

# Scottish Birds

THE JOURNAL OF THE SOC

Vol 24 No 1 June 2003



**Mandarin Ducks and the potential consequences for Goldeneye  
Scottish Chough Census 2002  
Scotland's endemic subspecies  
Eurasian Reed Warblers in Scotland**



***Scottish Birds* – The Journal of the SOC**

**Editor:** Dr S R D da Prato

**Assisted by:** Dr I Bainbridge, Professor D Jenkins, Dr M Marquiss,  
Dr J B Nelson and R Swann.

**Business Editor:** Admin Officer, The SOC, Harbour Point,  
Newhailes Road, Musselburgh, EH21 6SJ.

*Scottish Birds*, the official journal of the SOC, publishes original material relating to ornithology in Scotland. Papers and notes should be sent to The Editor, *Scottish Birds*, Harbour Point, Newhailes Road, Musselburgh, EH21 6SJ.

Two issues of *Scottish Birds* are published each year, in June and December. *Scottish Birds* is issued free to members of the SOC, who also receive the quarterly newsletter *Scottish Bird News*, the annual *Scottish Bird Report* and the annual *Raptor Round Up*.

**Published by:** The Scottish Ornithologists' Club, Harbour Point, Newhailes Road, Musselburgh EH21 6SJ.

**Design by:** Pica Design, 51 Charlton Crescent, Aboyne, Aberdeenshire AB34 5GN.

**Printed by:** Meigle Printers Ltd, Block 11, Units 1 & 2, Tweedbank Industrial Estate, Galashiels TD1 3RS

## Mandarin Ducks in northern Scotland and the potential consequences for breeding Goldeneye

P COSGROVE

*During 2002, an exceptional number of non native Mandarin Duck sightings were reported in and around Strathspey, including at least 2 breeding attempts. Recent records from the north of Scotland were collated and suggest that Mandarins are increasing in number and have begun to colonise sites close to and inside the core British Goldeneye breeding area. The pattern and origin of these records is investigated and suggests that Mandarin are now migrating or dispersing more regularly into the north of Scotland during the spring. The potential consequences for breeding Goldeneyes in northern Scotland of the hole nesting Mandarin Ducks becoming established and competing for nest sites are considered and recommendations made.*

### Introduction

The Mandarin *Aix galericulata* is a colourful non native duck from eastern Asia that was first introduced to Britain in the 19th century. Since then the species has been popular in wildfowl collections and has bred ferally (from both escapes and deliberate releases) for many years before being admitted to the official British and Irish list in 1971 (BOU 1971). The Mandarin nests chiefly in tree holes up to 10m above the ground, but also readily takes to elevated nest boxes (Owen *et al* 1986). In Britain, Mandarins compete for nesting sites with such hole nesting species such as Jackdaws *Corvus monedula*, the introduced Grey Squirrel *Sciurus carolinensis* (Lever, in Wernham *et al* 2002) and apparently Goosanders *Mergus merganser* and Tawny Owls *Strix aluco* (Anderson and Petty 1996).

The distribution of Mandarins in the British Isles is primarily in central and southern England, with 3 Scottish populations on the River Tay outside Perth (c100 birds, but possibly declining recently) and on the Eye Water in Berwickshire (c50 birds) in 1993 (Lever, Gibbons *et al* 1993). Petty and Anderson (1994) recorded the first breeding records from Argyll between 1991 and

1993 in nest boxes erected for Tawny Owls around Loch Eck. The Argyll population has continued to expand with 25 ducklings hatching during 1992–1994. In 1995, 5 pairs laid 42 eggs from which 17 ducklings hatched and 4 pairs in 1996 laid 55 eggs and hatched 47 ducklings (Anderson and Petty 1996). Most records appear to refer to incidental sightings, or counts from specific well recorded water bodies. For example, the 1998 *Scottish Bird Report* (Murray 2000) refers to 2–3 birds (pairs?) breeding in Perth, 50 Glenbranter, Argyll and 18 breeding pairs at Loch Eck.

In their native range, Mandarin Ducks are both migratory and dispersive. Some authors (eg Lever, in Wernham *et al* 2002) contend that Mandarins in Great Britain have lost their migratory instinct, although they do acknowledge a tendency for some seasonal dispersal and vagrancy. This has happened with other introduced/released wildfowl, eg Ruddy Duck *Oxyura jamaicensis*, Barnacle Goose *Branta leucopsis* and Canada Goose *Branta canadensis* (apart from the development of a moult migration) and is presumably a response to living somewhere which permits year round occupancy (Malcolm Ogilvie *pers comm*).

Ringed recoveries of Mandarin have originated from several parts of the species' British range, but most have arisen from ringing in the southern English stronghold between September and March. There are also some remarkable and swift long distance movements to and from the near continent (Lever, in Wernham *et al* 2002), where general movements tend to be longitudinal, rather than latitudinal. At an international level, more research into the movements and dispersal of European Mandarins might shed light on the alleged loss of instinct to migrate.

Comparisons between the 2 BTO Breeding Atlases (Lever, in Gibbons *et al* 1993) suggest that there was a marked extension in the Mandarin Duck's range and a 459% increase in numbers, but this level of expansion has been disputed by others such as Davies (1988) who believe that Mandarins were always more numerous than originally suspected due to the species' shy and secretive nature leading to under recording.

In 1988, the British Mandarin population was estimated to be c7,000 individuals using extrapolation from gathered evidence of distribution, counts and trapping (Davies 1988) and this figure was inexplicably translated into 3,500 pairs by Lever, in Gibbons *et al* (1993). Davies (1988) makes no statement regarding the time of year that the British extrapolated population is just under 7,000 individuals and to convert this to 3,500 pairs is not acceptable. Furthermore, these unsubstantiated figures have been used to argue that the British Mandarin population is of conservation significance because it is believed to be an important component of the total world population of 25,180 pairs (Lever, in Wernham *et al* 2002).

Unfortunately, it not possible to ascertain the conservation significance of the British Mandarin population (whatever it is) because the global figure of 25,180 pairs quoted by Lever is

incorrect. The most up to date information on the global population size of Mandarin Ducks is of c65,000 pairs (Delany and Scott 2002) (Table 1). The principal reason for the decline of the Mandarin in its native range has been habitat loss due to widespread deforestation. However, recent figures from the eastern Palearctic suggest that the species has staged a recovery in its native area, where it is now classified as of least concern (Birdlife International 2000).

Despite their gaudy colouration, Mandarins are surprisingly elusive and probably the most poorly monitored of all inland ducks species by WeBS counts (Cranswick *et al* 1999). Consequently, there are no systematic or reliable counts of this species over significant areas of Scotland. Furthermore, some observers do not even bother to count or submit their sightings of Mandarins because of the bird's non native status. This lack of reliable data makes it difficult to determine Mandarin population trends in Scotland.

### **Mandarin in Badenoch, Strathspey, Strathnairn and NE Scotland**

No Mandarins were recorded in Badenoch and Strathspey until 1985. Dennis (1995) lists 3 records of 4 birds since 1985 including a male at Loch Garten on 23–25 October 1985, a pair at Loch Vaa on 6 May 1990, then a single male there between 7–13 May 1990, and one at Newtonmore in April 1992. Mandarins have also been recorded in the spring in recent years on the Allt Mor, near Nethy Bridge (Roy Turnbull *pers comm*), where birds were released on an ornamental pond. However, during spring 2002 it became clear that an exceptional number of Mandarin sightings had been made in Strathspey. These sightings (Table 2 and Figure 1) suggest that at least 2 well travelled pairs of birds were prospecting for nest sites in Strathspey. Most of these sightings occurred on

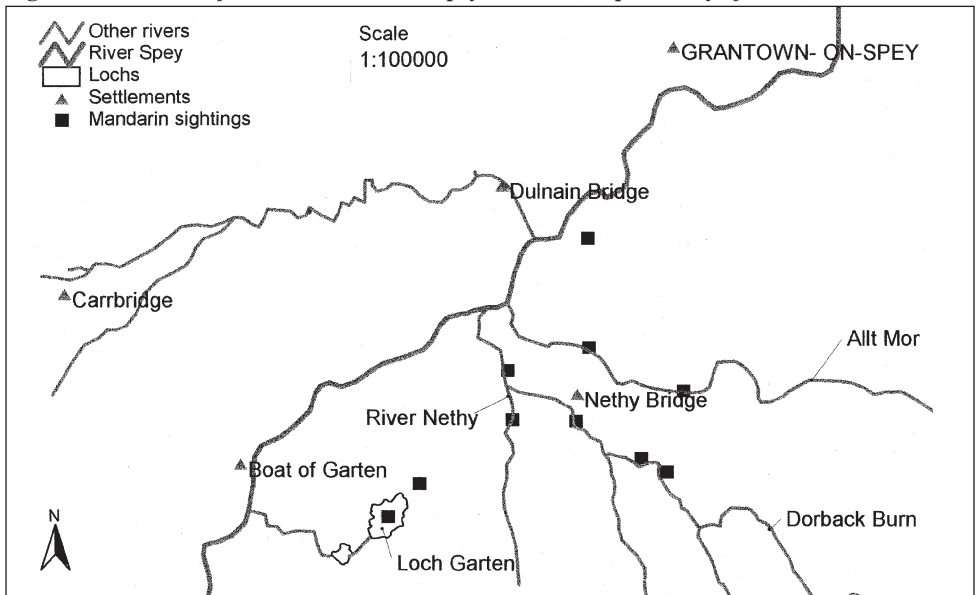
wetland and water habitats used by breeding Goldeneyes. For example, Mandarin records are from near the main stem of the River Spey, lochs on the main Strath and small but relatively high sections of small tributaries (<10m wide).

Nearby in the Highlands, escaped and released Mandarins, from local collections, have occurred in Strathnairn and Cannich since the 1970's and 1980s (Roy Dennis *pers comm*). During the last decade, Mandarin have repeatedly bred at several localities in Strathnairn, the nearest of which is only 25km away from Strathspey. Regular monitoring by Ray and Val Collier has shown that at least 7 pairs bred in 2000, with variable numbers in other years (Table 3). A post breeding flock of 18 birds together in September 1999 suggests that a significant population of Mandarins has now become established in Strathnairn. It is perhaps surprising that Mandarin Ducks have been deliberately released because the species is listed

on Schedule 9 (Part 1) of the Wildlife and Countryside Act 1981. Section 14 of the Act states: 14(1) Subject to the provisions of the Part, if any person releases or allows to escape into the wild any animal which (a) is of a kind which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state; or (b) is included in Part 1 Schedule 9, he shall be guilty of an offence.

It is not clear where all the Mandarins in Badenoch, Strathspey and Strathnairn have come from. Some records can probably be attributed to local wildfowl collections, such as one on the Allt Mor, near Nethy Bridge, but not all records relate to local escapes or releases. A Dutch ringed Mandarin was recovered in Strathspey on 19 April 1998. It was hatched in Rotterdam Zoo in June 1991 and escaped in 1994, before making its own way to Scotland (Pete Moore *pers comm*).

**Figure 1** Locations of Mandarins in Strathspey in 2002. (Map courtesy of SNH)



In 1989 a Mandarin nest was found in a nest box, 2km up a wooded tributary of the River Dee near Ballater in Aberdeenshire (Mick Marquiss *pers comm*). On 18 April a female was incubating 3 eggs, which had increased to 11 eggs on 1 May. The box was visited on 31 May and all the eggs had hatched and the young had successfully left the box. No brood was seen on the river despite thorough searching. The provenance of the birds was assumed to be a collection at Ballater, which had free flying birds. More recent records from across the other side of the Cairngorms in NE Scotland indicate that a few birds are now recorded almost annually, with peak sightings in the March to June period (Table 4). Most recently, a pair of Mandarins bred at Glen Tanar, Deeside in 2002 and are still present there at the time of writing (May 2003).

The increase in records suggests that Mandarin are now migrating or dispersing more regularly into the north of Scotland during the spring. This is supported by sightings from Orkney, Shetland, Faeroe and Iceland which have increased in recent years. There are 7 records from Orkney (although apparently none since 1998) and apart from a pair in May 1979, all other sightings were of males, with 5 records between 6 April and 10 June, and one of a bird present from 7 September to 28 October (Booth 1998). Shetland has 6 records (Pennington *et al* in prep) comprising 8

individuals (both males and females), all but one in the spring. All records are post 1985, apart from one male on Foula in June 1942. There have also been at least 3 records in Iceland and 2 in the Faeroe Islands since 1984, all of these have also been in April and May (Pennington *et al* in prep).

### The importance of Badenoch and Strathspey for Goldeneyes

In 1961, the RSPB started a major nest box scheme throughout the Highlands and a pair of Goldeneyes successfully nested in one of these boxes at Loch an Eilein in 1970. This pair nested again in 1971 and 1972; increased to 3 pairs in 1973 and then annually increased to 41 in 1981, 54 in 1984, 85 in 1989, 95 in 1990 and at least 130 pairs in 1995, nearly all of which were in nest boxes (Dennis 1995).

In 2002, a concerted effort was made to monitor the Scottish population and this fieldwork indicated that 58 clutches were incubated and 33 were laid but not incubated in 223 nest boxes checked (*Goldeneye Study Group 2002 newsletter*). Unpublished studies have revealed that as many as two thirds of nests contained eggs laid by more than one female, making a firm population estimate problematical (Begg 2002). However, tentatively assuming that two thirds of the 91 clutches laid involved more than one female, the breeding population in Scotland could involve as many as 150 egg laying females (Carl Mitchell *pers comm*).

Goldeneyes readily find nest boxes, even those away from water, and once an individual starts to nest it tends to return to the same box, or nearby in later years. The provision of nest boxes certainly helped the birds to colonise Scotland, where no or few suitable natural nest holes previously existed and the provision of nest boxes is key to their continued presence as a British breeding species. The birds have



*Goldeneye by Dan Powell*

remained remarkably faithful to the lochs and rivers of Badenoch and Strathspey with the vast majority of British breeders in the area. In 1984, 2 pairs bred north of the main area and up to 4 pairs have continued to nest, on 3 localities, away from the main area (Dennis; in Gibbons *et al* 1993). In 2002, only 2 nests were discovered outwith Badenoch and Strathspey, including one in Deeside (*Goldeneye Study Group 2002 newsletter*).

### **The potential impact of Mandarin Ducks on breeding Goldeneyes in Badenoch and Strathspey**

The principal reasons for the successful establishment of Mandarin Ducks in Britain are firstly, the existence of a vacant ecological niche for a hole nesting duck which feeds on aquatic invertebrates in the spring and summer; secondly, the abundance of suitable habitats and thirdly, the founder stock was a particularly vigorous one derived directly from the wild (Lever; in Gibbons *et al* 1993). In Badenoch and Strathspey the niche for a hole nesting insectivorous duck is not vacant. This is the first time in Britain (and possibly Europe?) that breeding Mandarins have come across another hole nesting, insectivorous duck species in the wild. Is it possible to predict the outcome of this encounter? In the eastern Palearctic both species' natural ranges meet, but there appears to be little, if any, published information on competitive interactions.

