by the 2 observers gave totals of 12,609 and 13,291 AOS respectively indicating an average total of 12,950 AOS. The 1985 and 1994 counts were directly comparable in terms of aerial coverage and photographic quality. The 1994 total of 12,950 AOS was 9.3% higher than the 1985 count of 11,853 AOS (Table 3). The 3 main areas of colony expansion identified in 1985 (details in Wanless 1987) had expanded further by 1994 with the biggest increase occurring in the south centre colony.

### **Discussion**

The 1994 survey indicated that there were 32,818, 14,660 and 12,950 AOS on Boreray, Stac Lee and Stac an Armin respectively. This gives an overall total for St Kilda of 60,428 AOS. Taken at face value this represents a 20.7% increase over the last count of 50,050 AOS in 1985. However, as has been stressed in the results, although count methods and standards for Stac Lee and Stac an Armin were very similar in 1985 and 1994, counting methods differed markedly for Boreray with a much greater percentage of aerial coverage and higher photographic

quality in 1994 compared with 1985. Thus, while we are confident that the observed changes on Stac Lee and Stac an Armin accurately reflect the population trend between 1985 and 1994, changes on Boreray have to be treated more cautiously.

Counts for Stac Lee and Stac an Armin indicate average rates of increase of 0.9 and 1.0% pa respectively between 1985 and 1994. These values are remarkably similar to the rates of increase of 0.9% and 0.8% pa calculated for Stac Lee and Stac an Armin over the period 1959 to 1985 (Boyd 1961, Murray & Wanless 1986).

Counts for Boreray suggest that numbers increased at 3.2% pa between 1985 and 1994. We now consider that the 1985 count was probably too low and the calculated rate of increase is, therefore, too high. Conversely, the increase between 1959 and 1985 was probably bigger than previously suggested (Murray & Wanless 1986). Comparing the 1994 count with that for 1959 (which was also obtained almost entirely from an aerial survey), gives an average rate of increase of 0.8% pa, ie a very similar trend to that shown by Stac Lee and Stac an Armin over the same period. We conclude that a slow but sustained increase has occurred on Boreray and the stacs over the last 35 years, with the St Kilda gannetry increasing at an average rate of 0.9% pa.

This survey has reaffirmed the importance of the St Kilda gannetry and has also highlighted the difficulties involved in censusing this large and complex colony. We strongly recommend that future counts are based primarily on aerial surveys, if possible, with concurrent land and sea visits.

## Acknowledgements

This survey was a partnership project and contributions towards the costs were received from the Scottish Ornithologists' Club, Scottish Natural Heritage, Joint Nature Conservation Committee, the British Trust for Ornithology, the Seabird Group and the Royal Society for the Protection of Birds. We thank all these organisations for their support and Mark Tasker, Emma Brindley, Jeremy Greenwood and Greg Mudge for commenting on an earlier version of the manuscript. The success of the aerial survey was largely due to the flying skills of Alan Mossman of Air Alba. His enthusiasm and cooperation gave us a memorable experience. We are also grateful to Mary Harman, Digger Jackson, Kenny Taylor and Jim Vaughan for backup photography and Mike Harris for helpful discussions.

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## Ravens nesting on buildings in Orkney

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**Ravens have been recorded nesting on buildings in 5 territories on Mainland Orkney between 1972 and 1995, as well as on buildings on other islands in Orkney. Ruined buildings, as described below, provide good substitute nest sites when cliffs and trees are absent. Ravens nesting on buildings on Mainland were more successful than those at other sites although there was no difference in brood size. Such use of buildings by Ravens appears to be more widespread in Orkney than in other parts of Britain. Similar choices elsewhere in the Western Palearctic and in north America are noted. By using this type of nest site Ravens are able to nest in areas where their more typical nest sites, cliffs and trees, are absent**

### Introduction

In the Western Palearctic the typical nesting sites of the Raven *Corvus corax* are on cliffs, both sea and inland, or in trees and are usually difficult of access (Cramp and Perrins 1994). Occasionally man made structures such as pylons or buildings are used. During a study of Ravens on Mainland Orkney it was noted that, although in the majority of Raven territories the nests were on sea cliffs, there were a number of territories in which nests were regularly sited on ruined buildings.

There are historical references to Ravens nesting on buildings in Orkney. Low (1813), writing in 1770, mentioned that Ravens sometimes used the steeples of churches and ruined buildings. Buckley and Harvie-Brown (1891) referred to Wolley's Egg Book where it was stated that, in 1849 when the Kirkwall Cathedral was undergoing repairs, the Ravens that always nested there had moved to the old ruins of the Bishop's palace.

The purpose of this paper is to detail the use of buildings as Raven nesting sites in Orkney during the period 1972 to 1995.

### Study area and methods

The study area involved the whole of Mainland, the largest of the Orkney Islands. It has an area of approximately 490 sq km and a coastline of 234kms, 50kms (21%) of which consists of cliffs over 15 metres in height, 169kms (72%) of low rocky shore and 15kms (6%) of beaches (Mather, Ritchie and Smith 1975). There are areas of moorland and hills which rise to over 260 metres. The low lying land is extensively cultivated, there are a number of large lochs, some small plantations and several quarries, some of which are in regular use.

Annually, from 1972 to 1995, an effort was made to locate all the nesting Ravens on Mainland and, from 1983 to 1995, to record the success of each breeding pair. In the inland areas of the island, particularly where there were no suitable cliffs, quarries or trees to provide nest sites, attention was paid to derelict and disused buildings, especially if they were situated at a distance from human habitation. Additionally, during the study period, any reports from other islands in Orkney of Ravens nesting on buildings were

noted and a number of personal observations were also made on some of these islands.

## Results

The number of nesting pairs of Ravens on Mainland recorded annually during the period 1972 to 1995 varied between 21 and 35, with a total of 47 different territories occupied at least once. The term 'territory' is used to describe a locality such as a stretch of cliff or, inland, an area of mainly agricultural land where a pair of Ravens was nesting. There were usually several nest sites within a territory. In some territories the same nest site was used for several years in succession but in others an alternative site was chosen the following year.

In one territory 3 types of nest site were used: a building, a disused quarry and the steep bank of a burn. In 29 (61.7%) territories the

A nesting attempt was considered to have taken place if a completed lined nest or a nest with eggs or young was found, and to have been successful when it was known that one or more young had fledged from the nest. Brood sizes were of young definitely known to have fledged and are therefore minima. Some young may have died on fledging, or shortly after, and before the visit to record the number of young was made. It is also possible that at cliff sites some of the fledged young were hidden from view.

As can be seen from Table 2, Ravens nesting on buildings on Mainland were more successful than those at other sites on the island, although there was little difference in brood size.

Details of nest sites on buildings were as follows:

**Territory 1** Nest site in the bell tower of a ruined church. There are 2 openings in the tower, one above the other. The upper opening was used most frequently. The church is surrounded by fields and the nearest occupied house about 200 metres away.

**Territory 2** Four different buildings have been used. On the first occasion the nest was built on top of the east gable end of a ruined and roofless chapel. The following year it was built on girders under the galvanised roof of a building on a disused wartime airfield. A local farmer pulled the roof down just after the young fledged, destroying the site. Next year the birds moved to the top of a brick support pillar on a nearby building. This site was used, with varying success, over a period of 9 years. All the old wartime buildings were demolished during the next winter and the following year the pair built a nest on the floor of a loft of a disused cottage but the young

**Table 1 Types of nesting site used in 47 Raven territories from 1972 to 1995**

Type of site	No of territories
Sea cliff 15 metres and over	29
Sea cliff less than 15 metres	6
Building	5
Quarry (used and disused)	5
Tree	2
Inland cliff	1
Steep bank	1

nest sites were on sea cliffs 15 metres or over in height, while 5 (10%) territories had nest sites on buildings and in 4 of these it was the only type of nest site used.

**Table 2 Breeding success of Ravens on Mainland, Orkney 1983-1995**

	No of attempts	No successful *	% successful	Mean brood size
Nests on buildings	42	31	73.80	2.90
All other nests	326	176	53.98	2.88

\* Success means one or more young fledged from that nest



Raven

Jim Young

were shot when they were ready to fledge. The birds then returned to the ruined chapel, nesting about two thirds up on a gable end, using both east and west ends in different years. The farmer who owns the land where the chapel is situated does not interfere with the nests and young have been reared successfully for the past 6 years. The chapel is surrounded by fields and the nearest habitation about 600 metres away.

**Territory 3** Two ruined cottages have been used, with 2 sites on each. On one ruin, the nests were sited on the top of the chimney stack and on the side of the gable end where it meets the chimney. On the other the nest was situated at the base of the chimney stack where some stones were missing, leaving a sheltered recess. Unfortunately, after 7 years the chimney began to lean and the pair moved to the other side, then, shortly after the young fledged, the chimney finally collapsed and the site has not been used since.

**Territory 4** At least 4 sites have been used but, as the newly completed nests have been destroyed at 2 sites, it is possible that there have been attempts at other sites also and that nests have been removed before I have been able to locate them. Of the known sites, one was on top of a chimney stack of a disused cottage, 2 were situated on the roofs of ruined cottages and against the chimney stacks, while the fourth was against the kiln end, on the roof of an outbuilding of a disused cottage. The nearest occupied houses at any of the sites were about 200 metres away. Young have been reared successfully at both the first and last site.

**Territory 5** This was an alternative site; others used in the territory were in a disused quarry and on the steep bank of a burn. The nest was situated on collapsed wooden beams

and stone roof slabs between 2 buildings. When these fell down further, the nest was built in a gap under a roofing slab of one of the buildings. The buildings were in a field about 600 metres from the nearest occupied house.