The impact of the introduced North American Ruddy Duck on the conservation of the threatened White-headed Duck *Oxyura leucocephala* has become a cause celebre within the non native species debate (Walton 2002) and there are several lessons that can be learned from it. Firstly, when comparing and contrasting any potential threat from the non native Mandarin to the native Goldeneye it is important to have

good data and information on which to assess risk and make informed decisions.

The Goldeneye breeds across the northern coniferous forests of Europe and the former USSR. Unlike the White-headed Duck, the Goldeneye is not a threatened species and across its range it is apparently doing well (Cramp and Perrins 1998). The British breeding population of Goldeneyes is not threatened by hybridisation with Mandarin Ducks and food is not known to be limiting. The Mandarin is a bird of temperate broadleaved forests, primarily in the lowlands, but occupies valleys and forested uplands to 1500m (Cramp and Perrins 1998). Consequently, it would probably do quite well in the mixed broadleaved and conifer forests of northern Scotland. Although both species feed on aquatic invertebrates, they do so in different niches with Mandarins largely surface feeders whilst Goldeneyes are mainly benthic feeders, reducing potential competition.

Suitable nest sites are apparently limiting for Goldeneyes, with populations still expanding in the core area given suitable nest boxes. However, not all boxes are used every year, providing many 'empty' boxes in the core Goldeneye breeding areas. Why some boxes are used by Goldeneye and not others is still somewhat of a mystery. In his 1996 review of Strathspey nest box selection, Landridge found that Goldeneyes were unaffected by habitat, tree species and height up the tree. However, the closer a box was to the water the more successful it was and boxes facing NW were slightly more successful than other directions.

The primary cause of nest failure in Scottish Goldeneye has been attributed to Pine Marten *Martes martes* predation (Langridge 1996) and this probably remains the single most important limiting factor on Goldeneye breeding success. Pine Marten predation may also significantly



affect Mandarin breeding success, as it has already been the cause of at least one nest failure at Farr in 1996 (Table 2), and could slow down or even halt successful colonisation of suitable nest sites in the core Goldeneye breeding areas.

The timing of both species breeding is identical according to BWP, with mid April the earliest date and the main period being late April and early May. Aggressive interactions between Mandarins and breeding Goldeneyes have already taken place at least once in Strathspey (Table 1), incidentally c1km from water. There appears to be no published information on Mandarin nest box selection, as there is with Goldeneye, but it would appear that both species tend to have similar nest site preferences. So, given these circumstances, any potential impact of Mandarins on breeding Goldeneyes is likely to focus primarily on nest site competition.

Ironically, the presence of the Goldeneye as a regular British breeding species is due to the provision of artificial nest boxes in and around the Badenoch and Strathspey area. Today's woodlands in northern Scotland do not have many suitable natural tree holes because of the historical loss of native woodlands and possibly a lack of large woodpeckers, such as Black Woodpecker *Dryocopus martius*, creating suitable holes. Four thousand years ago, pine dominated native mixed forests covered around 1.5 million ha of the Scottish Highlands. The remaining fragments now represent about 1% of this former range (Biodiversity Steering Group 1995). The provision of nest sites for Goldeneyes in northern Scotland has inadvertently provided Mandarins with suitable nest sites.

Although it would appear that relatively small numbers of Mandarins are presently breeding in and adjacent to the core Goldeneye areas, due to their secretive nature during the breeding season, the Mandarins recorded might be an underes-

timate of true numbers involved. Pair formation and courtship occurs mainly in poor light at early morning or evening and on dark days or shade (Cramp and Perrins 1998); a common occurrence in northern Scotland. Thus, the data on Mandarins presented in this paper is likely to be an absolute minimum estimate of numbers present.

In Argyll, the origin of the founding pair at Loch Eck could not be determined (Anderson and Petty 1996), but this single pair increased quickly to 18 pairs within 5 years (Murray 2000) and seems primed for further expansion. With perhaps as many as 7000 individuals in the wild in Great Britain, Mandarins have been able to rapidly establish themselves in suitable habitats. Of particular concern in northern Scotland is the issue of a non native species getting a foothold in the area and becoming a significant problem in the future. There is a legal and moral responsibility towards conserving our native species and this means acting prior to a problem becoming established. By removing the natural biogeographic barriers between species we should expect to see some problems for native wildlife (Walton 2002). Not all introduced non native species will have a detectable effect on native wildlife, but given that 2 species with very similar, and limiting, nest sites have come together for the first time in the wild in Britain, we cannot predict what will happen next.

### **Recommendations**

As Mandarin Ducks become established in Badenoch, Strathspey and Strathnairn there are 4 options that could be considered:

- (1) Ask the keepers of tame Mandarins to pinion ducklings and wing clip their adult birds annually or stop keeping them in such sensitive areas;
- (2) The relative ease of trapping Mandarin at nest boxes, means either a lethal or non lethal control programme could quickly be developed in core Goldeneye areas, with



wild Mandarins either killed humanely or removed under licence, wing clipped and perhaps given to responsible wildfowl collections. A less effective variation of this would be to prick eggs or dip them in paraffin, which would keep the female incubating until it was too late to relay;

- (3) Increase the number of nest boxes available in an attempt to reduce nest box competition between Goldeneyes and Mandarins, segregated if possible according to the respective optimal habitat; and
- (4) Nothing, leave both Mandarin Ducks and Goldeneyes to their own devices and monitor the outcome.

Whilst it is important to promote the understanding of the problems caused by non native species through awareness raising, this should not preclude appropriate proactive management from taking place before a problem becomes significant. Both Mandarins and Goldeneyes should be monitored regularly in Badenoch, Strathspey and Strathnairn along with adjacent areas, in Aberdeenshire, Morayshire and Highland. If Mandarins are found to threaten native breeding Goldeneyes through interspecific competition for nest sites, then suitable measures should be undertaken immediately to protect Great Britain's only population of breeding Goldeneyes.

### Acknowledgements

This paper would not have been possible without the help of a large number of people. I am grateful to all the observers who submitted records and made comments about Mandarin Ducks and Goldeneye in Scotland: Stuart Benn, Roy Dennis, Keith Duncan, Ian Francis, Ian Hastie, Alastair and Ann MacLennan, Mick Marquiss, Carl Mitchell, Ray Nowicki, Steve Petty, Jonny Pott, Kevin and Carol Shaw, Richard Thaxton and Roy Turnbull. I would particularly like to thank Ray and Val Collier for allowing me to use their breeding Mandarin

data. Finally, I would also like to thank Malcolm Ogilvie for his very helpful comments and additional sources of information.

### References

- Anderson D I K and Petty S J 1996. Population growth and breeding of Mandarins *Aix galericulata* in Cowal, Argyll. 1996 *Argyll Bird Report*, pp 82–84.
- Begg T 2002. Aspects of the breeding biology of the Goldeneye *Bucephala clangula* in Scotland. Unpublished MSc Thesis, University of Glasgow.
- Birdlife International 2000. *Threatened Birds of the World*. Lynx Edicions, Barcelona, and Birdlife International, Cambridge.
- Biodiversity Steering Group 1995. *Biodiversity: The UK Steering Group Report*. Vol 2 Action Plans, HMSO.
- Booth C and J 1998. *Status and checklist of The Vertebrate Fauna of Orkney*. The Orcadian, Kirkwall.
- BOU Records Committee 1971. Sixth Report. *Ibis* 113: 420–423.
- Cramp S and Perrins C M (eds) 1998. *The Birds of the Western Palearctic: Concise edition*. Oxford University Press.
- Cranswick P, Pollitt M, Musgrove A and Hughes B 1999. *The Wetland Bird Survey 1997–98 Wildfowl and Wader Counts*. BTO, WWT, RSPB and JNCC.
- Davies A K 1988. The distribution and status of Mandarin Duck *Aix galericulata* in Britain. *Bird Study* 35: 203–208.
- Delany S and Scott D 2002. *Waterbird Population Estimates* (3rd edition). Wetlands International.
- Dennis R 1993. Goldeneye in *The New Atlas of Breeding birds of Britain and Ireland: 1998–1991* (ed Gibbons DW, Reid JB and Chapman RA). T & AD Poyser, Calton.
- Dennis R 1995. *The Birds of Badenoch and Strathspey*. Colin Baxter Photography Ltd.
- Goldeneye Study Group 2002. *Breeding season newsletter*. RSPB Insh Marshes.

- Langridge A 1996. The status of the breeding population of Goldeneye *Bucephala clangula* in Scotland from 1974–1995. Unpublished RSPB Report.
- Lever C 1993. Mandarin in *The New Atlas of Breeding birds of Britain and Ireland: 1998–1991* (ed Gibbons DW, Reid JB and Chapman RA). T & AD Poyser, Calton.
- Lever C 2002. Mandarin Duck in *The Migration Atlas: Movements of the Birds of Britain and Ireland*. (ed Wernham C, Toms M, Marchant J, Clark J, Siriwardena G and Baillie S) BTO, Poyser.
- Murray R (ed). The 1998 *Scottish Bird Report*. SOC, Edinburgh.
- North-East Scotland Bird Report*. 1996, 1997, 1998, 1999, 2000, 2001. North-East Scotland Bird Club.
- Owen M, Atkinson-Willes G L and Salmon D G 1986. *Wildfowl in Great Britain*. 2nd Edition. Cambridge University Press.
- Pennington M G, Osborn K, Harvey P V, Riddington R, Heubeck M, Ellis P M and Okill JD *The Birds of Shetland*. in prep.
- Petty S J and Anderson D I K 1994. First breeding records of the Mandarin in Argyll. *Scottish Birds* 17: 164–165.
- Stone B H, Sears J, Cranswick PA, Gibbons DW, Rehfisch M M, Aebischer N J and Reid J B 1997. Population estimates of birds in Britain and the United Kingdom. *British Birds* 90: 1–22.
- Thom V M 1986. *Birds in Scotland*. T & AD Poyser.
- Walton P 2002. The ruddy duck and the white-headed duck: the case for ruddy duck population control in the UK. In, Alien species: friends or foes? *The Glasgow Naturalist*. Vol: 23 Supplement 2001. pp 91–98.

*Peter Cosgrove, 14 The Square, Grantown on Spey, Morayshire, PH26 3HG*

*Revised manuscript accepted March 2003*

**Table 1** *Global population estimates for Mandarins*

Breeding range	Wintering or core non breeding range	Estimate (pairs)	Trend	Source
Far East, Russia, China, N Korea	China	20,000	Declining	Miyabayashi and Mundkur (1999)
East Asia	Korea	5,000	Declining	Callaghan and Green (1993)
Japan, S Kuril Islands	Japan	40,000	Stable	Miyabayashi and Mundkur (1999)
Taiwan	Taiwan	350–500	Stable	Yuan-Hsun, University of Science and Technology, Taiwan, in litt.

Data from Delany and Scott (2002).

**Table 2** Mandarin records from Strathspey in 2002

Date	Location and activity
27/03/02	Pair on Loch Garten <sup>1</sup> .
April 2002	Pair inspecting natural hole in riparian tree, Lettoch, Dorback Burn <sup>2</sup> .
April 2002	Up to 3m and 1f together on the Allt Mor, Nethy Bridge <sup>3</sup> .
10/04/02	2m, 1f flying around house, Allt Mor, Nethy Bridge <sup>2</sup> .
12/04/02	Pair of birds sitting on the Osprey nest and the Osprey CCTV camera Loch Garten, Nethy Bridge <sup>4</sup> .
12/04/02	2m, 1f inspecting rabbit burrow and Goldeneye nest box, Allt Mor, Nethy Bridge <sup>2</sup> .
13/04/02	2m, 1f on Allt Mor, Nethy Bridge <sup>2</sup> .
14/04/02	1f on Allt Mor, Nethy Bridge <sup>2</sup> .
15/04/02	2m, 2f on Allt Mor, Nethy Bridge <sup>2</sup> .
18/04/02	1f on Dorback Burn, Clachaig <sup>5</sup> .
19/04/02	Pair of birds on Loch Garten, Nethy Bridge <sup>6</sup> .
24/04/02	2m, 1f on Allt Mor, Nethy Bridge <sup>2</sup> .
25/04/02	2m, 1f on Allt Mor, Nethy Bridge <sup>2</sup> .
27/04/02	2m, 1f on Allt Mor, 1f flew out of Goldeneye nest box in the evening, 13 Mandarin eggs in box, Nethy Bridge <sup>2</sup> .
28/04/02	2m on Allt Mor, Nethy Bridge <sup>2</sup> .
01/05/02	2m, 1f on Allt Mor, Nethy Bridge <sup>2</sup> .
09/05/02	Pair of birds attacked and attempted to evict a sitting female Goldeneye from its nest box, Balliefurth, Nethy Bridge for over an hour. The Goldeneye nest subsequently failed (not predated) <sup>7</sup> .
10/05/02	Pair swimming close together on the Duaick burn, Nethy Bridge <sup>8</sup> .
11/05/02	2m, 1f on Allt Mor, only 4 Mandarin eggs left in nest box (eggs cold), Nethy Bridge <sup>2</sup> .
13–14/05/02	Pair of birds on the River Nethy, Nethy Bridge <sup>8</sup> .
15/05/02	2 (cold) eggs in nest box, Allt Mor, Nethy Bridge <sup>2</sup> .
17/05/02	2m, 1f flying down Allt Mor, Nethy Bridge <sup>2</sup> .
22/05/02	1m flying up Allt Mor, Nethy Bridge <sup>2</sup> .
30/05/02	1m flying up Allt Mor, Nethy Bridge <sup>2</sup> .

Observers: Roy Dennis, pers comm<sup>1</sup>, Keith Duncan, pers comm<sup>2</sup>, Roy Turnbull, pers comm<sup>3</sup>, Richard Thaxton, pers comm<sup>4</sup>, Peter Cosgrove pers obs<sup>5</sup>, Jonny Pott, pers comm<sup>6</sup>, Alastair and Ann MacLennan pers comm<sup>7</sup>, Kevin and Carol Shaw pers comm<sup>8</sup>.