Nesting on buildings was also recorded from some of the other islands:

**North Ronaldsay** Here a window opening in the old lighthouse has been used.

**Sanday** Buildings have been used in 2 territories. In the south of the island a large ruined house, which stands in the middle of a field, has provided a number of nesting sites over a period of at least 22 years. Nests have been built on the window sills of the upper floor and also against the chimney pots. The other territory was in the north east of Sanday, where the nest was on the roof of an outbuilding of an unmanned lighthouse on a small tidal island.

**Stronsay** The upper floor of a large ruined building has been the site of nest over a period of several years.

**Egilsay** The tower of a ruined church has been used on at least one occasion.

**Damsay** Nesting has been attempted on a ruined building on several occasions. Damsay is a small low lying island only 800 metres offshore and may be an alternative site for a nearby territory on Mainland that is occupied sporadically and where cliff nesting sites are used.

## Discussion

In some inland areas of Mainland Orkney, where there are no quarries, inland cliffs or suitable trees, ruined buildings provide good substitute nest sites. This is also the case on several of the other Orkney Islands, especially those that are low lying. Only 5% of the 96km of coastline on Sanday and just 13% of the 62kms of Stronsay coastline consists of cliffs over 15 metres in height (Mather et al 1975), the type of site most frequently occupied on Mainland. There are no cliffs over 15 metres high on the islands of Damsay, Egilsay and North Ronaldsay.

Breeding Ravens tend to be very wary, often leaving the nest when humans appear in their territories. A number of the buildings on which Ravens nest are within 200 metres of occupied houses and all on Mainland are surrounded by agricultural land, so, in the breeding season, there is usually some disturbance, particularly from farming activities.

Despite this, 73.8% (31 out of 42) of breeding attempts on buildings on Mainland during the years 1983 to 1995 were successful which compared favourably with the success of 53.98% (176 out of 326) for breeding attempts of Ravens at all other sites on Mainland for the same period (Table 2).

The success of the nests on buildings depended very much on the attitude of the farmers on whose land the buildings were situated. A few farmers destroyed nests whenever they found them but others were more tolerant, even taking the view that the breeding Ravens may keep away birds such as the Great Black-backed Gull *Larus marinus* and Hooded Crow *Corvus corone* which they considered to be a greater threat to their sheep and lambs.

In a study of the breeding success of Ravens on Mainland Orkney from 1983 to 1995 (Booth 1985), human interference was noted as the main known cause of nest failure.

Ravens have been recorded nesting on buildings in other parts of Britain but this habit does not appear to be as frequent or widespread as it is in Orkney.

I have seen nests on a derelict mine building in Cornwall and on an old wartime building in Shetland. Nesting on ruined mine buildings in Devon and derelict cottages in Northumberland and Shetland was noted by Holyoak and Ratcliffe (1968), while successful nesting on the Guildhall, Swansea was recorded by Hume (1975). On the Isle of Man a building was used regularly as a nest site for a number of years (Cullen 1978). Nesting has also been reported on other man made structures such as pylons and viaducts.

Nesting of Ravens on buildings is not confined to Britain and there are records from elsewhere in the Western Palearctic (Cramp and Perrins 1994) and also North America (Bowles and Decker 1930, Heinrich 1990). In a lowland area of south west Iceland 48% of pairs used man made structures, including abandoned farm buildings (Skarphedinsson et al 1990), although there were only scattered records of these types of sites from other parts of Iceland.

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Raven nest in territory 5

Chris Booth

# The hunting behaviour of Merlins in winter in Galloway

R C DICKSON

**Observations on the hunting behaviour used by Merlins in winter in west Galloway between 1965-95 are summarised and categorised. Up to 8 methods were distinguished and details are given of these techniques. A low level flight attack was the commonest method used by both male and female/immature Merlins**

## Introduction

In summer it is not clear exactly how Merlins *Falco columbarius* do hunt (Bibby 1987) although Newton et al (1984) state that they usually chase and kill flying prey. In winter and on migration, however, their methods are relatively better known when it is easier to study their foraging activities by direct observation. Between 1965-95, 287 hunts by Merlins were observed in various habitats in west Galloway; these hunts were categorised and the different methods used by both classes of Merlins, blue (males) and brown (females or juveniles) are shown in Table 1.

feeding on the ground. This caused the prey to take flight ahead of the Merlin, which then attempted to catch the bird on the wing close to the ground. This method accounted for 64% of observed hunting flights. Both blue and brown Merlins used this as their principal method: 58% by blue (14.3% success), 65% by brown (10.9% success). Dekker (1988) also recorded surprise attacks on prey initially on the ground by one of the North American subspecies in 72.3% (9.4% success) of hunts in Canada.

## Height and stooping

Merlins would sometimes attack prey at a height above 10 metres but, more often, it was usually the end result of a low level chase when the intended victim 'towered' apparently trying to escape. The intended victim, whether a wader or a passerine, seemed to try to keep above the pursuing falcon, with both climbing, sometimes out of sight ('exhaustion hunting': see Rudebeck 1951), but, as Meinertzhagen (1959) points out, it is not clear whether the prey is purposely driven up by the Merlin or whether the prey deliberately gains height to avoid a stoop. If the attack did not end in a long stoop, Merlins would get above the prey and short, shallow stoops/swoops would follow, sometimes ending close to the ground. Merlins would also carry out short stoops if

## Results

### Low flight attack

Merlins hunted from anything that served as a perch, even the ground, and which provided them with an adequate stance from which to locate potential prey, often flocks of birds in open country ('still hunting': see Cade 1982, Dickson 1988). From these positions Merlins, both inland and on the coast, would launch attacks using a low level approach less than a metre above the ground. Such an attack involved a very low fast, horizontal and direct flight sometimes ending in a glide of 50-300 m towards the intended prey which was usually

**Table 1 Observation frequency and hunting success of methods used by Merlins in west Galloway 1965-95**

Type of hunt	No of hunts by blue Merlins		Successful by blue Merlins		No of hunts by brown Merlins		Successful by brown Merlins		Total hunts	
Low flight attacks	28	58.3	4	14.3	156	65.3	17	10.9	184	64.1
Height and stooping	9	18.8	1	11.1	42	17.6	2	4.8	51	17.8
Tail chasing and upward swoop	7	14.6	-	-	24	10.0	2	6.5	31	10.8
Bounce tactics	1	2.1	-	-	6	2.5	-	-	7	2.4
Pounce	-	-	-	-	6	2.5	2	33.3	6	2.1
Hunting together	3	6.2	-	-	1	0.4	-	-	4	1.4
Stalking	-	-	-	-	3	1.3	-	-	3	1.0
Post hopping	-	-	-	-	1	0.4	-	-	1	0.4
Totals	48		5		239		23		287	

Notes: blue = males; brown = females or juveniles



their victims sought cover and/or the prey was crouching on the ground (see also 'bounce tactics'). It was the second commonest method overall (17.8%) and was used by both classes, 18.8% by blue (11.1% success), 17.6% by brown (4.8% success). Buchanan et al (1988) found it the commonest method of attack (45%, 7.3% success) on flocks of Dunlins *Calidris alpina* in North America, but the highest success rates there were during low flight attacks (8.3%).

### **Tail chasing and upward swoop**

If an initial attack failed, usually when the prey apparently saw the falcon approaching at the last moment, Merlins would sometimes follow very close behind the intended victim ('tail chasing') persistently and doggedly pursuing its victim's every move, sometimes zig zagging and terminating the pursuit either by swooping up to try and catch the prey from below or by a short stoop from above. It was possibly not the most energy efficient way of hunting in winter, especially if Merlins had to indulge in prolonged, energy expending chases. This method did not occur very often overall (10.8%) and only 6.5% of these hunts were successful.

### **Bounce tactics**

In North America, 'Merlins approach flight on prey ended with a quick down thrust which appeared to startle its prey into the air' (Page & Whitacre 1975). These 'bounce tactics' (Cramp & Simmons 1980) are probably used to flush prey crouching on the ground but this method (2.4%) was infrequently used in Merlin attacks in west Galloway since most of the intended prey had already taken flight before Merlins had reached them. It did not account for any successful attacks. Ash (1960), however, recorded 'bounce tactics' as the

usual method of hunting Skylarks *Alauda arvensis* in Hampshire.

### **Pounce (seizing prey on the ground)**

Merlins would sometimes pounce on to the ground if prey was not quick enough to get airborne after a low flight attack, and, on a very few occasions, Merlins would deliberately pounce from a fence post after a very short flight. This method was not often used or seen in hunts in west Galloway (2.1%) but accounted for 33.3% of successful hunts. Other observers have recorded this more frequently (eg Brennecke 1951, Rudebeck 1951).

### **Hunting together**

Three hunts involved blue and brown Merlins together and one hunt involved 2 brown birds. Hunts by 2 Merlins probably occurred by chance and there was no indication that each assisted the other; methods used were low flight attacks, tail chasing and short stoops by either bird. Hunting together was only seen on 4 occasions (1.4%) but none ended in success. Many other observers (eg St John 1888, Parker 1978) have recorded hunting together and Bengtson (1975) found that 31% of hunts in Iceland were by breeding pairs.

### **Stalking**

Merlins would sometimes approach prey feeding on the ground by walking across the ground keeping behind vegetation or contours (Dickson 1979, 1988). The stalk on foot usually ended with a short flight and appeared to be an extension or variant of the low flight attack. It only occurred in 1.0% of hunts but none ended in success. Stalks on foot were usually only under 2 metres long although

Fleet (1993) saw a Merlin stalk Dunlin on foot for over 30 metres in Germany.

### Post hopping

Post hopping occurred when Merlins approached flocks of passerines by hopping/flying very short distances from one fence post to another. This method may have been a variant of stalking but was little used by Merlins in these observations (0.4%) and none were successful.

### Discussion

Merlins employ a wide variety of hunting techniques in winter facilitating exploitation of a wide range of prey species (Dickson 1988). Rudebeck (1951) identified at least 6 hunting modes in Europe including 4 forms of stooping, one horizontal attack and one 'mobbing'. In North America, Buchanan et al (1988) distinguished 7 on one particular species including 3 forms of stooping, 2 low flight attacks, a flock chase and 'ringing'. Up to 8 broad categories were distinguished in west Galloway but hunts could, and did, commence as one type of attack and end as a combination of one or more methods. Nonetheless, in attempts to catch their prey quickly, both blue and brown Merlins consistently used short distance low flight attacks. This method probably also helped them take their prey by surprise. It seemed an efficient way of hunting; of 28 successful hunts, 21 (75%) occurred using low flight attacks. Most attacks (<80%) lasted less than a minute.

Some published observations from the breeding season provide direct comparisons. Newton et al (1984) observed 2 methods of hunting: fast low flying attacks and watching and flying from a perch ('still hunting'). Bengtson (1975) also only recognised 2

methods in Iceland: surprise attacks (49%) and persistent chases (51%). Radio tracking of adults in Wales in summer suggested Merlins may use a 'sit and wait' hunting technique ('still hunting') (Petty 1995). Sodhi et al (1991), on the other hand, combined the results of summer and winter hunts by radio tagged urban Merlins in Canada, including flights by 7 Merlins trained for falconry. They only distinguished 2 main techniques: attack from a perch (58% in summer, 95% in winter) and cruising flights (37% in summer, 5% in winter).

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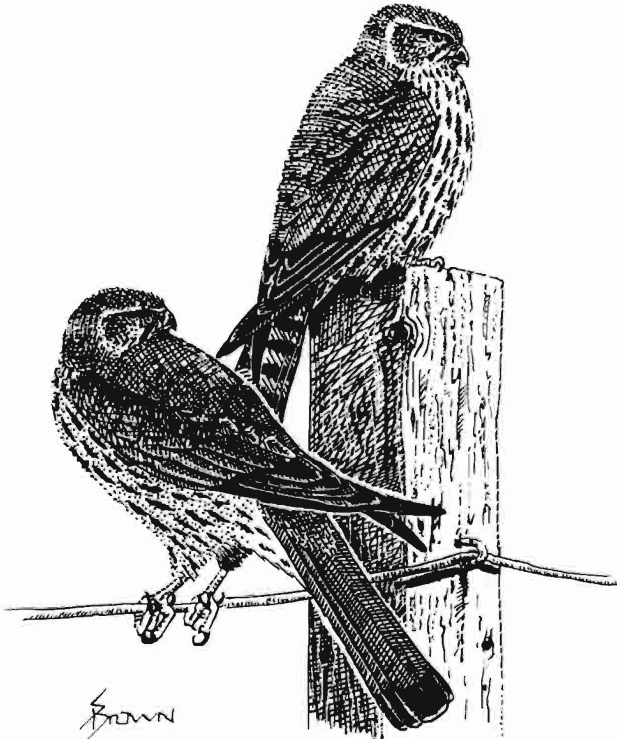
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Merlins

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## Numbers, distribution and habitat associations of Corn Buntings on the Outer Hebrides and Tiree in 1995

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**All known Corn Bunting populations on the Inner and Outer Hebrides were visited in June and July 1995 to collect information on changes in numbers since previous surveys, to relate these to any changes in habitat and to measure current populations and distribution. The overall recorded population on the Uists and Benbecula changed very little between 1983 (the year of the last full survey) and 1995, with an estimated population in 1995 of between 240 and 320 territories. Territory densities remain amongst the highest in Britain. However, there was a considerable decline in numbers on North Uist and an increase on South Uist between the 2 surveys. Territorial male Corn Buntings selected dry machair, particularly cultivated dry machair, usually near coastal dunes. Territory density within each count site was positively correlated with the proportion of the site made up by cultivated dry machair, and on North Uist population declines coincided with a 44% reduction in the area of this habitat. The population increases on South Uist did not coincide with any measured gross habitat change, suggesting that habitat quality had improved. On Tiree, only 6 to 10 Corn Bunting territories were found, compared with the 60-95 estimated to be present during the 1970s. The importance and conservation of the Hebridean populations of this species are discussed**

This paper describes the results of a British Trust for Ornithology (BTO) expedition to the Uists, Benbecula and Tiree during June and July 1995. The aims of the expedition were to assess the distribution and population size of Corn Buntings *Miliaria calandra*, to assess recent population trends and to relate these to changes in habitat.

The Corn Bunting is one of Britain's most rapidly declining bird species. Between 1970 and 1990 the British population declined by over 70% (Marchant et al 1990) and the range contracted by over 30% (Gibbons et al 1993).

The declines are almost certain to be connected with changes in farming practice, although exactly which ones remains unclear (Donald 1996). A historical review of regional population and range changes has shown that the current decline is the second to have taken place this century, a similarly dramatic decline having occurred during the 1920s and 1930s (Donald et al 1994). During both periods, declines were most severe in northern and western regions of Britain, and particularly in western Scotland. A national survey of the species, undertaken by the BTO in 1993, suggested that the British breeding population

numbered around 20,000 territories in that year (Donald & Evans 1995).

At the turn of the century, the population density of Corn Buntings in the Inner and Outer Hebrides was probably higher than anywhere else in Scotland (Baxter & Rintoul 1953) and several contemporary accounts describe the species' extraordinary abundance both on these isles and in coastal regions of the adjacent mainland (eg Graham 1890; Harvie-Brown & Buckley 1892). The species was even common on islands as remote as St Kilda at the end of the last century. Declines appear to have started during the early years of the 20th century, with the first island extinctions occurring during the early 1930s (Donald et al 1994). Declines have continued to such an extent that, by the time of the second Atlas of Breeding Birds (1988-91), breeding was recorded in western Scotland only on the Uists and Benbecula, on Tiree and at a few scattered localities on the adjacent mainland.

In 1983, the Nature Conservancy Council (NCC) undertook a survey of breeding Corn Buntings on the Uists and Benbecula (Williams et al 1986). They estimated a total population of between 260 and 350 territories, the majority (over 70%) on North Uist. At the time, fears were expressed that the loss of traditional strip cultivation on the machair (a narrow, cultivable shell sand plain with a distinctive flora) to improved grassland would cause populations to decline (Williams et al 1986). Such declines were observed on North Uist, where the population fell from 117-149 territories in 1983 to around 100 in 1988 and possibly as few as 60 in 1991 (Donald et al 1994). These declines coincided with an increase in the area of silage, a decline in traditional strip rotation cultivation and increased fencing, allowing more intensive

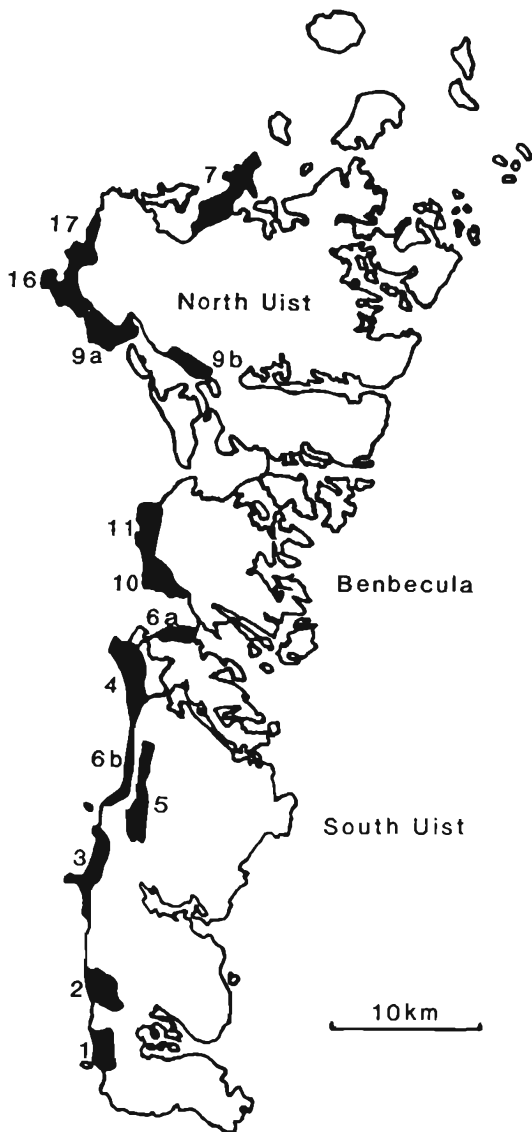
stocking regimes (R J Fuller pers comm). Population trends on Benbecula and South Uist are unrecorded.

Corn Buntings on Tiree were surveyed regularly between 1969 and 1987 (Cadbury 1989). A population of 60-95 territories between 1971 and 1979 declined sharply in the early 1980s to less than 20, although this number increased slightly during the late 1980s. Population trends thereafter are unrecorded.