**Table 3** *Strathnairn Mandarin records 1993–2002*

<b>Date</b>	<b>Location and activity</b>
1993	Successfully bred in a natural hole, Blar-Buidhe, Farr <sup>1</sup> .
1994	Two pairs bred, Achvaneran, Farr <sup>1</sup> .
1995	Two pairs bred, Achvaneran, Farr <sup>1</sup> .
1996	Three pairs bred, at least one pair hatched, Achvaneran, Farr. One nest was lost when the female was taken on eggs by a Pine Marten <sup>1</sup> .
1997	Four pairs bred, Achvaneran, Farr <sup>1</sup> .
1998	Four pairs bred, Achvaneran, Farr <sup>1</sup> .
1999	Three pairs bred, Achvaneran, Farr. In September 1999, 18 Mandarin were seen on the pond at Achvaneran, Farr <sup>1</sup> .
2000	Five pairs bred, Achvaneran, Farr. Maximum 8 males and 5 females in April <sup>1</sup> .
2000	Pair of birds nested in a garden nest box, Littlemill, Daviot. Success unknown <sup>1</sup> .
2000	Pair successfully bred on a lochan, Littlemill, Daviot <sup>1</sup> .
2001	Two pairs bred, Achvaneran, Farr <sup>1</sup> .
2001	Pair of birds nested in a garden nest box, Littlemill, Daviot. Success unknown <sup>1</sup> .
2001	Pair successfully bred on a lochan, Littlemill, Daviot <sup>1</sup> .
2002	Pair of birds nested in a garden nest box, Littlemill, Daviot. Success unknown <sup>1</sup> .
2002	Two pairs bred, Achvaneran, Farr <sup>1</sup> . Early March–early April 2002. Pair prospecting at a pond, Inverarnie but did not nest <sup>2</sup> .

Observers: Ray and Val Collier<sup>1</sup>, Stuart Benn<sup>2</sup>.

**Table 4** *NE Scotland Mandarin records 1996–2003*

<b>Date</b>	<b>Location</b>
7–18 May 1996	1 f, Stoneywood Mill <sup>1</sup>
29 Sept–2 October 1996	1 m, Kinloch <sup>1</sup>
19 October 1996	1 m, Banchory <sup>1</sup>
3 May 1998	2 m, Dinnet <sup>2</sup>
3–18 May 1999	2 m, River Dee, Inchgarth <sup>3</sup>
9 February 2000	1 f, River Don, Inverurie <sup>4</sup>
25 March 2000	1 f, River Urie, Inverurie <sup>4</sup>
18 April 2000	1 pair, River Urie, Inverurie <sup>4</sup>
8 June 2000	1 pair, River Urie, Inverurie <sup>4</sup>
28 June–4 July 2001	1 eclipse m, Marywell <sup>5</sup>
10 April 2002	1 pair, Lossiemouth <sup>6</sup>
19 May 2002	2 m, River Carron, Stonehaven <sup>7</sup>
23 May 2002	1 pair, Meikle Loch <sup>6</sup>
30 October to at least 18 November 2002	1 m, River Dee, Inchgarth <sup>8</sup>
Spring 2002	1 pair bred, Glen Tanar <sup>9</sup>
Spring 2003	1 pair present, Glen Tanar <sup>9</sup>

Reference/observer: 1996 NE Scotland Bird Report<sup>1</sup>, 1998 NE Scotland Bird Report<sup>2</sup>, 1999 NE Scotland Bird Report<sup>3</sup>, 2000 NE Scotland Bird Report<sup>4</sup>, 2001 NE Scotland Bird Report<sup>5</sup>, Jonny Pott<sup>6</sup>, Ian Hastie<sup>7</sup>, Various observers<sup>8</sup>, Ian Francis<sup>9</sup>.

## The distribution and status of the Red-billed Chough in Scotland in 2002

S K FINNEY<sup>1</sup>\* & D C JARDINE<sup>2</sup>

*A survey of Red-billed Choughs in Scotland in spring 2002 estimated the total population size to be 256–257 birds; 83 pairs were at nest sites and of these 66 were confirmed as breeding. This was an increase of 26% in the number of pairs since the last comprehensive census in 1998. Breeding was restricted to the Hebridean islands of Islay, Colonsay and Oronsay with the exception of a single breeding pair on the mainland. Productivity was relatively low with a mean of 1.7 chicks fledged per pair.*

### Introduction

In northwest Europe, the Red-billed Chough *Pyrrhocorax pyrrhocorax* has a highly localised and fragmented distribution. Red-billed Choughs are predominantly found in areas with a relatively mild, wet climate along with low intensity agricultural systems (Monaghan *et al* 1989, Bignal *et al* 1997). Pastoral farming provides an abundance of soil and dung invertebrates on which the birds feed and the mild climate ensures prey availability throughout the winter months. In Britain, the range of the Red-billed Chough has contracted over the last 200 years and the breeding population is now restricted to western coasts and islands (Gibbons *et al* 1997). The reasons for the population decline are not clear but may be related to persecution, changes in climate and the intensification of farming practices (Bullock *et al* 1983, Warnes 1983).

The Scottish population of Red-billed Choughs is the most northerly in Europe. The Inner Hebridean islands of Islay and Colonsay have been the birds major stronghold in Scotland for many years (Thom 1986, Monaghan *et al* 1989). Between 1986 and 1998, when the last Scottish census was carried out, over 90% of the Red-billed Chough population was found on these islands. Over the same period, the Red-billed Chough population in Scotland showed a dramatic decline from 105 pairs in 1986 to 66 pairs in 1998. The Red-billed

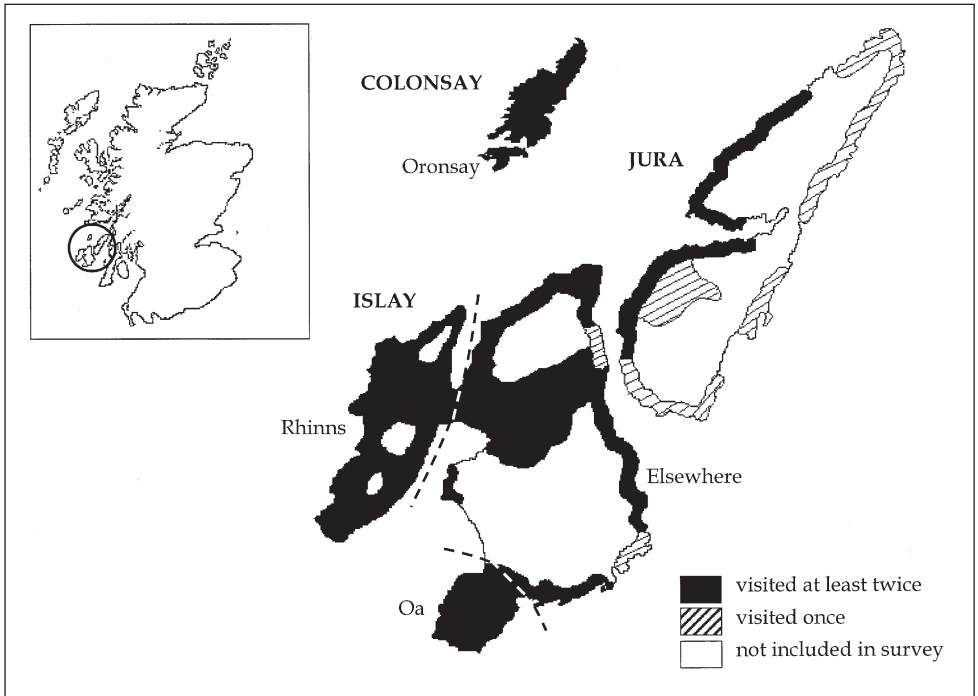
Chough is now listed as one of the UK's Birds of Conservation Concern (Gibbons *et al* 1996, Gregory *et al* 2002).

As a result of the species rarity, population decline and restricted distribution, Red-billed Choughs are given full legal protection under the Wildlife and Countryside Act and the European Directive on the Conservation of Wild Birds. Under the EC Directive, member states are responsible for conserving both the species and its habitat. Regular censuses are a critical part of this responsibility in order to monitor the status of the population and to assess the impact of land use changes. Unlike the last census in Scotland in 1998 (Cook *et al* 2001), in 2002 Red-billed Choughs were also counted in other parts of their range in the British Isles. The aim of this survey in Scotland was primarily to establish the population size and distribution of Red-billed Choughs and secondarily to measure breeding success.

### Methods

#### Survey area

The census was carried out between 6 April and 15 June 2002. Surveys were undertaken throughout the known breeding range of the Red-billed Chough in Scotland. On the islands of Islay and Colonsay, where most of the Scottish population are known to breed, nearly



**Figure 1** Map showing survey coverage on Islay, Jura and Colonsay during the 2002 Red-billed Chough census. Regions of Islay mentioned in the text are also shown.

all the coastline and all suitable inland sites were checked (Figure 1). On Jura, all historical sites on the west coast and most of the east coast were covered. In addition, inland areas of Jura where Red-billed Choughs have been recorded visiting in the past were also checked (Figure 1). On Mull, Mull of Kintyre and Galloway only historically known nest sites were checked. Many other areas of Scotland were covered by other workers as part of the National Peregrine Census (March–June 2002).

### **Survey methodology**

All potential nest sites were first visited between 6 April and 7 May, under licence from Scottish Natural Heritage. Coastal sections were

surveyed by slowly walking along the cliff tops, constantly looking and listening for Red-billed Choughs. At least one hour was spent near each known or suitable nest site. An observation period of one hour was chosen as adult Red-billed Choughs normally visit the nest every 40–50 minutes during both incubation and chick rearing. For extensive sections of cliff with many potentially suitable nest sites but where birds had not previously been recorded breeding, observations, of at least one hour, were made from vantage points approximately 1 km apart. At least one hour was also spent at all known or suitable inland sites: buildings and crags. All areas where Red-billed Choughs were found, or where Red-billed Choughs had been recorded breeding historically, were checked for a second

time between 8 May and 15 June. Thus, historical sites on Mull and on the mainland were surveyed twice; survey coverage on Islay, Jura and Colonsay varied and is shown in Figure 1. No additional nest sites were found during the second survey period indicating that all breeding Red-billed Choughs were successfully located during the first visit.

Any birds located during the survey were observed to establish their breeding status. Solitary birds or pairs that were found feeding or flying were followed to determine whether they returned to a nest site. Many birds were ringed with unique colour ring combinations, which were used to distinguish between close nesting pairs. If no birds were seen after one hour, and if access was possible, potential nest sites, ie buildings, caves and gullies, were searched thoroughly for evidence of breeding activity. Assessment of breeding status followed the criteria of Monaghan *et al* (1989) and was categorised as follows:

*Confirmed:* Sites where nests with eggs or young were observed, where adult birds were observed incubating, feeding young, leaving the nest with egg shell or a faecal sac, where nestlings were heard or where dependent young were observed with parents. Pairs were included in this category even if no young fledged.

*Probable:* Sites where Red-billed Choughs were present and were suspected of breeding but where this was not confirmed, largely because of inaccessibility of the site.

*Pair present:* Sites where Red-billed Choughs were known to visit but where nest building was never completed or laying was not believed to have occurred.

Where a breeding attempt was confirmed, additional visits were made during June and July to establish breeding success and number of fledged young. Nests which were known to fail were included in assessments of overall breeding success.

Numbers of non breeding birds seen in flocks were also recorded to allow an estimate of the total population size to be made.

The standard Red-billed Chough census methodology involves 2 visits to potential nest sites as described above. On Islay, however, time and resources were available for additional visits to be made. These were carried out both at the end of the season to establish breeding success and, in some cases, during the main survey period. This offered the opportunity to assess the effectiveness of the standard census methodology at correctly classifying the breeding status of Red-billed Choughs. This was done by comparing the results obtained based on the standard methodology to those obtained when the additional information collected during the breeding season was taken into account.

## Results

### *Population size*

Eighty three pairs of Red-billed Choughs were recorded in Scotland in 2002. Of these, 66 were confirmed breeders, 5 probably bred but breeding was not confirmed and a further 12 pairs were active at suitable nest sites but there was no evidence that laying occurred (Table 1). All breeding Red-billed Choughs were on the islands of Islay, Colonsay and Oronsay with the exception of a single breeding pair in Galloway.

On Islay, the maximum number of non breeding birds recorded at any one time was 61. These birds were seen at feeding sites on 24 April. On

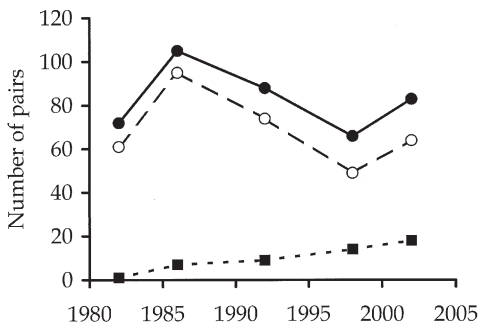


Colonsay, 29–30 non breeding birds were seen regularly on the island. There were no non breeding flocks on Jura, Mull or on the mainland. This gives a minimum Scottish Red-billed Chough population size (breeders and non breeders, but excluding young from 2002) of 256–257 birds of which 74% were on Islay and 25% on Colonsay.

### Breeding success

Breeding success was calculated using data from the 48 confirmed breeding pairs on Islay for which brood size at fledging was known. A mean of 1.69 ( $\pm 0.19$  se) chicks fledged per pair. Breeding success did not differ significantly between Red-billed Choughs nesting on natural sites (1.78 chicks/pair) and those nesting in buildings (1.60 chicks/pair; t-test,  $df=46$ ,  $t=0.64$ , n.s.). The mean number of young produced from successful nests was 2.38 ( $\pm 0.16$  se,  $n=34$ ).

It was not possible to obtain a value for mean breeding success of Red-billed Choughs on Colonsay as infrequent visits prevented breeding failures from being confirmed; the data were therefore biased towards successful pairs. However, at least 10 of the 13 confirmed breeding pairs successfully fledged young (mean for successful nests = 3.0 chicks/pair,  $\pm 0.26$  se). The pair breeding on the mainland fledged 2 young.



### Nest site type and location

Red-billed Choughs used a variety of nest sites including ledges in caves, crevices and both used and abandoned buildings. The proportion of pairs nesting in buildings, ie derelict cottages, farm outbuildings and barns, has increased substantially on Islay over the last 15–20 years with 52% (33/64) of pairs nesting in buildings compared to 29% (25/86) in 1986. On Colonsay, almost all Red-billed Choughs nested in natural sites.

The greatest number of breeding Red-billed Choughs on Islay was found on the Rhinns and on the Oa (Table 1), with only 14 of the 64 pairs being found elsewhere on the island. This distribution is consistent with that found during previous Red-billed Chough surveys (Monaghan *et al* 1989, Bignal *et al* 1992, Cook *et al* 2001; chi-squared test,  $c^2=3.67$ ,  $df=6$ , n.s.).

### Effectiveness of basic census methodology

Out of a total of 64 Red-billed Chough pairs on Islay, 6 (9%) were reclassified based on the information obtained from the additional nest visits (Table 1). Four pairs were classified as “pairs present” or probable breeders based on the standard methodology alone but breeding was confirmed following a third visit, when fledglings were observed leaving the nest. Two pairs, both nesting in buildings, were classified as probable breeders based on the standard

**Figure 2** Changes in the number of pairs of Red-billed Choughs recorded at nest sites on Colonsay & Oronsay (squares, dotted line), Islay (open circles, dashed line) and in Scotland (closed circles, solid line) between 1982 and 2002 (data from Monaghan *et al* 1989, Bignal *et al* 1992, Cook *et al* 2001 and current study).

**Table 1** *The number of nest sites at which pairs of Red-billed Choughs were recorded in Scotland during 2002. Numbers in parentheses show classification based on the standard census methodology, the final figures take into account information collected during additional nest visits.*

Area	Confirmed	Probable	Pair Present	Total
Islay	52 (48)	4 (8)	8	64
Rhinn	36 (33)	0 (3)	4	40
Oa	7	2	1	10
Elsewhere	9 (8)	2 (3)	3	14
Colonsay (& Oronsay)	13	1	4	18
Jura	0	0	0	0
Mull	0	0	0	0
Kintyre	0	0	0	0
Galloway	1	0	0	1
Total Scotland	66 (62)	5 (9)	12	83

methodology but were finally classified as “pairs present” based on additional checks of the nest site during the season, which showed that no eggs had been laid. Despite these discrepancies, this comparison of results between the standard methodology and that including additional information showed no difference in the estimated number of pairs (Table 1).

### **Discussion**

Eighty three pairs of Red-billed Choughs were recorded in Scotland in 2002. This was an increase of 26% since the last comprehensive census in 1998. The increase in the number of Red-billed Chough pairs on Islay was the first recorded on the island since 1986, after which the population declined by over 50% (Fig 2). In contrast, the number of Red-billed Choughs recorded breeding on Colonsay increased consistently between 1986 and 2002 (Bignal *et al* 1992, Cook *et al* 2001). However, there is evidence of an interchange of birds between the 2 islands and, as such, the increase in the number of breeding pairs on Colonsay may have involved the recruitment of young birds from Islay.

On Islay, breeding success was 1.7 chicks fledged per pair. This was low compared to that recorded in previous years (Bignal *et al* 1987, Cook *et al* 2001). The reasons for the low productivity are unknown but the exceptionally wet weather experienced during the 2002 breeding season may have played a role to some extent. The size of the non breeding flock on Islay (minimum 61 birds) was the largest recorded since 1992. Furthermore, the 29–30 non breeding birds on Colonsay was the largest non breeding flock recorded on the island for many decades (see Bignal *et al* 1992 and Cook *et al* 2001 for previous recent records).

Despite the increase in the population size of Red-billed Choughs in Scotland over the last 4 years, the range of the birds has contracted. Having lost the pairs on Mull and Jura the entire Scottish breeding population is now restricted to the islands of Islay, Colonsay and Oronsay with the exception of a single breeding pair in Galloway. Historical records suggest that the distribution of Red-billed Choughs in Scotland used to be much more widespread with birds regularly breeding in several areas on the mainland but that both the size and range of the

breeding population has been declining for at least 200 years (Warnes 1983). However, between 1982 and 1998, when detailed population monitoring was first carried out, some long abandoned breeding areas (Galloway and Mull) were recolonised, although stable breeding populations were never established. Previous work has suggested that joining a flock in the autumn is crucial for the first winter survival of young birds, which interact with other individuals within the flock (Bignal *et al* 1997). The recent recolonisation of sites on Mull and on the mainland may have occurred through the chance arrival of single pairs, as the dispersal distances of juvenile birds are normally very short (Bignal *et al* 1997). It therefore seems unlikely that breeding by several pairs will take place in these areas for some time.

The results obtained following the standard census methodology were slightly different to those obtained when information collected during additional nest visits was taken into account. The greatest difference arose when pairs that were classified as "pairs present" or probable breeders based on the standard methodology alone, had breeding confirmed following a third visit, when fledglings were observed leaving the nest. Despite these changes, the results obtained using the 2 methods were very similar. Therefore, the use of information from additional nest visits did not affect the overall conclusions drawn from this study. However, the Islay Red-billed Chough population has been intensively studied and monitored and the methods used in this census are therefore as consistent as possible with those used during previous Red-billed Chough surveys in Scotland (Monaghan *et al* 1989, Bignal *et al* 1992, Cook *et al* 2001). Although there will inevitably be some variation between surveys in the classification of breeding status based on the interpretation of a birds behaviour, the results do still provide a reliable measure of population change.

In conclusion, although there has been a recent increase in the size of the Red-billed Chough population in Scotland, Red-billed Choughs remain of conservation concern as a result of their small population size and very restricted distribution (Gregory *et al* 2002). With the majority of birds concentrated in such a small area the population is vulnerable to threats such as changes in land use or the alteration of farming practices as well as changes in weather conditions (Reid *et al* in press). Research that is currently being undertaken, which aims to identify the factors that most strongly influence population growth rate and the stage of the life cycle that is most affected, should help focus future conservation effort in the most appropriate areas.

#### **Acknowledgements**

We would like to thank the landowners and farmers who kindly gave permission to survey their land. Thanks also to John Adair, John Armitage, Eric Bignal, Roger Broad, Ian and Margaret Brooke, Fiona Harmer, James How, Angus Keys, Ronnie McIndoe, Clive McKay, Mike Peacock, Fiona Rout and Guy Thomas for help in the field and to Pat Monaghan and Eric Bignal for comments on an earlier draft of this manuscript. The Scottish Chough Study Group provided information on the location of historical nest sites. The census was run as part of the Statutory Conservation Agencies/RSPB Annual Breeding Birds Scheme (SCARABBS) and was funded jointly by the Countryside Council for Wales and the RSPB. Nest visits were licensed by Scottish Natural Heritage.

#### **References**

- Bignal E, Bignal S & McCracken D 1997. The social life of the chough. *British Wildlife* 8: 373–383.
- Bignal E, Bignal S, Moore P, Clarke J & Clarke P 1992. The second international chough census in Scotland, 1992. Unpublished report to the RSPB.

- Bignal E, Monaghan P, Benn S, Bignal S, Still E & Thompson P M 1987. Breeding success and post-fledging survival in the chough *Pyrhocorax pyrrhocorax*. *Bird Study* 34: 39–42.
- Bullock I D, Drewett D R & Mickleburgh S P 1983. The chough in Britain and Ireland. *British Birds* 76: 377–401.
- Cook A S, Grant M C, McKay C R & Peacock M A 2001. Status, distribution and breeding success of the Red-billed Chough in Scotland in 1998. *Scottish Birds* 22: 82–91.
- Gibbons D W, Avery M I, Baillie S R, Gregory R D, Kirby J, Porter R F, Tucker G M & Williams G 1996. Bird species of conservation in the United Kingdom, Channel Islands and Isle of Man: revising the Red Data List. *RSPB Conservation Review* 10: 7–18.
- Gibbons D W, Reid J B & Chapman R A 1997. *The new atlas of breeding birds in Britain and Ireland, 1988–1991*. T&AD Poyser, London.
- Gregory R D, Wilkinson N I, Noble D G, Robinson J A, Brown A F, Hughes J, Proctor D A, Gibbons D W and Galbraith C A 2002. The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002–2007. *British Birds* 95: 410–450.
- Monaghan P, Bignal E, Bignal S, Easterbee N & McKay C R 1989. The distribution and status of the chough in Scotland in 1986. *Scottish Birds* 15: 114–118.
- Reid J M, Bignal E, Bignal S, McCracken D & Monaghan P. Environmental variability, life history covariation and cohort effects in the red billed chough. *Journal of Animal Ecology* – in press.
- Thom V M 1986. *Birds in Scotland*. T&AD Poyser, Calton.
- Warnes J M 1983. The status of the chough in Scotland. *Scottish Birds* 12: 238–246.

**\*SK Finney, RSPB,  
Dunedin House, 25 Ravelston Terrace,  
Edinburgh, EH4 3TP  
Tel: 0131 311 6500  
Email: suki.finney@rspb.org.uk**

**DC Jardine, 49 Bellfield Road, North  
Kessock, Inverness, IV1 3XX**

*\*To whom correspondence should be addressed.*

*Revised manuscript accepted January 2003*

## Scotland's endemic subspecies

R Y MCGOWAN, D L CLUGSTON & R W FORRESTER ON BEHALF OF THE  
SCOTTISH BIRDS RECORDS COMMITTEE. ILLUSTRATED BY C ROSE

*Scottish Crossbill* *Loxia scotica* is the only species currently considered to be endemic to Scotland. Scotland does however possess a further 9 endemic subspecies, that appear on the Scottish List (Clugston et al 2001). These are

Rock Ptarmigan	(Scottish Ptarmigan)	<i>Lagopus mutus millaisi</i>
Winter Wren	(Shetland Wren)	<i>Troglodytes troglodytes zetlandicus</i>
Winter Wren	(Fair Isle Wren)	<i>Troglodytes troglodytes fridariensis</i>
Winter Wren	(Hebridean Wren)	<i>Troglodytes troglodytes hebridensis</i>
Winter Wren	(St Kilda Wren)	<i>Troglodytes troglodytes hirtensis</i>
Song Thrush	(Hebridean Song Thrush)	<i>Turdus philomelos hebridensis</i>
Crested Tit	(Scottish Crested Tit)	<i>Parus cristatus scoticus</i>
Common Starling	(Shetland Starling)	<i>Sturnus vulgaris zetlandicus</i>
Common Linnet	(Scottish Linnet)	<i>Carduelis cannabina autochthona</i>

Many of these races are little known and have been poorly studied. From the early years of the 20th century until the 1950s many bird books treated Scottish birds at the subspecies level, but this practice largely disappeared by the 1960s. As a result most of Scotland's endemic races have to a great extent been ignored during the second half of the twentieth century. In recent years, however, there has been a development in the interest of subspecies amongst many birding enthusiasts, as noted by Rogers *et al* (2002). This has largely been driven by the availability of diagnostic information and the expectation of possible future elevation to species status. Whilst most Scottish species are now well known, we lack detailed knowledge about identification, population and even distribution of many of our endemic races. The purpose of this paper is to provide an overview of what is currently known and to highlight gaps in our knowledge. We also hope to stimulate further study of our endemic birds and to encourage attempts at identification of the various races in the field.

The "Hebridean" race of Hedge Accentor *Prunella modularis hebridium* would be included in the list of endemic races, except that it is currently considered that birds in Ireland belong to this race, so it is not a true Scottish endemic. This race was first described by R Meinertzhagen in 1934 (Meinertzhagen 1934), with the type locality South Uist, Outer Hebrides. As far as it is now known its distribution within Scotland covers the Hebrides, Ayrshire, Renfrewshire, Dunbartonshire the Clyde Islands and Argyll. Two million pairs of Hedge Accentor breed in Britain (Stone *et al* 1997). From the species distribution within Britain (occupied 10 kilometre squares) and its judged density, it would be reasonable to estimate the Scottish population of *hebridium* to be in the region of 75,000–125,000 pairs.

Although the Fair Isle Wren, with less than 50 breeding pairs, is the rarest of our endemic races, both Song Thrush and Linnet are UK Red listed species, as a result of rapid declines (over 50%) in population during the last 25 years. There are

**Table 1** *Subspecies described from Scotland (most of which would be classified as Scottish endemics) but now not considered to be sufficiently distinct and no longer accepted by BOURC.*

English and Scientific names, with describer, citation and type locality		
Common Moorhen*	<i>Gallinula chloropus vestigialis</i> Clancey, 1939	<i>Bull BOC</i> 59:70 (Bardowie, Stirlingshire)
Eurasian Oystercatcher	<i>Haematopus ostralegus occidentalis</i> Neumann, 1929.	<i>Die gef Welt</i> 14:161 (Auskerry, Orkney)
Ringed Plover	<i>Charadrius hiaticula harrisoni</i> Clancey, 1949	<i>Limosa</i> 22:319 (Rudha Ardvule, South Uist)
European Golden Plover	<i>Plivialis apricaria oreophilus</i> Meinertzhagen, 1921	<i>Bull BOC</i> 42:6 (Orphir, Orkney)
Common Wood Pigeon	<i>Columba palumbus kleinschmidti</i> Clancey, 1950	<i>Syll Biol Leipzig</i> , (Kinloch Rannoch, Perthshire)
Sky Lark*	<i>Alauda arvensis divergens</i> Clancey, 1947	<i>Bull BOC</i> 68:12 (Dalitburgh, South Uist)
Water Pipit*	<i>Anthus spinoletta meinertzhageni</i> Bird, 1936	<i>Bull BOC</i> 56:55 (Lochboisdale, South Uist)
Water Pipit*	<i>Anthus spinoletta hesperianus</i> Clancey, 1942	<i>Bull BOC</i> 62:58 (Blackwaterfoot, Arran)
Hedge Accentor*	<i>Prunella modularis interposita</i> Clancey, 1943	<i>Bull BOC</i> 64:14 (Dornoch, Sutherland)
Whinchat[*]	<i>Saxicola rubetra hesperophila</i> Clancey, 1949	<i>Limosa</i> 22:370 (Newton Mearns, Renfrewshire)
Stonechat*	<i>Saxicola torquata theresae</i> Meinertzhagen, 1934	<i>Ibis</i> 76:36 (South Uist)
Northern Wheatear	<i>Oenanthe oenanthe integer</i> Clancey, 1950	<i>Auk</i> 67: 392 (North Knapdale, Argyll)
Common Blackbird*	<i>Turdus merula ticehursti</i> Clancey, 1938	<i>Ibis</i> 80: 750 (Darnley, Renfrewshire)
Song Thrush*	<i>Turdus philomelos catherinae</i> Clancey, 1938	<i>Ibis</i> 80: 749 (Cathcart, Renfrewshire)
Mistle Thrush	<i>Turdus viscivorus precentor</i> Clancey, 1950	<i>Limosa</i> 23:337 (Darnley, Renfrewshire)
Common White-throat	<i>Sylvia communis jordani</i> Clancey, 1950	<i>Auk</i> 67: 394 (Darnley, Renfrewshire)
Long-tailed Tit*	<i>Aegithalos caudatus chlamyrodomeletus</i> Clancey, 1941	<i>Ibis</i> 83:314 (Evelix, Dornoch, Sutherland)
Coal Tit*	<i>Parus ater pinnicolus</i> Clancey, 1943	<i>Bull BOC</i> 63:66 (Rothiemurchus, Inverness-shire)
Eurasian Jay*	<i>Garrulus glandarius caledoniensis</i> Hazelwood and Gorton, 1953	<i>Bull BOC</i> 73:1 (Pitlochry, Perthshire)
Chaffinch*	<i>Fringilla coelebs scotica</i> Harrison, 1937	<i>Bull BOC</i> 57:65 (Carmunock, Lanarkshire)
European Greenfinch*	<i>(Carduelis=) Chloris chloris harrisoni</i> Clancey, 1940	<i>Ibis</i> 82:92 (Thorntonhall, Lanarkshire)
Twite*	<i>(Carduelis=) Acanthis flavirostris bensonorum</i> Meinertzhagen, 1934	<i>Ibis</i> 76:55 (South Uist)
Common Redpoll	<i>Carduelis flammea disruptis</i> Clancey, 1953	<i>Bull BOC</i> 73: 72 (Knapdale, Argyll)
Common Bullfinch*	<i>Pyrrhula pyrrhula wardlawi</i> Clancey, 1947	<i>Bull BOC</i> 67: 76 (Kinloch Rannoch, Perthshire)
Reed Bunting*	<i>Emberiza schoenicus mackenziei</i> Bird, 1936	<i>Bull BOC</i> 56:54 (Lochboisdale, South Uist)

\* Distribution of these forms is restricted to Scotland

no data available to indicate whether the populations of the races endemic to Scotland (Hebridean Song Thrush and Scottish Linnet) have declined at the same rate or exceeded the rate of decline of the species as a whole.