### Methods

On the Uists and Benbecula, each of the 14 sites visited during the 1983 survey (Fig 1) was revisited between 17 June and 29 July 1995, the period of peak song activity in this late nesting species. The bulk of the fieldwork was carried out in the last 2 weeks of June, with follow up visits to selected sites (those which were only visited once in June or those which were covered in poor weather) in July. 6054 ha of machair, sand dunes, fen and blackland (an intermediate grassland between the machair strip and peatland) were covered, an area accounting for 63.4% of the total area of lowland habitats on the Isles (Williams et al 1986). Further details of the lowland habitats on the Hebrides are given in Fuller et al (1986). Between 2 and 4 visits were made to each site. The weather throughout most of the fieldwork period was hot, calm and sunny. In such conditions, singing birds could be detected at distances of up to 500m. On Tiree, all known previous breeding sites and all apparently suitable areas were visited at least once between 17 and 24 June 1995. A territory mapping technique (Marchant et al 1990) was used. Birds were recorded on 1:10,000 maps using appropriate activity codes to denote birds singing, calling etc and to distinguish registrations relating to the same

Figure 1 The location of the 14 study sites where Corn Buntings were counted in 1983 and 1995 on the Uists and Benbecula. Numbering follows that of Williams et al (1986)



or to different individuals. Population sizes at each site were calculated in the same way as in the 1983 survey, using "minimum" counts (the highest count recorded at each site on any one visit) and "maximum" counts, which used records from all visits, activity codes and known nearest neighbour distances to estimate the number of territories present. The latter method is comparable with the methods of the Common Birds Census (Marchant et al 1990) although fewer visits were made in the present survey than are required by the CBC. The figures obtained for the area surveyed were multiplied up to take account of the 3501 ha of lowland habitats which were not surveyed. In doing this, it was assumed that territory densities outside the study areas were the same as those within. Some data collected outside the study areas suggested that densities may have been slightly lower, on average, than those within the study areas, although habitats were similar. This would lead to a slight overestimation of the total population but does not compromise comparisons of overall population changes between the 2 years. The BTO expedition and a Royal Society for the Protection of Birds (RSPB) wader survey team between them resurveyed all the habitats measured in 1983 to assess habitat change. Such changes could then be related to any observed changes in Corn Bunting populations.

As each singing male Corn Bunting was located, the relative proportions of the following habitats within a 100m radius of the bird were assessed by eye: open shore, sand dunes, uncultivated dry machair, cultivated dry machair, uncultivated wet machair, cultivated wet machair, fen, blackland and open water. Recent fallow was classified as uncultivated because the vegetation structure was usually more similar to that habitat than

to cultivated machair. The extent of wet and dry machair was assumed to have been the same as that measured on the basis of floristics for the 1983 survey of breeding waders and used by Williams et al (1986) in their analyses of Corn Bunting habitat selection. These data on habitats within territories were only collected on the first visit to each site, since if data were collected for the same male 2 or 3 times, they would not be independent (ie there would be problems of pseudoreplication). Habitat data were collected from a high proportion of all the males present in the study areas (a minimum of 63%) and were used to derive some measure of habitat association. Because the data collected were proportions and therefore not independent (ie if the relative area of one particular habitat type is high, the relative areas of the others must be low), these data were analysed using a simple measure of the frequency with which each was found within male Corn Bunting territories. These could then be compared with the availability of each habitat to derive a simple assessment of habitat selection.

## Results

### Numbers and distribution on the Uists and Benbecula

Table 1 gives the "minimum" and "maximum" counts of territorial males in each of the 14 study areas shown in Fig 1. Multiplying up the counts from the areas covered (to account for the areas not covered) yielded a 1995 population estimate for the Uists and Benbecula of between 240 (based on minimum counts) and 320 (based on maximum counts) territories compared with the 260 and 350 estimated using the same methods in 1983. As indicated in the Methods above, the 1983 and 1995 estimates for the

**Table 1** Calculated “minimum” and “maximum” Corn Bunting territories in each of the study areas depicted in Fig 1 (see text for definitions). The total area of the sites is slightly greater than the area actually surveyed since it includes areas of unsuitable habitat (road, human habitation etc)

Site	Area (ha)	Minimum count	Maximum count
South Uist			
1	395	16	21
2	375	7	13
3	554	15	22
4	674	4	8
5	575	0	0
6a	233	0	0
6b	554	26	35
Benbecula			
10	496	10	10
11	520	9	14
North Uist			
7	479	17	18
9a	387	16	24
9b	168	0	0
16	572	27	32
17	630	5	6
Total		152	204

**Table 2** Numbers of Corn Bunting territories recorded on 14 study sites in the Uists and Benbecula in 1995. Figures from the 1983 survey (from Williams et al 1986) are given in brackets

	Minimum count	Maximum count	Area surveyed (ha)
North Uist	65 (117)	80 (149)	2106
Benbecula	19 (17)	24 (24)	940
South Uist	68 (22)	99 (35)	3008



total Outer Hebridean population may be slightly too high. The figures suggest a decline in the overall population of less than 10%. However, the proportions of the total population recorded on North and South Uist changed markedly (Table 2). Populations on North Uist were found to have declined by nearly 45%, whereas those on South Uist increased by over 200%. Populations on Benbecula were virtually unchanged. On North Uist, population declines were apparent in all study areas between 1983 and 1995, although the decline may have stabilised since 1991, when approximately the same number of territories was found as in 1995 (Donald et al 1994). On South Uist, populations increased most markedly in study areas 1 and 6b, where the combined "minimum" number of territories increased

from 19 in 1983 to 41 in 1995. Not all populations on South Uist increased; for example, study area 6a, which held a population of around 5 territories in 1983, was found to have been abandoned by 1995 (Table 1).

Recorded densities of singing male Corn Buntings in occupied study areas (calculated using "maximum" counts) ranged from 1.0 territories /km<sup>2</sup> in study area 17 to 6.3 territories /km<sup>2</sup> in study area 6b (mean = 3.8 /km<sup>2</sup>). On the machair strip alone (ie coast, dunes, wet and dry machair without open water, fen or blackland), densities in occupied study sites ranged from 1.3 to 7.3 territories /km<sup>2</sup> (mean = 5.1 /km<sup>2</sup>). The highest density recorded in a single 1km square approached 15 territories /km<sup>2</sup> (study area 16, which

**Table 3 Areas (ha) of cultivated and uncultivated machair on study areas in the Uists and Benbecula in 1983 and 1995. Measurements of the areas of other crop types (such as hay and silage) were not available. Areas of non crop habitats (blackland, dunes, open water and shore) were assumed not to have changed**

	1983	1995	% change
<b>North Uist machairs</b>			
Cultivated dry	404.7	228.7	-43.5
Uncultivated dry	938.4	1114.4	+18.8
Cultivated wet	65.7	11.6	-82.3
Uncultivated wet	458.1	512.2	+11.8
<b>Benbecula machairs</b>			
Cultivated dry	56.3	78.6	+39.6
Uncultivated dry	275.4	253.1	-8.1
Cultivated wet	9.3	13.1	+40.9
Uncultivated wet	176.5	172.7	-2.2
<b>South Uist machairs</b>			
Cultivated dry	222.7	201.8	-9.4
Uncultivated dry	728.6	749.5	+2.9
Cultivated wet	117.6	75.4	-35.9
Uncultivated wet	1063.5	1105.7	+4.0

included Balranald RSPB reserve).

### Corn Buntings and habitat change

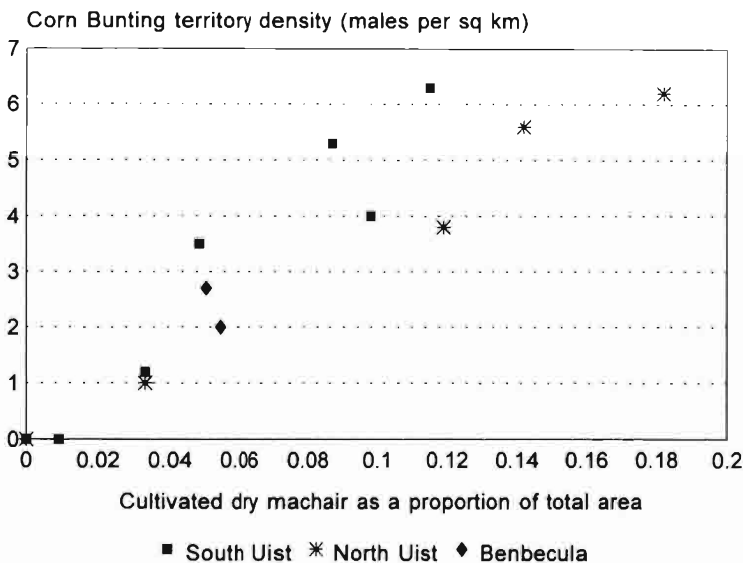
Changes in the areas of the main lowland habitat types on North and South Uist and Benbecula are shown in Table 3. No evidence was found for changes in the areas of dunes, fen, blackland or open water between 1983 and 1995 so the areas of these habitats were not measured in 1995. The population declines on North Uist coincided with a decline in the area of cultivated dry machair of 43.5%. Similarly, the extinction on South Uist of the small population in study area 6a coincided with a reduction in the area of cultivated dry machair from 11.4 ha to 2.1 ha. However, the increase in the population of South Uist as a whole did not coincide with changes in the area of any measured habitats (Table 3). Even in study areas 1 and 6b, where population increases were greatest, there were no substantial differences in the extent of any of the habitat types measured between

the 2 years.