The Scottish List is based upon the taxa accepted by the British Ornithologists' Union Records Committee (BOURC) as they appear on the British List (British Ornithologists' Union 1992). A number of other forms have been described from Scotland, though these are not now considered to be taxonomically distinct (Vaurie 1959; 1965) and their names are accordingly synonymised with current British races. These are listed in Table 1. Sixteen (possibly 17) of these taxa had breeding distributions limited to Scotland when originally described and are marked with an asterisk.

### Scottish Endemic Subspecies

***Rock Ptarmigan (Scottish Ptarmigan)***  
***Lagopus mutus millaisi Hartert 1923.***  
**British Birds 17: 106. (Ben Wyvis)**

*Millaisi* is the only race found in Britain. The entire British population is now confined to Scotland, having become extinct in the English Lake District during the 19th century. Restricted to the higher mountains with the main population in the Grampians and North West Highlands. It is scarce on the Caithness hills. Small numbers are resident on the islands of Arran, Mull, Skye and Outer Hebrides. With few exceptions, such as Applecross, the habitat in the west is poorer than in the Cairngorms and east Mounth (A Watson *pers comm*). The most recently published population estimates of a minimum of 10,000 pairs (Gibbons *et al* 1993; Stone *et al* 1997; Mead 2000) appear all to have been based on Ratcliffe's (1990) data. Gibbons *et al* (1993) do draw attention to the fact that few data from counts exist. A Watson (*pers comm*)

confirms that no accurate estimate is possible because counts have been so few in number, though he believes it unlikely that there would be less than 10,000 birds in spring and seldom more than 100,000 in autumn.

### Identification

Summer and autumn dorsal plumage rather greyer and less barred, lacking the white markings of the nominate race. In comparison, nominate *mutus* is browner and blacker, more barred and vermiculated. In winter, most individuals of *millaisi* retain a few dark feathers. Wing length of male *millaisi* significantly shorter than nominate *mutus* (Cramp and Simmons 1979). A general impression from skins in the NMS is that Scottish birds have narrower and less deep bills than Scandinavian ones.

### *Winter Wren (Shetland Wren)*

***Troglodytes troglodytes zetlandicus***  
***Hartert 1910. Die Vögel der paläarktischen fauna page 777. (Shetland Islands)***

Bannerman (1954) describes this race as 'A resident confined to the Shetland Islands (except Fair Isle)'. More recently, Pennington *et al* (*in press*) draw attention to a few records of this subspecies from Fair Isle on 21 October 1985 and 17 May 1986. There is some evidence from FIBO reports that these records may be a regular, though perhaps less than annual, phenomenon (Collinson 2002). A further extra limital record of a corpse from Newburgh, Aberdeenshire on 13 January 1968 was considered by Kenneth Williamson to be a definite *zetlandicus* (Macmillan 1969, Pennington *et al in press*), though Collinson alludes to a suggestion that this may have been a large migrant from Scandinavia. Unfortunately, none of these birds had been ringed.

The current breeding population is estimated as 3,000-6,000 pairs (Pennington *et al in press*).



**Winter Wren (Fair Isle Wren)**  
**Troglodytes troglodytes fridariensis**  
**Williamson 1951. Ibis 93:599. (Fair Isle, Shetland)**

The resident breeding population is confined to Fair Isle, an island lying between Orkney and Shetland, and 25 miles from each. They rarely nest away from the sea cliffs. There are no records of this race away from Fair Isle.

A population estimate by Williamson (1965) suggested 40–50 pairs whereas Thom (1986) indicates that the population ‘...fluctuates between 10 and 40 pairs and was estimated to include only 10 singing males in 1980.’ Pennington *et al* (*in press*) currently refer to a population that has fluctuated between 10 and 50 singing males during the last 30 years, with 29 territories recorded in 2000.

**Winter Wren (Hebridean Wren)**  
**Troglodytes troglodytes hebridensis**  
**Meinertzhagen 1924. Scottish Naturalist**  
**page 135. (Butt of Lewis, Outer Hebrides)**

Bannerman (1954) describes this race as ‘A resident in the Outer Hebrides, Lewis, Harris, North and South Uist and probably Skye’. Earlier and subsequent writers add virtually nothing to our understanding of its complete distribution, nor any real idea about the size of the population.

Population estimates are surprisingly broad, ranging from 1,000–10,000 pairs (B Rabbitts *pers comm*, A Stevenson *pers comm*), with the upper figure possibly attainable in good years.

**Winter Wren (St Kilda Wren) Troglodytes troglodytes hirtensis Seebohm 1884. Zoologist page 333. (St Kilda)**

This species is confined to the archipelago of St Kilda, lying almost 40 miles west of the Outer Hebrides. Baxter & Rintoul (1953) indicate a population range of 50–100 pairs with 68 pairs in 1931, though later estimates by others generally suggest a higher figure. Williamson (1958) calculates a total population of 233 pairs from a study in 1957. Specific figures for each island were 116 pairs on Hirta, 25 on Dun, 45 on Soay, 45 on Boreray and 2 on Stac an Armin. A later census on Hirta only, between May 1961 and September 1962 (Waters 1964) gives a population of 92 pairs, an apparent decrease on the 1957 figure. More recently Murray (2002) writes that ‘there is no evidence of gross changes in numbers and the 1957 estimate of not less than 230 pairs for the islands is probably still valid’.

**Field identification of Scotland's Winter Wren subspecies (Plate 2)**

As noted by Vaurie (1959) geographical variation within the Winter Wren is substantial with between 26 and 30 races now usually being recognised in the Palearctic. Wing length, size and length of bill, overall plumage colouration and extent of barring are the features that show the most noticeable difference. The degree of colour saturation is believed to correlate with prevailing humidity.

The following descriptions compare these subspecies with the mainland Scottish wren *T t indigenus*. The latter is the predominant subspecies throughout the British Isles, though nominate *trogloodytes* occurs towards the south. In comparison with nominate *trogloodytes*, *indigenus* is darker and richer brown on the upperparts. For a fuller discussion on the geographical variation of wren taxa in the Palearctic see Cramp (1988) and Collinson (2002).

As wren populations are generally sedentary, identification of individuals will not usually be a problem; eg most wrens observed on Fair Isle

will be *fridariensis*. Instances of ‘vagrancy’ amongst these endemics, however, have been recorded eg nominate *trogodytes* in St Kilda (Murray 2002) and possible *zetlandicus* in Aberdeenshire (King 1969; Collinson 2002). However, for birds outwith their normal ranges, subspecific differences may not always permit field identification of individuals. Whilst expertise in the recognition of vocalisations of particular populations may also be of some assistance with identification, local variation in song dialects would make this difficult.

**Shetland Wren:** Darker and more rufous brown than the mainland form with underside heavily barred, barring generally extending from abdomen to breast, bill longer and stouter, stronger legs.

**Fair Isle Wren:** In comparison with *zetlandicus*, generally paler; wing, bill and tarsus length intermediate between mainland form and *zetlandicus*; heavier than mainland form.

**Hebridean Wren:** Darker and more heavily barred than the mainland form; size similar. From *zetlandicus* tends to be buffier, with less heavy and extensive barring; bill slightly shorter and weaker.

**St Kilda Wren:** Heavily barred, bill strong and long, distinctly paler and greyer undersides than all of the above subspecies. From the mainland form by larger size, heavier barring, generally greyer and less rufous.

***Song Thrush (Hebridean Song Thrush)*  
*Turdus philomelos hebridensis Clarke*  
1913. *Scottish Naturalist* page 53.  
(Barra, Outer Hebrides)**

The BOU (1971) states ‘confined to the Outer Hebrides and the Isle of Skye; populations in the Inner Hebrides other parts of western Scotland and Kerry are intermediate between this and the race *T p clarkei*’, the latter being the race which breeds

throughout Britain. Clements (2000) shows the distribution to be Outer Hebrides and Isle of Skye. Thom (1986) makes no mention of this race at all.

Due to the lack of census work current population estimates for the Outer Hebrides are understandably vague, with A Stevenson (*pers comm*) suggesting 750–2,000 pairs, whereas B Rabbitts (*pers comm*) prefers the slightly lower range of 500–1,000 pairs. No survey data are available from Skye, although Andrew Currie (*pers comm*) considers it unlikely that the breeding population exceeds 200 pairs. The total population of *hebridensis* cannot therefore be estimated more accurately than the broad approximation of 500–2,200 pairs.

In Britain, breeding Song Thrushes are largely sedentary with only c25% of breeding birds recovered in winter moving more than 20km (Wernham *et al* 2002). Birds specifically from the Outer Hebrides and Skye are generally believed to be similarly sedentary, apart from a proportion which move away from their breeding grounds between July and February (Witherby *et al* 1938b). A number of these birds are quite reasonably assumed to overwinter in Ireland (Cramp 1988). However, apart from Ruttledge’s (1966) reference to a bird ‘showing the characteristics’ of *hebridensis* which was caught in County Tipperary on 1 January 1963, there is, to date, little in the way of empirical evidence to support this. Some of the Hebridean birds are replaced in winter by continental (= nominate *philomelos*) birds (Witherby *et al* 1938b; Baxter & Rintoul 1953) and one was trapped at Uig, Lewis on 23rd October 2001 (A Stevenson *pers comm*). Examination of winter collected skins from the Outer Hebrides in the NMS (this study) indicates that some mainland Scottish (= *clarkei*) birds also move to these western areas. A small number of *clarkei* were claimed to breed at Stornoway (Witherby *et al* 1938b), but A Stevenson (*pers comm*) says that this is no longer the case, with all

Stornoway breeders now being *hebridensis*, as are all Song Thrushes currently breeding in the Outer Hebrides.

Baxter & Rintoul (1953) refer to autumn and spring records of *hebridensis* from Ayrshire, Pladda (off Arran), and Wigtownshire. The Ayrshire record relates to a specimen collected from a 'small flock' by Richmond Paton on 6 October 1922 and deposited in the Dick Institute, Kilmarnock (Baxter & Rintoul 1953; Paton & Pike 1929). Validation of this record should therefore be possible if the specimen still exists. The Pladda records may allude to birds (*ex coll* H Whistler in NMS) obtained at Pladda lighthouse in April 1937 and October 1938. In fact, these skins are perfectly good *clarkei* and not *hebridensis*. Specimen based and/or ringing evidence for *hebridensis* movements is virtually nonexistent. It is certainly insufficient to substantiate N F Ticehurst's theory, as quoted by Bannerman (1954), by which Redwings *Turdus iliacus* coming south by the west coast route "pick up" a proportion of *hebridensis*.

A bird ringed in its first year on 2 August 1983 near Inverness was found dead on Lewis on 16 May 1984. The race was not recorded nor is it known if the specimen was preserved. It could either be a *hebridensis* returning to Lewis to breed or a wandering *clarkei* or *philomelos* still to return to its breeding area.

As mentioned above, birds from the Inner Hebrides and parts of western Scotland are described as intermediate between *hebridensis* and *clarkei* (Witherby *et al* 1938b; Vaurie 1959; BOU 1971) or, at least, generally darker in plumage (Bannerman 1954). Whilst researching this paper, an examination of the NMS skin collection revealed several skins from Islay (all collected in June 1926) that show a mixture of *hebridensis* and *clarkei* characters. Three adults exhibit *hebridensis* features of dark spotting,

greyer rump and flanks, richer buff underwing and more boldly marked face, though they also have lighter rufous brown crown and mantle, these latter features being more typical of *clarkei* or *philomelos*. A fourth adult in the same series closely resembled typical *hebridensis* even in crown and mantle colouration. A juvenile bird collected at the same time is heavily spotted, though its immaturity makes assessment of its affinities more difficult. A further specimen showing similar intermediate characters is a bird collected in April 1911 at Barns Ness Lighthouse, Dunbar. This individual is heavily spotted with darkish buff underwing and hint of grey on the rump, though it does have a richer rufous crown and mantle.

It is clear that we are still largely ignorant of the status, distribution and movements of Hebridean Song Thrush even 90 years after its first description.

### Identification (Plate 3)

Six features are useful in differentiating *hebridensis* from *clarkei* and nominate *philomelos*. Ventrally these are (a) bold, almost black spots, (b) flanks smoky, greyish brown rather than buffish, (c) underwing coverts rich, rufous buff, darker than other races. On the dorsal surface, (d) the forehead, crown and mantle is dark brown with a less rufous tone than *clarkei*, and (e) the rump and upper tail coverts have a grey wash. Finally, (f) the dark markings of the face and throat are generally bolder. Regarding (d), it is worth emphasising that the forehead and crown colour is noticeably darker in *hebridensis* when directly compared with the other 2 races.

As some *clarkei* and nominate *philomelos* may superficially resemble *hebridensis* eg with heavy dark spotting, it is important that as many characters as possible are used to verify the diagnosis.

Most Hebridean Song Thrushes should be separable in the field given good views. Bold spotting alone should not be relied on. Greyish wash on rump and upper tail coverts, smokey brown flanks and richer rufous buff underwing, are important identification features.

**Crested Tit (Scottish Crested Tit) *Parus cristatus scoticus* (Prazák, 1897). Journal fur Ornithologie 45: 347. (Scotland)**

The entire British population is confined to Highland pine forests of Scotland and belongs to the race *scoticus*. It appears likely that they became isolated from the widespread Continental birds along with the Caledonian pine forest after the last glaciation. *Scoticus* is largely restricted to the pinewoods of Strathspey, the Beaully catchment, parts of the Great Glen, east Ross and the coasts of Nairn, Moray and Banffshire. It is absent as a breeding species from Deeside, despite the presence of apparently suitable habitat and occasional records. Studies have shown that 35% of the population occurs in ancient native pinewoods, which comprises only 4.7% of the woodland, with the rest nesting in pine plantations (Summers *et al* 1999). The Scottish subspecies is by far the most restricted in range of any of the European populations.

Estimates of population size have previously varied from Nethersole-Thompson's 300–400 pairs in the 1960s (Thom 1986) to c900 pairs in Cook's 1980 study (Cook 1982). This latter figure is quoted in *The New Atlas of Breeding Birds* (Gibbons *et al* 1993) and also used by Stone *et al* (1997) and Mead (2000).

In the most recent quantitative assessment Summers *et al* (1999) calculate a winter population range of 5,600 – 7,900 birds over three winters in the early 1990s and estimate 2,400 territories holding pairs or unmated birds.

The population estimates obtained in this study are greater than earlier ones, because of the different methods used and small sample sizes of densities in earlier works. There is no evidence of any real population increase.