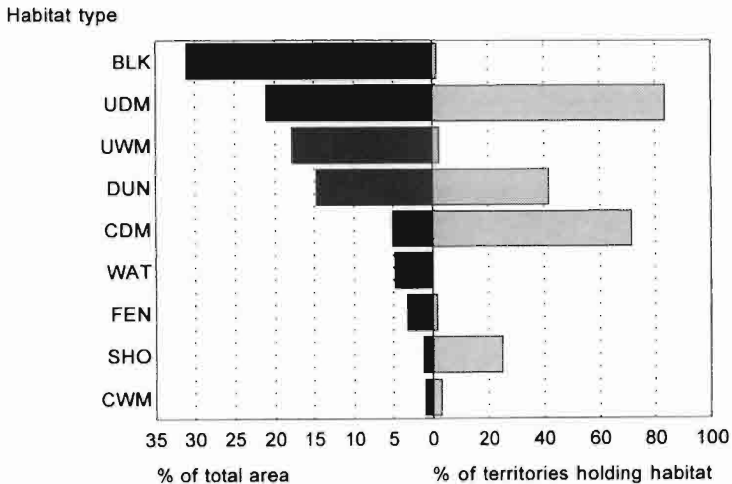
### Habitat associations of Corn Buntings on the Uists and Benbecula

Corn Bunting territory densities were positively correlated with the proportion of each study site made up by cultivated dry machair (Fig 2) and total cultivation ( $r_s = 0.94$ ,  $n = 14$ ,  $P < 0.001$ ) but not with cultivated wet machair ( $r_s = 0.40$ ,  $n = 14$ , ns). There was also a significant correlation between Corn Bunting territory density and the proportion of the machair strip alone (defined above) made up by the cultivated dry machair ( $r_s = 0.78$ ,  $n = 14$ ,  $P < 0.001$ ). Cultivated dry machair was also found to be important in the analysis of territory habitat data (Fig 3). Of the 127 territories for which data were available, 94% were found on dry machair, and 78% of these (73% of all 127 territories) contained cultivated or recently cultivated dry machair. Dunes or other coastal habitats were recorded in 58% of the 127

**Figure 2** Correlation between Corn Bunting territory density (calculated from "maximum" counts) and the proportion of each study site made up by cultivated dry machair ( $r_s = 0.93$ ,  $n = 14$ ,  $P < 0.0001$ )



**Figure 3** Habitat availability and associations of territorial male Corn Buntings on the Uists and Benbecula. Black bars show the availability of each habitat (% of total combined area of the 9 habitats), grey bars show the percentage of territories (n = 127) holding each of the 9 habitats (at least 5% by area). Habitats are listed in decreasing order of availability. BLK = blackland; UDM = uncultivated dry machair; UWM = uncultivated wet machair; DUN = sand dunes; CDM = cultivated dry machair; WAT = open fresh water; FEN = fenland; SHO = open shore; CWM = cultivated wet machair



territories, yet these habitats made up only 16% of the total study area. Less than 4% of territories contained wet machair, a habitat occupying 72% of the area of dry machair (Fig 3). Across all study sites combined, cultivated dry machair made up only 5.1% of the total area, yet was found in over 70% of territories. Cultivated dry machair was found within Corn Bunting territories significantly more frequently in relation to its availability than was cultivated wet machair (adjusted  $\chi^2 = 8.5$ ,  $P < 0.01$ ).

### Corn Buntings on Tiree

We estimated that between 6 and 10 widely spaced territories were present on Tiree. These birds were all present in areas where the species previously bred in higher numbers

(Cadbury 1989). Territories appeared to be more associated with grazed land and hay or silage meadows than on the Uists and Benbecula and less associated with coastal habitats, although sample sizes were too small for statistical comparison. The current low numbers reflect a severe decline in the population levels of the late 1970s.

### Discussion

These results suggest that Corn Buntings fared considerably better on the Outer Hebrides between 1983 and 1995 than populations elsewhere in Britain. The overall population of the Outer Hebrides declined by less than 10% compared with a decline of over 50% recorded by the Common Bird

Census across Britain as a whole during the same period. However, some populations declined considerably, particularly on North Uist, where declines were more similar to the national trend. At least in some areas of North Uist, these declines form part of a long term trend which started well before 1983 (Donald et al 1994). At Balranald RSPB reserve (study area 16), there were 63-66 territories in 1977, 56 in 1983 (Williams et al 1986) and 27-32 in 1995.

The declines on North Uist coincided with a reduction in the area of cultivated dry machair. However, marked increases in some populations on South Uist were not correlated with any measured habitat change and an increase in the area of cultivated dry machair on Benbecula (Table 3) did not result in an increase in Corn Bunting populations there. Population changes could, therefore, only be partly explained by changes in the areas of any of the gross habitat types measured. From this, it seems likely that changes in habitat quality were as important as changes in habitat availability. The crude methods of habitat categorisation used might have masked a considerable change in habitat structure or suitability. Donald & Forrest (1995) also found that changes in Corn Bunting densities correlated very poorly with gross changes in habitat in a sample of farmland Common Bird Census plots. A number of changes in habitat quality could have affected Corn Bunting populations. The availability of food, particularly in winter, is likely to have been important in declines of British Corn Bunting populations (Donald & Evans 1994, Donald 1996) and the same may apply to some Hebridean populations. Contemporary literature suggests that, at the turn of the century, corn ricks and stack yards were very important to Corn Buntings on the Hebrides (eg Graham 1890) and recent observations suggest that this is still the case (M Shepherd

& I R Hartley, unpublished data). However, these are now less common features of machair agriculture due to the increase in silage production. The warming effects of the Gulf Stream may have contributed to the survival of the Hebridean populations by reducing the birds' feeding requirements in winter. The tendency of declining populations to survive longer or in higher numbers in coastal areas has been pointed out previously (Donald et al 1994).

Densities of singing male Corn Buntings on the Outer Hebrides remain high relative to populations studied elsewhere in Britain. In a study in the Fens of Lincolnshire, where densities are amongst the highest in mainland Britain, the highest density recorded was 9 territories /km<sup>2</sup> (Gillings & Watts 1996) compared with the highest density of 15 territories /km<sup>2</sup> on North Uist. Average territory density in the Fens was around 2.8 territories /km<sup>2</sup>, compared with 3.4 territories /km<sup>2</sup> in lowland habitats on the Uists and Benbecula as a whole and 5.1 territories /km<sup>2</sup> in the machair strip alone. This suggests that the low intensity agriculture of the machair is favourable for this species, despite occurring at the northernmost limit of its world range.

The habitat associations of Corn Buntings recorded by the current survey accord well with those of previous surveys. Williams et al (1986), Hartley et al (1995) and Hartley & Shepherd (1996) all noted the importance of cultivated and uncultivated dry machair and dunes and the avoidance of wet machair, fens and blackland. This habitat selection could arise either from preferences for the types of vegetation growing on dry machair and/or in the adjacent dunes (where many of the nests were found, Hartley et al 1995) and its associated food resources, or from preferences for dry, sandy soils, which have been noted elsewhere (eg Gillings & Watts

1996). Cultivated dry machair was found by Hartley et al (1995) to be the most preferred foraging habitat of female Corn Buntings when provisioning nestlings but was avoided for nesting. The avoidance of wet machair might result from the positive association of birds with dunes, since wet machair generally occurs further inland, and therefore further from the coastal dunes, than dry machair.

Conservation of the few remaining Corn Bunting populations in the Hebrides is of considerable importance to the future of this species in Scotland. Historical evidence clearly shows that the Hebrides, and the coast of western Scotland, have the potential to support extremely high densities of Corn Buntings. Should the factors which are causing the present decline be halted or reversed, repopulation of abandoned islands and the adjacent mainland would be more likely to occur if some populations still exist, because the species appears to be fairly sedentary. Although the ability of the Hebridean population to recolonise distant areas appears to be low at present (Shepherd et al 1996), the species is capable of rapidly recolonising areas close to its existing range when conditions there become suitable (Hustings 1996). The Hebridean populations are now the only viable ones in western Scotland, and indeed amongst the few remaining in western Britain, and could act as a source for the future recolonisation of abandoned areas. The conservation of these populations depends upon an understanding of responses of birds to changes in land use. The data presented above suggest that, so far, the Hebridean populations have survived better than most mainland populations. However, the vulnerability of these isolated populations is reflected in the severe declines which have occurred on North Uist and Tìree. The future of the Hebridean Corn Buntings should not be assumed to be safe and

populations need to be monitored at regular intervals.

The inclusion in 1994 of most of the machair of the Uists and Benbecula into the Environmentally Sensitive Areas (ESA) scheme could be of considerable benefit to the conservation of Corn Buntings on the Outer Hebrides. Amongst other things, the scheme encourages farmers to reduce pesticide inputs, which are already very low, to maintain existing machair and to keep at least 15% of ploughable machair in arable crop or recent fallow (SOAFD 1994). Such measures are also likely to benefit the internationally important populations of breeding waders on the machair (Fuller et al 1986). Geographical differences in the take up of this voluntary scheme might explain the differing population trends of Corn Buntings on North and South Uist but such data are confidential and were not available to test this hypothesis. The introduction of a similar scheme on Tìree might help the recovery of the dwindling population there.

### **Acknowledgements**

This project would not have been possible without the help and encouragement of many people. We would particularly like to thank Des Thompson, Mike Shepherd and John Love of Scottish Natural Heritage and Rob Fuller of the BTO for their help and advice throughout, and Craig Whyte, Steve Babbs, Stuart Murray and Tony Cook of the RSPB for collecting additional Corn Bunting data and for sharing the work of collecting and collating habitat data. We are also very grateful to South Uist Estates Ltd., The Scottish Office Agriculture and Fisheries Department (SOAFD), North Uist Estate and The Church of Scotland for granting access to their land

and to Mark O'Brien, George Boobyer, Cath Jeffs, Phil Benstead, Jim Reid, Gwen Evans, Claire Forrest, Su Gough and Lt Col C Stoddart for their help in various ways. We would also like to thank the crofters of the Hebrides for the hospitality they extended to us during our visit. This work was funded by the Joint Nature Conservation Committee on behalf of Scottish Natural Heritage, English Nature, the Countryside Council for Wales and the Department of the Environment (Northern Ireland). Generous additional funding was provided by the Rosemount Trust and the Adrian Darby Charitable Trust. This paper was greatly improved by comments from Rob Fuller, Mike Shepherd, Des Thompson, the Editor and an anonymous referee.

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Revised manuscript accepted January 1996



Corn Bunting

Mike Ashley

## SHORT NOTES

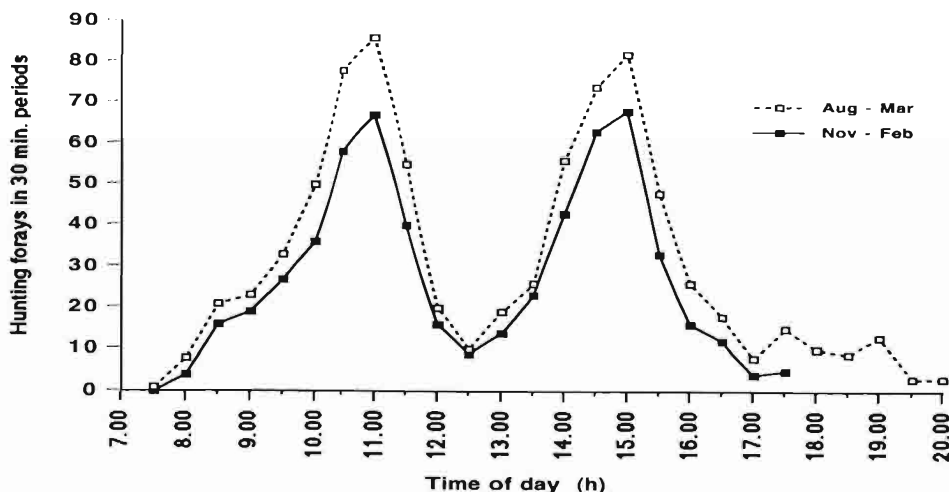
### Hunting times of Hen Harriers in winter

The Hen Harrier *Circus cyaneus* is essentially an open country species. In winter in west Galloway Hen Harriers hunt during the day over many habitats ranging from low lying farmland to the higher moors (Dickson 1992, *The Birds in Wigtownshire Wigtown*). Although easy to observe in these habitats, there is very little information on the times they hunt during the course of a winter's day. I watched Hen Harriers, spending an equal amount of observation time at different hours of the day, between August and March 1965-95. I timed and pooled every hunting foray, categorised as flying at low speeds systematically quartering the ground, whether successful or not by both classes of harriers, grey (adult males) or brown birds (females or juveniles). No hunts are included, however, if harriers were on breeding moors in August or at their roosts in winter.

Figure 1 gives the results of 795 hunts recorded in west Galloway. During November to February there was a late morning peak at 1100 hrs (GMT) and a very similar peak in the afternoon at 1500 hrs (GMT) with a definite lull in hunting activity at midday. A similar pattern emerged between August and March despite the longer daylight. The need to replenish energy stores lost overnight is suggested by the gradual build up of hunting activities in the morning, reaching a peak of activity some 2 to 3 hours after the birds had left their roosts. Another peak of activity in late afternoon suggests that there was also a need to replenish energy stores before roosting.

These findings agree with Hamerstrom & Wilde (1973, *Inland Bird Banding News* 45:123-127) who found that most hunting by Northern Harriers *Circus cyaneus* in North America is done during morning hours with a midday lull, followed again by a late afternoon period of hunting. Similar hunting

Figure 1 Hunting times of Hen Harriers in west Galloway, 1965-95





patterns occur in other birds of prey in winter such as Sparrowhawks *Accipiter nisus* (Newton 1986, *The Sparrowhawk*, Poyser, Calton) and Merlins *Falco columbarius* (Dickson 1993, *Scottish Birds* 17:56-57), but

a different pattern was found in Peregrines *Falco peregrinus* when peak hunting activities occurred at midday with a lesser peak in the late afternoon (Dickson, *British Birds* in press).

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Revised manuscript accepted December 1995

### **Oystercatchers nesting in clear cut forestry plantations**

During May 1994 a pair of Oystercatchers *Haematopus ostralegus* was seen on several occasions over a newly clear cut area within a Forestry Commission conifer plantation in the Cree Valley, Dumfries and Galloway. The patch of ground was bounded on all 4 sides by mature Sitka Spruce *Picea sitchensis* although on one edge only a narrow strip of trees divided the clear cut area from the river. The nearest pasture was 0.4km distant. There was no ground flora present on the clear cut, only a litter of dead spruce needles, interspersed by tree stumps and dead branches. On 27 May I was surprised to watch one of the birds return to a nest with 2 eggs at the foot of a low stump. On 6 June the scrape was empty, with no sign of the birds.

I was unaware of any previous nesting attempt by Oystercatchers on clear cuts, but by chance learned that Forest Officer Andy Walker had discovered a nest, also in May 1994, on a 15ha clear cut of Japanese Larch, *Larix*

*kaempferi*, felled in the previous year, in the valley of the Water of Ae, about 70km east of the Cree Valley site. This clear cut was bounded on 3 sides by mature plantation, with the nest situated 40m from a grass pasture on the fourth side. The nest, which held 2 eggs on 13 May, was on compacted brash. Incubation continued at least until 25 May; on 17 June the scrape contained one unhatched egg.

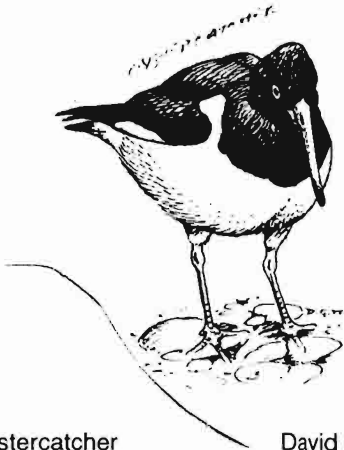
Oystercatchers have been extending their range through the river valleys of south west Scotland since the late 19th century (E J M Buxton. 1961. The inland breeding of the Oystercatcher in Great Britain, 1958-59. *Bird Study* 8: 194-209), and are widespread in the catchments of both the Ae and the Cree. Tilled land is relatively uncommon in these pastoral areas and most nests are found on river shingle or roadside gravel. Both situations provide a dry, bare substrate which reflects radiant heat, and these features are shared by the clear cuts. The utilisation of clear cuts for nesting presumably allows the birds to exploit nearby feeding areas where suitable nest sites are scarce.

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Accepted March 1996

## Oystercatcher apparently rearing Lapwings

On 27 May 1995, at Colquhar, Leithen Water, Borders, I noted a pair of Lapwings *Vanellus vanellus* mating on a vegetated shingle island. This may have been a second breeding attempt since a single bird, which had been noted sitting on a nest nearby on 13 May, was absent on 20 May. On 4 June, a Lapwing was noted sitting on a nest. The nest was not visited due to the danger of trampling by sheep or predation by Jackdaws *Corvus monedula*.



Oystercatcher

David Mitchell

On 10 June, I noted that an Oystercatcher, *Haematopus ostralegus*, was incubating a clutch at the same spot as the Lapwing having, I assumed, displaced it from its nest. Again this nest was not disturbed to save it from potential damage by sheep or Jackdaws. An Oystercatcher was also noted incubating on 18 and 24 June.

On 1 July, at 0600 GMT, I saw that there was no Oystercatcher at the nest site, but there was one in an adjacent field. On leaving my car to check this bird it rose, giving alarm

calls, and another bird lifted from a patch of shingle at the side of the burn. As I made my way to this spot with the intention of measuring and ringing any Oystercatcher chicks, I was astonished to see 3 recently hatched Lapwing chicks. After measuring and ringing them, I returned to my car and watched one of the Oystercatcher pair return to brood them, while the other stood guard nearby. I did not see either adult provide any food for the chicks and I left at 0630 GMT.

On 8 and 13 July (my last visit to the area) I noted that both Oystercatchers were still actively alarming. On both occasions I retrapped the same chick. Its bill length (to feathers) had increased from 11.5mm on 1 July to 18.4mm on 13 July, and it seemed in reasonable condition.

It seems that the Oystercatcher took over a Lapwing clutch during the early stages of incubation, possibly because they had lost their own clutch nearby, hatched it successfully and reared the brood. Lapwings were present throughout this time, but is not known if they were responsible for the clutch. Lapwing chicks find their own food shortly after they become mobile and adult Oystercatchers carry food to their chicks. It would have been interesting to see if the Lapwing chicks accepted any food provided by the Oystercatcher, but such observations were not made.

I am grateful to Rosebery Estates for permission to study birds on their land and I particularly thank Mr Templeton, the shepherd at Colquhar, for his tolerance of my activities.

**Tom Dougall, 62 Leamington Terrace,  
Edinburgh EH10 4JL**

Accepted October 1995



Dunnock

Brian Turner

### Dunnock feeding in Spruce canopy

In the autumn of 1993 the plantations of Sitka Spruce *Picea sitchensis* in the Galloway Forest Park, in south west Scotland bore a heavy seed crop. In order to observe birds feeding on the cones, I constructed a small hide in the canopy of a 30 year old stand of trees. Observations were made at a distance of 2-20m on clusters of cones at a height of 12-17m in the spruce crowns near the forest edge.

From midday on 23 November the cone bracts were open in warm sunshine, and the accessible seeds were being taken by mixed flocks of birds, which includes 3 species of tits *Paridae* and 4 finches *Fringillidae*. Most species fed in an inverted position, by clinging to the cone, but the 2 heavier finches present, Chaffinch *Fringilla coelebs* and Brambling *Fringilla montifringilla*, fed by perching on a branch and reaching over to insert the bill between the open bracts of the nearest cone. For a brief period around 1400 hrs a single Dunnock *Prunella modularis* appeared in the canopy and took seeds directly from a cone, by

adopting the 'perch and reach' method of the larger finches.