Generally 6 races of Crested Tit including *scoticus* are recognised with all populations being considered extremely sedentary (Cramp & Perrins 1993). Of c10 English records, only 2 have been identified to race, one nominate *cristatus* (Whitby, Yorkshire, 1872) and one *mitratus* (Isle of Wight, pre 1844) (Bannerman 1953b). There is an interesting report of a Crested Tit attending a garden feeder in Tobermory, Mull from 19 October 2002 to at least 9 November 2002. Although the race was undetermined, this presumably refers to *scoticus* (A Murray *pers comm*).

**Identification (Plate 1)**

*Scoticus* is noticeably smaller (male – wing length 65.5 (64–67) mm *cristatus*; 63.3 (60–66) mm *scoticus*) and darker than nominate *cristatus* and *mitratus*; upper parts are duller and browner, underparts much duller, flanks and undertail coverts browner, less buff. White fringes of crown narrower and duller, also white of underparts duller and more dingy.

*Scoticus* is closest to *weigoldi* (from the Iberian peninsula) in size and colour, though latter unlikely to cause confusion in Scotland. *Weigoldi* has pale fringes on forehead and crown broader and whiter than *scoticus*.

Occurrences in Scotland of races other than *scoticus* must be considered unlikely. Even 'paler and larger' Scottish Crested Tits will probably be just that, rather than another race, nevertheless there must be some chance of Scandinavian vagrants and, presumably, these are likelier to be detected outwith normal *scoticus* areas, for example at coastal sites. All birds found outside

the normal range of *scoticus* should therefore be closely examined to determine race.

**Common Starling (Shetland Starling)**  
***Sturnus vulgaris zetlandicus* Hartert**  
**1918. Novitates Zoologicae 25: 329.**  
**(North Yell, Shetland)**

Distributionally this is perhaps the most complex of the Scottish endemic subspecies. Hartert's type was from Yell and his series was separated on bill width (broader than nominate *vulgaris*, narrower than *faroensis*), wing length (intermediate between nominate *vulgaris* and *faroensis*) and colour of juvenile plumage (darker than nominate *vulgaris*). Birds from Fair Isle were classed as intermediate between *zetlandicus* and nominate *vulgaris* and Hartert suggested that St Kilda birds also showed intermediate characters.

Contrary to Baxter & Rintoul's (1953) claim that "In 1918 the Starling of the Outer Hebrides and Shetland was separated from the typical form", Hartert actually makes no reference whatsoever to birds from the Outer Hebrides. Bannerman (1953a) similarly includes Outer Hebrides within the range of *zetlandicus*. Witherby (1920) lists *zetlandicus* as an addendum in his *Practical Handbook* as occurring in Shetland excluding Fair Isle. However, the *Handbook of British Birds* (Witherby *et al* 1938a) subsequently includes the Outer Hebrides, including St Kilda, in the distribution of this race. The author (HFW) comments "Birds [= juveniles] from Outer Hebrides are as dark as those from Shetland" though "Birds from South Uist and St Kilda have very much the same measurements as *S v vulgaris*." It would appear that these statements formed the proposition that *zetlandicus* is the form occurring in the Outer Hebrides and that this view became more formally adopted through the works of Bannerman and Baxter & Rintoul

referred to above. It is worth noting, however, that the BOU (1971) record *zetlandicus* as a 'poorly defined' subspecies.

Baxter & Rintoul (1953) record the Shetland Starling being a common bird, even when starlings were generally scarce throughout Scotland around the mid 19th Century. This isolation of the Shetland population no doubt facilitated its differentiation. Hartert (1918) interprets the Fair Isle intermediates as the possible product of immigration from both north and south to that island.

A current population estimate for Shetland is c29,000 breeding pairs, ranging from 19–39,000 pairs (Pennington *et al in press*). The Starling population in the Outer Hebrides is estimated at 10,000+ pairs (B Rabbitts *pers comm*, A Stevenson *pers comm*). To complete the picture, between 100–300 pairs are regularly estimated on St. Kilda (Murray 2002), with a proportion including some autumn migrants overwintering.

The British breeding Starling population is largely sedentary, with c80% of movements of ringed birds being less than 20km (Wernham *et al* 2002) and there is little in the way of hard data to suggest that *zetlandicus* may be otherwise. Evidence from intermediate type birds ringed on Fair Isle shows a degree of juvenile dispersion eg recoveries in Shetland, Orkney, Caithness, Ross, Aberdeenshire, Angus and the North Sea Dogger Bank.

Of 12 birds found dead on North Sea oil installations (skins in NMS), 2 (both October) from the Beatrice C oil field (roughly midway between Wick and Banff) have bill widths of 8.1mm and 8.4mm, which are suggestive of *zetlandicus*. It is worth noting the somewhat curious report of 5 *zetlandicus* recorded on 5 October 1936 in Greenland (Bird & Bird 1941); a single bird was collected and is held at the Natural History Museum, Tring.

## Identification

As mentioned, Hartert described this subspecies as intermediate between nominate *vulgaris* and *faroensis*. The latter, in comparison with nominate *vulgaris*, is a large heavily built race, with stronger legs and feet and bill broader at the base. Birds from Fair Isle were considered intermediate between *vulgaris* and *zetlandicus* and therefore less distinctive. Plumage of juveniles (of both *zetlandicus* and *faroensis*) is more sooty black, with less white on chin and belly, the white making the dark spots on throat more obvious. Adults tend to be less glossy but more dark green than nominate *vulgaris*.

Identification of *zetlandicus* is, therefore, a fairly subtle matter, with width of bill at the base being the significant factor (8–8.5mm cf. 7–8mm in nominate *vulgaris*) (Cramp & Perrins 1994).

Although birds from the Outer Hebrides have been classed by some authors as *zetlandicus* due to darker juvenile plumage, it has been indicated more recently that dark juveniles are not uncommon within the range of nominate *vulgaris*, particularly in Scotland (Cramp & Perrins 1994). With biometrics also similar to *vulgaris*, the case for *zetlandicus* as the taxon in the Outer Hebrides must be fairly tenuous.

Field identification of *zetlandicus* outwith Shetland is therefore highly problematic. Essentially, either ringing data or data on bill width would be necessary to substantiate claims for this subspecies.

**Common Linnet (Scottish Linnet)**  
***Carduelis cannabina autochthona***  
**Clancey 1946. Bulletin of the British**  
**Ornithologists' Club 66: 84.**  
**(Carmunnock, Lanarkshire)**

Clancey described this subspecies on the skins from Renfrewshire, Lanarkshire and Fife, stating

of its distribution “imperfectly known at the present time”. Referring to a specimen from Fair Isle showing the appropriate characters, he added that it “is presumed to range throughout Scotland to the Orkneys and Shetlands”.

Baxter & Rintoul (1953) add nothing to Clancey’s assertion. However, Bannerman (1953a) does add “perhaps also Ireland”, remarking that Irish resident birds are variable though “mostly dark and match those from Scotland”. Nevertheless, no comparative analysis of this observation seems to have been undertaken. The BOU Records Committee (BOU 1971) view the subspecies as “poorly distinguished”.

Our current understanding of the precise distribution of *autochthona* remains obscure. Although *autochthona* is believed to breed throughout most of Scotland, it grades into *cannabina* (which breeds in the rest of the British Isles and continental Europe) and no precise boundary can be drawn between the 2 races. At present there are no confirmed instances of *autochthona* breeding outwith Scotland although gradation within the species probably extends either side of the border. Clancey (1946), himself, noted that birds from Northumberland “show a leaning towards” *autochthona*.

In *The New Atlas of Breeding Birds*, 520,000 Linnet territories were estimated for Britain in 1988–91 (Gibbons *et al* 1993). On the basis of occupied squares in the Atlas, we assess the Scottish breeding population to fall within the range 60,000–100,000 pairs.

Natal site fidelity in Linnets appears to be high, and many Scottish breeding birds over winter in Scotland (Wernham *et al* 2002). It is also believed that Western European and Scandinavian birds, of the nominate race *C cannabina cannabina*, contribute to the higher



numbers that are evident around the east coast during winter (Bannerman 1953a; Lack 1986).

Movements of English breeding birds to the continent are well established, though any pattern of movement for *autochthona* is more difficult to discern due to lack of data (Wernham et al 2002). There is only a solitary record of a Scottish bred Linnet (= *autochthona*) recorded outwith Scotland. The bird, ringed as a chick near Sanquhar, Dumfries & Galloway on 18 June 1928 was recovered near Egremont, Cumbria on 8 November 1928. (BTO *pers comm*).

Two other recoveries outwith Scotland were of birds ringed as adults. As no racial determinations of the birds were made, there is less certainty that these were genuine *autochthona*. One bird, ringed in Lothian on 26 August 1964 was recovered in Spain in 1 January 1965. The other bird was ringed on the Isle of May on 6 May 1953 and controlled 7 weeks later in Tyne & Wear (BTO *pers comm*).

Ringling data indicate some movement from England to Scotland e.g. Orkney and Strathclyde (BTO *pers comm*) Fifty years ago Bannerman (1953a) considered Linnets in the Outer Hebrides, Orkney and Shetland to be passage migrants from the continent (= nominate *cannabina*). However, no real determination of subspecies has so far been made regarding the recent colonisation of the Outer Hebrides (Murray 2000).

Whilst the race appears to be largely sedentary, we still have much to learn about the overall distribution and movements of *autochthona*.

### Identification

This race is, on average, marginally darker with slightly more obvious striations on mantle. In a given sample, Scottish birds, males in particular, will tend to show a darker grey nape and duller, darker brown mantle and scapulars in comparison with nominate *cannabina*.

**Plate 1** Subspecies of Crested Tit *Parus cristatus*. Painted from skins held by NMS.





As these features are average differences, some individuals (a minority) from the darker Scottish population may actually be lighter and less streaked than some from the nominate *cannabina* population. Similarly, there may exceptionally be some birds from the nominate population which are darker than the average Scottish birds. On an individual basis, therefore, it is virtually impossible to categorise a particular bird as *autochthona* or nominate *cannabina*. At a given locality eg Northumberland, such a determination would have to involve the study of a representative sample of the local breeding population.

## Conclusion

Our knowledge of Scotland's endemic bird forms is exceedingly sketchy. Very little research has taken place in recent years to determine the current status of most of these forms and birders have made little effort to get to grips with their field identification. In particular, the actual size of the population and specific distribution of several of these races is poorly known. Further research is desirable and may result in a reappraisal of their status and validity.

Linnet and Song Thrush are both UK Red listed species, as a result of rapid (50%+) declines in their overall UK breeding populations (Gregory *et al* 2002). The decline in the population of the Scottish race of Linnet *autochthona*, appears to be less than the UK average and there is some recent evidence of a partial recovery, but these conclusions are based on sparse monitoring information (R Gregory *pers comm*). Due to a lack of research, we know nothing about population changes within the *hebridensis* race of Song Thrush, although it may well not have declined to the same extent as *clarkei* (B Rabbitts *pers comm*).

St Kilda Wren has probably the best credentials of any of the endemic races in Scotland for

possible future upgrade to species level. On the other hand, the status of Scottish Linnet as a subspecies is more tenuous.

Crested Tit appears in Schedule 1 Part 1 and Schedule 4 of the Wildlife and Countryside Act 1981. Scottish Crested Tit is the only one of our endemic races to have specific protection. Under Section 3 of the Wildlife and Countryside Act 1981, there are 'Areas of Special Protection' (ASPs) and under the Birds Directive there are 'Special Protection Areas' (SPAs). We understand that St Kilda (as a World Heritage Site) and much of Fair Isle (the cliffs and hill area) are SPAs. As a result the entire population of St Kilda Wren and that part of the Fair Isle Wren population within the protected area, should have quasi Schedule 1 protection status, however this does not appear to have been fully tested in law. The majority of the population of all other endemic subspecies are at any one time outwith areas with either ASP or SPA status and therefore they have no special protection other than that afforded to the species. Common Starling appears in Schedule II Part 2 of the Wildlife and Countryside Act 1981 and as the Shetland race receives no special recognition it is therefore treated as a 'pest' species. There is certainly a strong case for subspecies to be afforded a higher level of overall protection than currently exists.

We hope this paper raises awareness about the identification features, status and distribution of Scotland's endemic subspecies and will stimulate further study.

## Appendix 1

### Original descriptions

Text of the first published descriptions is given below. With one exception, the full citations for the following scientific names have appeared above in the main treatments of the subspecies. With regard to the name for Rock Ptarmigan, however, Hartert first used the subspecific name *millaisi* in 1923 (*British Birds* 17:106), although his description of the Scottish Ptarmigan originally appeared in *Die Vögel der paläarktischen Fauna* (1921 page 1868).

#### Rock Ptarmigan (Scottish Ptarmigan)

##### *Lagopus mutus millaisi*

[Translation from German] The Scottish ptarmigan is clearly different from *L mutus mutus* in the following. [Adult] male in [breeding plumage] in *L m mutus* is rarely totally free of white feathers, on the upper tail covers, rump and back a few (often many) white feathers are [retained], [adult male *mutus*] always moulted really dark, without white spots. The old female in the same plumage [i e female breeding plumage] is [dorsally] and on the crop lively yellow brown, nearly orange-brownish. Autumn plumage is of a pure grey, with a lesser yellow brownish trace as in [nominate] *mutus*! This is really easy to see even in a limited series. The winter plumage, of birds from Scandinavia and Russia [is] always pure white, [usually] shows [in *millaisi*] some dark spots; on the colder east Scottish heights it [is said that it] can often go pure white. Wings of [adult] males 185–207 (most 192–203) mm. It is therefore easy to distinguish from *L m mutus*, but very similar to *L m helveticus*. After investigation of the specimens in the collections of John Millais, the British Museum, the Royal Scottish Museum in Edinburgh and the collection of Miss Jackson is it certain that it is dissimilar to *L m mutus*.

Lives currently only in the mountain heights of

Scotland, including the Inner Hebrides (Mull, Islay, Jura, Skye), but is said to be extinct on the outer Hebrides and Orkney islands, also on the heights of the lake district of north England.

#### Winter Wren (Shetland Wren)

##### *Troglodytes troglodytes zetlandicus*

[Translated from German.] Definitely different from *T t troglodytes* by its significant size and in general only comparable to *T t islandicus*, *borealis* and *hirtensis* - beak at least equally strong as in *islandicus*, culmen 15–16 mm, but wings are shorter: in 3 males 52–53.3, in one female 48.1mm. Different from *T t borealis* by the darker upper side, especially darker upper head, slightly darker wings and slightly darker under side, but especially by the stronger beak, [different] from *T t hirtensis* by the darker colouration, especially of the underside. Cross banding broad and dark. Tail male 37–39, female 34, foot 19mm. Type: female adult Dunrossness, Shetland Islands, north of Scotland, 12 Dec. 1906, collected by N B Kinnear, No. 59F in Royal Scottish Museum in Edinburgh. Often a resident on the rocky, stormy Shetland Islands, where he [the bird] fearlessly occurs and nests in rock crevices and under the grass cover over [hanging] cliffs.