Dunnocks are predominantly ground feeders, although feeding in vegetation at heights of up to 8m has been recorded in summer; seeds can form up to 90% of the winter diet (G Bishton in BWP vol 5). The species is widespread in conifer plantations. (R J Fuller 1982. Bird habitats in Britain. Poyser, Calton; A Bevington 1991. Habitat selection in the Dunnock in northern England. Bird Study 38: 87-91), and it would be surprising if spruce seeds were not taken from the ground, where they are often abundant after a heavy crop has been shed. However, BWP quotes only a single published record, of seeds of the Norway Spruce *P. abies*, obtained in a series of stomach samples from nestlings in a Russian study.

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Accepted March 1996

## OBITUARIES

### Dr Norah Armstrong

#### Died 1996

Dr Norah Armstrong was born in Hamilton and was a daughter of the Very Rev Matthew and Mrs Gladys Stewart. After her schooling at Hamilton Academy she went to Glasgow University where she studied and qualified in medicine. Nature was always part of her life and at one time she studied snails. It was, however, not until she came to live at Lochmaben that she was able to devote more of her time to watching and studying nature, especially birds. She was also a very good botanist. In her capacity as a doctor she will be remembered for her work in the Well Woman Clinics where, for many years, she worked at Lockerbie, Moffat, Kelloholm and Dumfries.

Norah became a member of the Dumfries branch of the SOC soon after coming to Dumfriesshire. The interests of this branch became very much part of her life. She was secretary for many years and became its first lady chairman. Norah was again acting as secretary when her illness made it too difficult for her to carry on and, very reluctantly, she resigned the post. The welfare of speakers was always paramount in her mind and many of them enjoyed the hospitality of Deil's Dike. She was also very generous in her support of money raising projects for the branch and also supported other good causes. Among the things she gave to the Dumfries branch were the loudspeakers for the public address system. Applegarth Wildlife Sanctuary has

also benefited greatly from her generosity and knowledge.

She was an enthusiastic conservationist and created a small wetland area, complete with a permanent hide, at her home. Recently a larger area was developed which includes a pond, shrubs and several acres of woodland. Norah was also a first class photographer and was, for many years, a member of the Nature Photographers Portfolio. Colour transparency was her favourite medium which allowed her to produce her own colour prints in the darkroom. Some of her work has been exhibited locally and at Leigh in Lancashire but most of her prints were for the NPP portfolio. Local clubs and societies often benefited from her talks and slide shows on medicine and nature. At the one day conference at Galashiels in 1995 she took candid shots of personalities for the SOC. When it came to the main conference, she declined to show her pictures, preferring to relax and enjoy the company of her friends.

A well travelled person, the Highlands of Scotland were her favourite with Norfolk taking second place. It was while she was watching a pair of Red-backed Shrikes that I saw her medical skills come to the fore. A girl had a terrible accident on her bicycle in front of her. Norah suddenly changed from a carefree bird watcher to a methodical, organised doctor. She was, for a time, a member of the North Solway Ringing Group and took part in the ringing of many waders. Lapwing chicks were among her favourites and there were also some hair raising experiences on the Scar Rocks which are probably best forgotten!

I have been extremely fortunate knowing such a wonderful person and I am sure many others feel the same. Norah was nursed at home with great care and devotion by her

husband and her daughter, who is also a doctor, until she died on 12 January. It was one of Norah's wishes that, if anyone would

like to visit Deil's Dike to see the sanctuary, they would be most welcome to do so.

**Bobby Smith**



Norah Armstrong

Bobby Smith

## Ian Munro

### 1910 - 1996

The death of Ian (JHB) Munro on 15th March after a mercifully fairly short spell in hospital must have brought to his many friends a conflict of great sadness - and deep sympathy for Bep - and memories of very happy times in his company. He had a wealth of knowledge of birds, a great fund of reminiscences of army service during the War and a seemingly inexhaustible collection of funny stories told in an intriguingly "dead-pan" way so that a holiday with him was enormously enjoyable. (Having been with him for a week on the Isle of May for 17 years and on a Zimbabwe safari I can remember hearing the same story only once - and how I wish that I could hear them all again!)

It was in the early 1930s that Ian, with a coterie of friends from the Edinburgh Academy and elsewhere, formed the Midlothian Ornithological Club which soon grew into the SOC. Life must have been fairly hectic in those early days for a keenly gifted athlete and budding CA yet he found time somehow for two projects in which he was to be profoundly involved. The Isle of May had been visited often between 1907 and 1933 by the almost legendary Misses Baxter and Rintoul from Fife but in 1934 the MOC started up the embryonic Observatory. They built the first of the Heligoland traps enabling birds to be caught - and ringed - instead of being shot for identification, binoculars and cameras not being what they are today. How thrilled Ian must have been to be, with Bep, in the party which crossed in October 1994 to celebrate the Observatory's 60th birthday. Ian's entries

in the Daily Log may not have been as hilarious as those of the inimitable MFMM but they were always full of insights. For many years too he was Treasurer of the Observatory.

The second of Ian's major undertakings was centred on the Pentland Hills which for him, as with Robert Louis Stevenson, were "the hills of home". He must have scoured most of the area covered by the Pentlands but part of the research he set himself was to cross from Nine Mile Burn to Bavelaw by the same 15 mile trail each week for a year between February 1948 and January 1949 - whatever the weather, 780 miles of it. He collected records from every conceivable source - a great deal of them from G L Sandeman - and in 1988 was published his *Birds of the Pentland Hills*. An amazingly scholarly book, no wonder it took him so long, especially in view of the fact that his working life with *The Scotsman* can have been no sinecure under Lord Thomson.

It was not until he was well into his forties that Ian married Bep, then on the nursing staff of the Edinburgh Royal Infirmary. Fortunately Bep too was keen on birds so there began a wonderfully happy partnership.

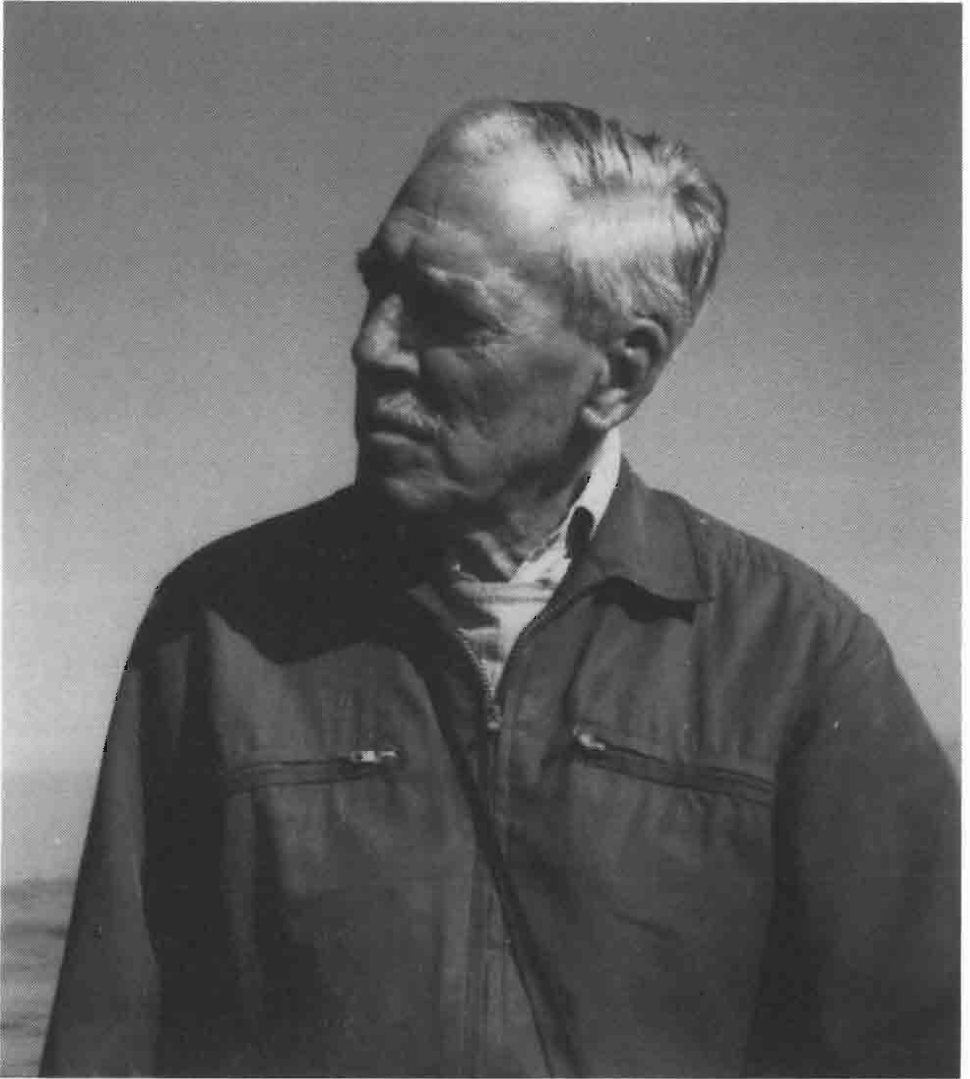
Ian played a round of not-too-serious golf most weeks at Gullane. They both took part in the Kirk and village life but it was clear that they were just blissfully happy together. Their home on the fringe of Colinton has a delightful air to it and the garden was a place of peace - after hard work - much favoured by birds. And although birds continued to draw them away for holidays to other parts of the country, and to other counties - the Med, Africa, India - it was surely to Colinton that they came home to.

There must be many hundreds who, in one

way or another, owe Ian a great deal for the fascination and joy that birds have brought

them; so, too, could they but express it, the birds of Lothians and beyond have much to be grateful for to him.

**Ian Balfour-Paul and John Arnott**



Ian Munro

John Arnott

## Correspondence

### Density of breeding Crows in Argyll

The density of breeding Crows in Argyll quoted in Dott (Scottish Birds 17:205-211) should be 2.56 pairs per km<sup>2</sup> (Hewson & Leitch 1982). This is higher than the highest densities found by Dott in urban and suburban south east Scotland (1.75-2.50 pairs per km<sup>2</sup>) or on one rural area in the Borders (0.50 pairs per km<sup>2</sup>), and similar to Picozzi's 2.3-3.0 pairs per km<sup>2</sup> on farmland and woods, excluding adjacent moorland, which Crows used in north east Scotland. The high density in Argyll was probably due to a good food supply; Crows foraged along the shoreline and on sheep and lamb carcasses.

Using Dott's method, 6 contiguous tetrads within the main study area of 20.25 km<sup>2</sup> of moorland with coastal woodland and pasture in Argyll had 0.5 to 1.5 pairs of Crows per km<sup>2</sup> (one tetrad had none), compared with 0.25 to 0.50 pairs per km<sup>2</sup> for hill, moor and coniferous plantations in south east Scotland.

**R Hewson, Department of Zoology,  
Aberdeen University, Aberdeen AB9 2TN**

The figure of 2.56 pairs per km<sup>2</sup> from Hewson & Leitch was taken as 2.6 for comparative purpose in my paper. At some stage 2.6 was changed to 26 pairs per km<sup>2</sup>. I apologise for failing to notice this and thank Ray Hewson for his observations.

**Harry E M Dott, 70 Findhorn Place,  
Edinburgh EH9 2NW**

### Red-backed Shrike breeding records in Scotland

In addition to those during 1977-79 and in 1992 mentioned in the paper on the species breeding in Perthshire in 1994 in the December 1995 issue of Scottish Birds (SB 18: 118-119) there was a successful breeding attempt on Shetland in 1990 which produced one fledged young bird (Shetland Bird Report 1990 p55).

**Bob Proctor, 94 Reid Street, Bishopmill,  
Elgin, Moray, IV30 2HH.**



Carrion Crow

Bill Paton

### Yellow-legged Gulls in Scotland

In the paper "Yellow-legged Gulls in Scotland" (Scottish Birds 18:96) R W Forrester refers to a Fair Isle record "attributed to Dr Eagle Clarke & Admiral L Stenhouse". The reference should be to Surgeon Rear-Admiral John Hutton Stenhouse, who worked with Dr Eagle Clarke and visited Fair Isle many times between 1920 and 1926. The mistake may have originated with Baxter & Rintoul (1953) in their book The Birds of Scotland which is cited by R W Forrester.

**Ian J Stenhouse, c/o 31 Kinarvie Road,  
Crookston, Glasgow G53 7EA.**



## Cormorants on Handa

In the recent paper on Seabirds of Handa (Stoneman & Willcox 1995, *Seabirds of Handa Island*, *Scottish Birds* 18: 78-87) there is no mention of Cormorant *Phalacrocorax carbo*. Varying numbers of Cormorants breed on the adjacent Badcall islands and there is documentary evidence that they formerly bred on Handa.

In a paper by Harvie-Brown (Extracts from a *Journal of a Nesting Tour in Sutherland in 1867*, *Zoologist* 1867: 851-865) appears the astonishing statement "Cormorants ... abundant on Badcall islands and increasing on Handa where they were introduced by Mr Maclver, the Duke's factor at Scourie". This seems incredible, and there is certainly no mention of it in the *Memoirs* (Henderson G, 1905, *Memoirs of a Highland Gentleman, being the Reminiscences of Evander Maclver of Scourie*, Constable, Edinburgh). Maclver's main interest in Handa appears to have been the acquisition of the grazing following the removal of the tenants in 1848. Maclver did not come to Scourie until 1845, yet in June 1849 John Wolley (Newton A, 1864-1907, *Ootheca Wolleyana*, Porter, London) shot a Cormorant on the nest on Handa and took the eggs "These were fresh but many of those about were hatched". This would appear to make Harvie-Brown's account all the more incredible. Later, Harvie-Brown (*On the birds found breeding in Sutherlandshire Proc Nat Hist Soc Glasgow* 2 1869-75) says "not numerous Handa, groups only of half a dozen on the highest parts of the cliffs", and in 1884 (Harvie-Brown J A & Buckley T E, Appendix to *St John's Tour in Sutherlandshire*, second edition, Edinburgh) "Rare on Handa, choosing the highest ledges". This is repeated in Harvie-Brown & Buckley 1887 *A Vertebrate Fauna of Sutherland, Caithness and West*

*Cromarty David Douglas, Edinburgh*). In Harvie-Brown and MacPherson 1904 (*A Fauna of the North-West Highlands and Skye David Douglas, Edinburgh*) "Colony still on Handa, not increasing."

I can find no later records of Cormorants breeding on Handa in references such as C G Connell (*Bird Life on Handa in 1925*, *Scottish Naturalist* 1925: 143-147;) and Dickinson & Harris (*Handa Birds*, July 1959, *Fair Isle Bird Observatory Bulletin* 1960: 1-4). The statement by Baxter and Rintoul (*The Birds of Scotland*, Oliver and Boyd 1953) "Nests quite plentifully ... on Handa" cannot be correct. There were none seen in 1954 when Dougal Andrew and I stayed on Handa in June. Cormorants have been recorded fishing offshore from Handa in most months and in July 1964 and June 1965 I received records of adults with young on Handa but I was not able to confirm that these had actually bred on the island.

Two questions arise. When did Cormorants cease to breed on Handa and why? To the first the answer is anyone's guess, sometime between 1904 and 1925. To the second "Decreasing and much persecuted" in 1875 provides a clue, but those on the Badcall islands were equally persecuted and survived in much greater numbers. Another reason why Handa has not been successfully colonised may be geological. Handa is composed of Torridonian sandstone with vertical cliffs. The horizontal bedding of the rock provides narrow ledges with overhangs and small caves more suitable for Shags. However, Cormorants prefer open, sloping sites as found on the rounded lumps of Lewisian Gneiss which form the Badcall islands.

**Ian D Pennie, Badcall, Scourie, Sutherland**

## Advice to Contributors

Authors should bear in mind that only a small proportion of the *Scottish Birds* readership are scientists, and should aim to present their material concisely, interestingly and clearly. Unfamiliar technical terms and symbols should be avoided wherever possible and, if deemed essential, should be explained. Supporting statistics should be kept to a minimum. All papers and Short Notes are accepted on the understanding that they have not been offered for publication elsewhere and that they will be subject to editing. Papers will be acknowledged on receipt and will be reviewed by at least 2 members of the editorial panel and, in some cases, by an independent referee. They will normally be published in order of acceptance of fully revised manuscripts. The editor will be happy to advise authors on the preparation of papers.

Reference should be made to the most recent issues of **Scottish Birds** for guidance on style of presentation, use of capitals, form of references, etc. **Papers should be typed on one side of the paper only, double spaced and with wide margins; 2 copies are required and the author should also retain one.** We are happy to accept papers on AppleMac computer discs. We cannot handle other formats as both the SOC computers

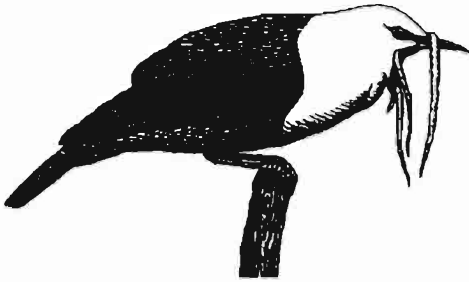
and those at our printers are on the Apple system. Please contact Sylvia Laing on 0131 556 6042 to discuss this. Headings should not be underlined, nor typed entirely in capitals. Scientific names in italics should follow the first text reference to each species. Names of birds should follow the official Scottish list (*Scottish Birds* Vol 17: 146-159). Only single quotation marks should be used throughout. Numbers should be written as numerals except for one and the start of sentences. Avoid hyphens except where essential eg in bird names. Dates should be written:.....on 5 August 1991.....but on the 5th (if the name of the month does not follow). Please note that papers shorter than c700 words will be treated as Short Notes, where all references should be incorporated into the text, and not listed at the end, as in full papers.

Tables, maps and diagrams should be designed to fit either a single column or the full page width. Tables should be self explanatory and headings should be kept as simple as possible, with footnotes used to provide extra details where necessary. Each table should be on a separate sheet. Maps and diagrams should be in Indian ink and be camera ready, but drawn so as to permit reduction to half their original size.



Hooded Crow

David Hassell



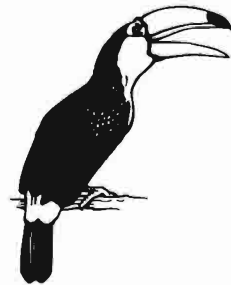
## NEOTROPICAL BIRD CLUB

### Neotropical bird club launched

A club has been launched to promote the study and conservation of the birds of the Neotropics (South America, Central America and the Caribbean). It is currently seeking founder members to help reach the launch budget of £2000, which is required to get the club running and to publish the two first issues of its intended journal 'Continga'. Founder members will be asked to pay a minimum of £25, and will be formally acknowledged in the first issue of 'Continga'. 'Continga' will provide a colourful and much needed forum for exchange of information on the avifauna of this extremely rich and diverse area, and will contain papers and features on the birds and their conservation as well as news of recent observations and discoveries (at present, new species are still being discovered at the rate of more than two a year). It is hoped that in due course the club will be able to provide direct funding and support for practical conservation programmes.

*For further details and membership forms,  
please contact:*

**Rob Williams,  
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Neotropical Bird Club,  
c/o The Lodge,  
Sandy,  
Bedfordshire SG19 2DL**



# Scottish Birds

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