#### Winter Wren (Fair Isle Wren)

##### *Troglodytes troglodytes fridariensis*

*Autumn plumage* – paler, not so dusky, on breast and centre of belly as *T t zetlandicus*. Chin and throat whiter. Underparts suffused with buffish, but less strongly than in *hebridensis*. Vermiculation on vent, flanks and sides of breast almost as extensive as on the Shetland form, and much more so than in the typical race and most Hebridean birds. Upper parts paler and brighter rufescent than in the Shetland race (which is dark reddish brown above) and having a greyish suffusion in fresh plumage.

*Worn breeding plumage* – Five June birds from Shetland are darker rufous brown than 2



Plate 2 Subspecies of Winter Wren *Troglodytes troglodytes*. Painted from skins held by NMS, including holotypes of *zetlandicus*, *fridariensis*, *hebridensis* and *indigenus*.



Plate 3 Subspecies of Song Thrush *Turdus philomelos*. Painted from skins held by NMS including syntypes of *hebridensis*.

comparable specimens from Fair Isle, which are brighter, more rufescent.

*Measurements* – In wing, bill and tarsus measurements Fair Isle birds are intermediate between the Shetland and typical races.

#### **Winter Wren (Hebridean Wren)**

##### *Troglodytes troglodytes hebridensis*

From *T t troglodytes* these differ in being darker and more heavily barred underneath. In size they are similar. From *zetlandicus* they do not differ in the colour of the upper parts, but on the whole the barring of the underparts is more confined to the abdomen, whereas in *zetlandicus* the barring usually extends from the abdomen to the breast. The bill in similar sexes is invariably smaller than in Shetland birds, and resembles the mainland form.

#### **Winter Wren (St Kilda Wren)**

##### *Troglodytes troglodytes hirtensis*

Closely resembles *T t pallescens* [Commander Islands and Kamchatka] but much more distinctly barred on the back and head, and almost free from any traces of spots on the throat and breast. In general colour ... quite as pale and slightly greyer than examples ... from Algeria and Turkestan. The bill resembles that of *borealis*. The eye stripe is as distinct as in typical examples from Europe.

#### **Song Thrush (Hebridean Song Thrush)**

##### *Turdus philomelos hebridensis*

Decidedly darker in plumage than any British or Continental representatives of the species. Mantle and wings are dark (clove) brown, the head is slightly redder, and the rump and upper tail coverts are dark olive. Thus the upper plumage of the Hebridean bird more resembles that of the Continental race than that of its British cousin. The most striking feature of the under surface, and indeed the plumage generally, is the multitude of intense black, ovate spots on the throat, chest and abdomen; while the buff,

which is confined to the throat and chest, is very pale as compared with song thrushes from other areas. The flanks are pronouncedly streaked with greyish brown, and show little of the buff, which is much in evidence on the flanks and breast of other song thrushes. The buff of the underwing coverts is richer (redder)... The wing measurements range from 116 to 120 mm, so that it is a mistake to say that the birds are smaller than their mainland representatives, which has been maintained by some writers, they are fully up to average.

#### **Crested Tit (Scottish Crested Tit)**

##### *Parus cristatus scoticus*

[Translated from German.] Since finishing the manuscript of the current work I came to the conclusion, that *rufescens* is a well distinguishable subspecies of the crested tit and is totally different from the eastern form. As I intend to return to these forms more thoroughly later on, here I give only short hints. *Lophophanes* [= *Parus*] *cristatus* falls into 3 geographically separated forms: 1. *cristatus typicus* (Linnaeus), entire upper side, i e back and rump isabell brown. [Range] Scandinavia, Eastern Prussia, Baltic provinces, Poland. 2. *cristatus mitratus* (Brehm), back wood brown grey, the rump more as the following [subspecies]. [Range] Central Europe. 3. *cristatus rufescens* (Brehm), white head colour more dull, belly sides more strongly [tinged with] a lively rust colour, crest usually longer and more upwardly curved, the red brown of the upper side, inclusive of the rump more intensive. Range Western Europe. If No 2 is perhaps very close to the typical form, No. 3 is totally different, as Brehm already knew very well. Namely the Scottish specimens are very dark brown and could maybe be called *scotica*.

#### **Common Starling (Shetland Starling)**

##### *Sturnus vulgaris zetlandicus*

Nearest to *faroensis*, but bill not so wide and

long, though wider (only sometimes longer) than in *vulgaris*. First primary not as broad as in *faroensis*. [Series of wing lengths.] In 12 adult *faroensis* wings 133–136 mm, in 200 *vulgaris* only 128–132 mm, (exceptionally up to 134). Juv. As a rule as dark as those of *faroensis*, much darker than those of *vulgaris*. [comparisons with Fair Isle specimens] – one must therefore say that these birds [Fair Isle] are on the whole intermediate between *vulgaris* and *zetlandicus*.

### Common Linnet (Scottish Linnet)

#### *Carduelis cannabina autochthona*

Male, autumn, differs from *A c sejuncta* [= nominate *cannabina*] on account of the much darker grey brown of the crown and nape; darker and more heavily striated mantle; duller underparts with more strongly accentuated gular markings. Female, autumn, considerably darker and more strongly striated on upperparts. Underside with darker markings than [nominate *cannabina*].

## Appendix 2

In addition to the endemic races (plus Hedge Accentor *Prunella modularis hybridum*) there are several other taxa, which have been described from specimens obtained in Scotland. These are:-

### Species

#### Northern Gannet

*Morus bassanus* Linnaeus 1758

*Systema Naturae* 10th edition, page 133.

(Bass Rock)

#### Roseate Tern

*Sterna dougallii* Montagu 1813

*Ornithological Dictionary Supplement*

(Cumbrae, Firth of Clyde)

#### Scottish Crossbill

*Loxia (curvirostra) scotica* Hartert 1904

*Die Vögel der paläarktischen Fauna*, page 120 (Easter Ross)

### Subspecies

#### Willow Ptarmigan (Red Grouse)

*Lagopus (lagopus) scoticus* Latham 1787

*A General Synopsis of Birds*. Suppl. 1. page 290 (Scotland)

#### Winter Wren

*Troglodytes troglodytes indigenus* Clancey

1937 *Bulletin of the British Ornithologists' Club* 57: 143 (Carmunnock, Lanarkshire)

#### Meadow Pipit

*Anthus pratensis whistleri* Clancey 1942

*Bulletin of the British Ornithologists' Club* 63: 6. (Dornoch, Sutherland)

#### Yellowhammer

*Emberiza citrinella caliginosa* Clancey 1940

*Ibis* 1940, page 94 (Dornoch, Sutherland)

### Acknowledgements

We wish to thank the following for help and assistance with this paper: Lloyd Austin, Andrew Currie, Richard Gregory, Angus Murray, Brian Rabbitts, Roger Riddington, Andrew Stevenson, Ron Summers, Adam Watson and Phil Whitfield for supplying information about particular subspecies; Jörn Scharlemann for translating German text; Graham Appleton for prepublication access to the BTO's Migration Atlas; The BTO Ringing Scheme, which is funded by a partnership of the British Trust for Ornithology, the Joint Nature Conservation Committee (on behalf of English Nature, Scottish Natural Heritage and the Countryside Council for Wales, and also on behalf of the Environment and Heritage Service in Northern Ireland), Duchas the Heritage Service – National Parks and Wildlife (Ireland) and the ringers themselves.

### References

- Bannerman D A 1953a. *The Birds of the British Isles*, Vol. 1. Oliver & Boyd, Edinburgh.  
 Bannerman D A 1953b. *The Birds of the British Isles*, Vol 2. Oliver & Boyd, Edinburgh.



- Bannerman D A 1954. *The Birds of the British Isles*, Vol 3. Oliver & Boyd, Edinburgh.
- Baxter E V & Rintoul L J 1953. *The Birds of Scotland*. 2 Vols. Oliver & Boyd, Edinburgh.
- Bird C G & Bird E G. 1941. The birds of Northeast Greenland. *Ibis* 83:118–161.
- British Ornithologists' Union 1971 *The Status of Birds in Britain and Ireland*. Blackwell, Oxford.
- British Ornithologists' Union 1992. *Checklist of Birds of Britain and Ireland* 6th Edition. BOU, Tring, Herts.
- Clancey P A 1946. Two new races of *Acanthis cannabina* (Linnaeus) from the Western Palearctic region. *Bulletin of the British Ornithologists' Club* 66:83–85.
- Clarke W E 1913. The Song Thrush of the Outer Hebrides – *Turdus musicus hebridensis* – a new racial form. *Scottish Naturalist* 1913:53–55.
- Clements J F 2000. *Birds of the World : A Checklist*. 5th Edition. Pica Press, Robertsbridge.
- Clugston D L, Forrester R W, McGowan R Y & Zonfrillo B 2001. The Scottish List – species and subspecies. *Scottish Birds* 22:33–49.
- Collinson M 2002. How Many Wrens? *Birdwatch* No 121: 28–32.
- Cook M J H 1982. Breeding Status of the Crested Tit. *Scottish Birds* 12:97–106.
- Cramp S (ed) 1988. *The Birds of the Western Palearctic*, Vol V. Oxford University Press, Oxford.
- Cramp S & Perrins C M (eds) 1993. *The Birds of the Western Palearctic*, Vol VII. Oxford University Press, Oxford.
- Cramp S & Simmons K E L (eds) 1979. *The Birds of the Western Palearctic*, Vol II. Oxford University Press, Oxford.
- Gibbons D W, Reid J B & Chapman R A 1993. *The New Atlas of Breeding Birds in Britain and Ireland: 1988–1991*. T & A D Poyser, London.
- Gregory R D, Wilkinson N I, Noble D G, Robinson, J A, Brown A F, Hughes J, Proctor D, Gibbons D W & Galbraith C A. 2002. The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern. *British Birds* 95:410–448.
- Hartert E 1910. *Die Vögel der paläarktischen Fauna*. Friedlander & Sohn, Berlin.
- Hartert E 1918. Notes on Starlings. *Novitates Zoologicae* 25:327–337.
- Hartert E 1923. The name of the Scottish Ptarmigan. *British Birds* 17:106.
- King H 1969. Shetland Wren in Aberdeenshire. *Scottish Birds* 5:391.
- Lack P 1986. *The Atlas of Wintering Birds in Britain and Ireland*. Poyser, Calton.
- Macmillan A T 1969. [editorial comment] *Scottish Birds* 5:391.
- Mead C 2000. *The State of the Nations' Birds*. Whittet Books, Stowmarket.
- Meinertzhagen R 1924. A note on Scottish wrens (Troglodytes) with characteristics of a newly defined Hebridean race. *Scottish Naturalist* 1924:135.
- Meinertzhagen R 1934. The relation between plumage and environment, with special reference to the Outer Hebrides. *Ibis* 96:52–61.
- Murray R D (ed) 2000. *1998 Scottish Bird Report*. SOC, Edinburgh.
- Murray S 2002. Birds of St Kilda. *Scottish Birds* Supp. Vol 23.
- Paton E R & Pike O G 1929. *The Birds of Ayrshire*. Witherby, London.
- Pennington M G, Osborn K, Harvey P V, Riddington R, Ellis P M, Heubeck M & Okill J D *in press*. *Birds of Shetland* Christopher Helm/A & C Black, London.
- Prazák J P 1897. Nachträgliche Bemerkungen. *Journal für Ornithologie* 45:347–348.
- Ratcliffe D A 1990. *Bird Life of Mountain and Upland*. Cambridge University Press, Cambridge
- Rogers M J & the Rarities Committee 2002. Report on rare birds in Great Britain in 2001. *British Birds* 95:476–528.



- Rutledge R F 1966. *Ireland's Birds: their distribution and migrations*. Witherby, London.
- Seebohm H 1884. On new species of British Wren. *Zoologist* 1884:333–335.
- Stone B H, Sears J, Cranswick P A, Gregory R D, Gibbons D W, Rehfish M M, Aebischer N J & Reid J B 1997. Population estimates of birds in Britain and in the United Kingdom. *British Birds* 90:1–22.
- Summers R W, Mavor R A, Buckland S T & MacLennan A M 1999. Winter population size and habitat selection of Crested Tit *Parus cristatus* in Scotland. *Bird Study* 46:230–242.
- Thom V M 1986. *Birds in Scotland*. T & A D Poyser, Calton.
- Vaurie C 1959. *The Birds of the Palearctic Fauna. Passeriformes*. Witherby, London.
- Vaurie C 1965. *The Birds of the Palearctic Fauna. Non-passeriformes*. Witherby, London.
- Waters E 1964. Observations on the St Kilda Wren. *British Birds* 57:49–64.
- Wernham C, Toms M P, Marchant J H, Clark J A, Siriwardena G M & Baillie S R. 2002. *The Migration Atlas: Movements of the birds of Britain and Ireland*. T & AD Poyser, London.
- Williamson K 1951. The Wrens of Fair Isle. *Ibis* 93:599–601.
- Williamson K 1958. Population and Breeding environment of the St Kilda and Fair Isle Wrens. *British Birds* 51:369–393.
- Williamson K 1965. *Fair Isle and its Birds*. Oliver & Boyd, Edinburgh.
- Witherby H F (ed). 1920. *A Practical Handbook of British Bird*, Vol I. Witherby, London.
- Witherby H F, Jourdain F C R, Ticehurst N F & Tucker B W. 1938a. *The Handbook of British Birds*, Vol I. Witherby, London.
- Witherby H F, Jourdain F C R, Ticehurst N F & Tucker B W. 1938b. *The Handbook of British Birds*, Vol II. Witherby, London.

**Address for correspondence:**

**Ronald W Forrester, Secretary, SBRC,  
The Gables, Eastlands Road, Rothesay,  
Isle of Bute PA20 9JZ**

*Revised manuscript accepted February 2003*

## Eurasian Reed Warblers in Scotland: a review of probable breeding records

D ROBERTSON

In Scotland, the Eurasian Reed Warbler *Acrocephalus scirpaceus* occurs regularly on migration in spring and autumn. Until the 1990s, it was thought to have bred only once in Scotland: in Shetland in 1973 (Thom, V M 1986, *Birds in Scotland*. Poyser, Calton). A number of birds have been seen in breeding habitat on the Scottish mainland since the early 1980s and the following account examines the extent of probable and possible breeding records in Scotland.

In England and Wales it is a common breeding bird where the species is closely associated with reedbeds *Phragmites australis* since the favoured nesting habitat consists of reeds above standing water. This is the habitat indicated by all the possible breeding records in mainland Scotland although, in England, birds will also nest in dry herbage and arable crops (e.g. Kelsey, M 1993 in *The New Atlas of Breeding Birds in Britain and Ireland*. Poyser, Calton, London).

The species avoids the colder, wetter, north and west of the UK. (Sharrock, J T R 1976 ed.) *The Atlas of Birds in Britain and Ireland*. T & A D Poyser, Calton, London). In recent years, however, the species has expanded its range to the north and west in Britain and northward in Scandinavia (Kelsey *ibid*).

In Scotland, most records of Eurasian Reed Warblers are of birds at coastal sites and bird observatories where migrants occur on passage with peak numbers during autumn migration in August–October with some records in November and smaller numbers during spring migration in May–June. These records are often associated with weather patterns causing drift migration across the North Sea.

Spring migration is protracted and some late birds are unlikely to return to breeding grounds in Western Europe before mid June (Dowsett-Lemaire, F and Dowsett, R J 1987. European Reed and Marsh Wablers in Africa: Migration patterns, moult and habitat. *Ostrich* 58: 65–85) by which time early nesters may have already fledged young. However, there are very few records from Scottish coastal sites in July and the first week in August, presumably because juveniles begin a partial post juvenile moult before migrating (Ginn, H B & Melville, D S 1983. *Moult in Birds*. British Trust for Ornithology, Thetford) and tend not to disperse far from their natal areas until some 51–60 days after fledging (Redfern C and Alker P in *The Migration Atlas*. Poyser, London: 548–551).

Breeding was suspected at a site in south west Scotland in 1992 and confirmed in 1993. Since then, breeding has occurred there annually and a second breeding site was located in south west Scotland in 1996 (Bruce, K 1997. Reed Warblers breeding in south west Scotland. *Scottish Birds*. 19(2): 119–120). One pair bred at St Abb's Head in 1997 and breeding was thought likely at the same site in 1998 but has probably not taken place since (Rideout *in litt*).

In Fife, there are tantalising records of possible breeding at a number of sites. In 1998, a bird was heard singing through the summer at a suitable breeding site and a pair was present at another site where breeding was suspected (Fotheringham D, ed 1998 & 1999. *Fife Bird Reports 1997 and 1998*, Fife Bird Club). A bird was found dead at St Margaret's Marsh, Rosyth, on 31 May 1993 where a bird was heard singing repeatedly in 1999 (Dewick *pers comm*). A bird

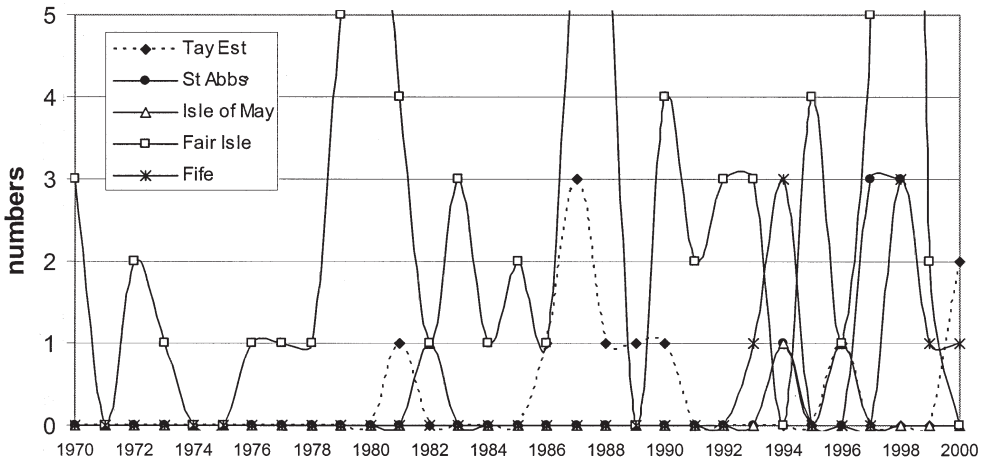
**Table 1** Ages and year of capture of Eurasian Reed Warblers in the Tay Reedbeds.

Year	Juvenile	Adult	Age unknown
1981			1
1982			2
1983		1	
1984			
1985			
1986			1
1987		2	
1988	2		
1989		1	
1990		1	
1991		1	
1992			
1993			
1994			
1995	3	2	
1996		1	
1997	3		
1998			
1999	1		
2000	2	2	

Retraps are not included.  
The single control is included.

was heard singing at the same site in 2000. In 1999 a breeding record was reported from yet another site in Fife where a used nest, thought to be of this species, was located. (Shuttleworth A 2000. Eurasian Reed Warbler, First Probable Breeding in Fife. *Fife Bird Report* 1999: 154).

In Tayside, Eurasian Reed Warblers have been caught in the Tay Reedbeds at least since 1981 (Lynch *in litt*) and a minimum of 21 have been ringed there. In recent years they have been trapped there almost annually and birds have been heard singing during and, in some cases, throughout the breeding season ie June, July and early August in 1987, 1990, 1995 and 1996. Males with developed cloacal protruberances, and presumably in breeding condition, were caught in 1987, 1990, and 1991. A female with a well developed brood patch was caught in 1987 and, in 1988, a juvenile, with primaries still in pin and growing, was trapped and ringed (Robertson D 2001. Reed Warblers Breeding in the Tay Reedbeds. *Tay Ringing Group Report* 1998–2000). These data indicate that Eurasian Reed Warblers probably bred in the Tay Reedbeds



**Figure 1** Reed Warbler occurrence between 1st July–7th August.

**Table 2** *Observations at various sites from 1 July–7 August*

Year	Tay Est	St Abbs	Isle of May	Fair Isle	Fife
1970	0	0	0	3	0
1971	0	0	0	0	0
1972	0	0	0	2	0
1973	0	0	0	1	0
1974	0	0	0	0	0
1975	0	0	0	0	0
1976	0	0	0	1	0
1977	0	0	0	1	0
1978	0	0	0	1	0
1979	0	0	0	5	0
1980	0	0	0	8	0
1981	1	0	0	4	0
1982	0	1	1	1	0
1983	0	0	0	3	0
1984	0	0	0	1	0
1985	0	0	0	2	0
1986	1	0	0	1	0
1987	3	0	0	6	0
1988	1	0	0	6	0
1989	1	0	0	0	0
1990	1	0	0	4	0
1991	0	0	0	2	0
1992	0	0	0	3	0
1993	0	0	0	3	1
1994	0	1	1	0	3
1995	0	0	0	4	0
1996	1	0	1	1	0
1997	0	3	0	5	0
1998	0	3	0	28	3
1999	0		0	2	1
2000	2		0	0	1

in 1987 and 1988. Breeding possibly occurred in 6 other years including 1999 and 2000 when further instances of breeding behaviour were observed. These are the first records of Eurasian Reed Warblers breeding in mainland Scotland.

The species is probably under recorded in Scotland. It is a bird that is difficult to see in breeding habitat, especially if observers are not actively searching for it. Its song may be difficult to separate from that of Sedge Warbler

*Acrocephalus schoenobaenus* and can be difficult to hear in extensive reedbeds such as those on the Tay; the sort of habitat that colonising birds would favour. Thinly dispersed, colonising birds may sing less where they have no neighbours of the same species to compete with (Cramp, S and Simmons, K E L eds *Birds of the Western Palearctic. Vol 6* Oxford University Press, Oxford) The recent confirmed breeding records in Scotland refer to ringing sites and particularly Constant Effort Sites where ringing

takes place throughout the breeding season. Consequently, it seems likely that a number of breeding attempts have been overlooked.

Peak passage along the coast appears to be in October, at sites such as Fife Ness (J Cobb *in litt*), the Isle of May (Isle of May Computerised Logs), North Ronaldsay and Fair Isle Bird Observatories (*Scottish Bird Reports*). Records from the Isle of May and Fair Isle show very few 'summer' records before the end of the first week in August and there are no records of birds during this period on North Ronaldsay, whereas high number of birds in the Tay Reedbeds and inland Fife are caught in late July and early August. At Fife Ness, there is just one record of a bird caught in early August but, since the mid 1980s, birds have begun to appear at this site when there were no signs of drift migration (Cobb *pers comm*). This pattern of occurrence suggests that birds caught in late July and the first week of August may be Scottish breeding birds, perhaps local breeders or their young. Some 13 birds have been caught in the Tay Reedbeds during this "early" period and the first one of these was trapped in 1981. A total of at least 26 Eurasian Reed Warblers have been trapped in the Tay Reedbeds consisting of 11 juveniles, 11 adults and 4 of unknown age.

There seem to be very few records of birds from other parts of Scotland during this 'summer' period. Potential breeding habitats such as the Insh Marshes in Highland and the reedbeds at Loch of Strathbeg in Aberdeenshire have no records of birds in the breeding season (RSPB *pers comm*) The exception to this seems to be Fife where, in addition to the sightings in this paper, birds have been caught in the first week of August in suitable habitat at St Margaret's Marsh (Darling *in litt*) and Loch Gelly (Little *in litt*).

Ringing recoveries indicate that a proportion of Scandinavian birds pass through Scotland on

southward migration, although none of these suggest that birds travel through Britain on their way to breeding grounds further north (Redfern C and Alker *P ibid*). Breeding records on the east coast of Scotland could be linked to expansion of the breeding population in Scandinavia. The expansion of range in Scotland may be an extension of the breeding population in northwest Europe as a whole, possibly involving birds from both the UK and Scandinavia and, perhaps, reflecting a change in climatic conditions brought about by global warming.

The confirmed breeding records on the Tay in 1987 and 1988 and the breeding records at St Abbs coincide with peak numbers of birds on Fair Isle and 3 possible breeding records in Fife. While this suggests an influx of Scandinavian birds the picture is not clear. The records of birds at St Abbs and Isle of May in 1982 and 1994 and at Isle of May and the Tay in 1996, along with a scattering of other records when there were no large influxes in Fair Isle suggest that these birds might not have come in across the North Sea.

Eurasian Reed Warbler is probably now best described as a sporadic and under recorded breeding bird in Scotland which has established itself at a handful of sites. It will be interesting to see if this extension to its breeding range continues.

### **Acknowledgements**

Many thanks to all of the following for collating observations: Dave Arthur, Ken Bruce, Jim Cobb, Ian Darling, Tom Dewick, Les Hatton, Brian Little, Stephanie Little, Shirley Millar, Steve Moyes, Mark Oksien, Kevin Rideout, Deryk Shaw, Kevin Woodbridge, RSPB Edinburgh, Isle of May Bird Observatory, Fair Isle Bird Observatory, Fife Bird Report. Thanks also to Dr Stan da Prato who revised an earlier draft of this paper.

**Derek Robertson, Woodlands Studios,  
Bandrum nr Saline, Fife KY12 9HR**

*Revised manuscript accepted February 2003*

## SHORT NOTES

### Unusual behaviour of Common Redshanks and Common Starlings towards dead Common Redshank

At 11.45 am, on 23 September 2002, during a visit to North Ronaldsay, a Common Redshank *Tringa totanus* was seen to fly into overhead power cables traversing a grassland field being grazed by cows. The dead Common Redshank fell to the ground below the power cables. There was an immediate response by a nearby flock of feeding Common Redshanks. Many birds began alarm calling and 17 flew towards the corpse. Most of these 17 birds then moved in close to the dead Common Redshank, loosely forming a circle and looking intently with their necks

outstretched and upwards, as if looking for a better view. The Common Redshanks were nervous, highly agitated and approached the corpse very cautiously. The Common Redshanks were then joined by a group of Common Starlings *Sturnus vulgaris* that behaved in an almost identical manner. This behaviour continued for about 2 minutes before all the birds began to lose interest. At this point a car passed by and flushed all the birds, none of which returned to the dead Common Redshank. The corpse was retrieved and the first winter Common Redshank was found to have had a broken neck and lower and upper mandibles.

*Peter Cosgrove and Ross McGregor,  
c/o North Ronaldsay Bird Observatory, North  
Ronaldsay, Orkney, KW17 2BE*

*Revised manuscript accepted February 2003*

### Eurasian Oystercatcher apparently brooding young of Ringed Plovers

There are many examples of Eurasian Oystercatcher *Haematopus ostralegus* displacement in conflict situations including 'mock brooding' but not, apparently, of a different species (Cramp & Simmons 1983, *The Birds of the West of the Palearctic*, vol 3. Oxford; Nethersole-Thompson & Nethersole-Thompson 1986, *Waders, their breeding haunts and watchers*. Calton).

During 1975, on a small lowland heath (>1/2 acre) in West Galloway, the density of nesting waders was high including 4 Eurasian Oystercatcher nests, 3 Ringed Plovers *Charadrius hiaticula* nests and 4 Northern Lapwings *Vanellus vanellus* nests as well as 2

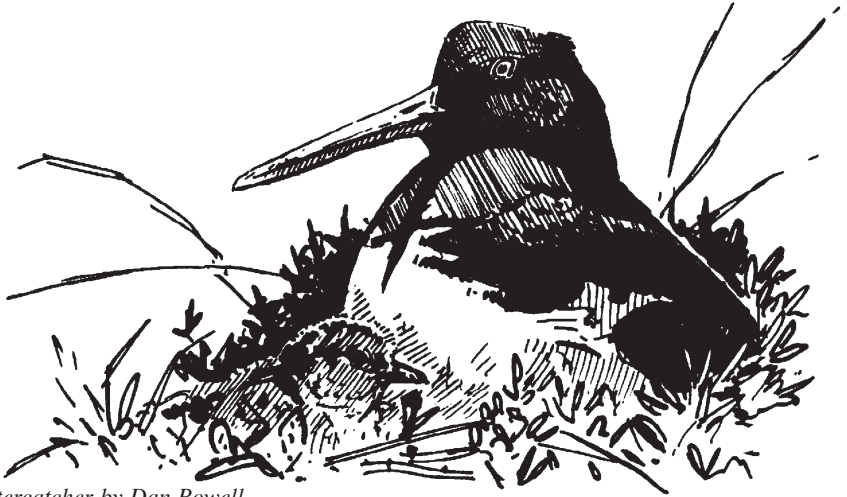
nests of Common Terns *Sterna hirundo*. On 19 May 1975 an Oystercatcher was still brooding a mixed clutch of one Oystercatcher egg together with 2 Lapwing eggs (Dickson 1977, Oystercatcher hatching Lapwing eggs. *British Birds* 70:36). Most of the Ringed Plover eggs had hatched but only 1 chick was seen 10–15m from the Oystercatcher nest. An Oystercatcher, probably the mate of the mixed clutch, ran over to the Ringed Plovers' chick and settled on top of the chick as if it was brooding it. One of the adult Ringed Plover circled the Oystercatcher in an 'agitated' manner and through binoculars I saw the Oystercatcher leave the brooded chick some time later.

Oystercatchers may be unusually poor at distinguishing other eggs from their own eggs (Speakman 1987, Mixed Clutch of Oystercatcher and Lapwing eggs incubated by an Oystercatcher, *Scottish Birds* 14:184–185)

or at distinguishing other wader chicks from their own, since they have also been recorded brooding Lapwing chicks from mixed clutches (Dickson *op cit*; French & Insley 2000, Oystercatcher usurping Lapwings nest. *Scottish Birds* 21:53–54). Perhaps the density of several species nesting close together may have added to the Oystercatchers' behaviour.

*R C Dickson, Lismore, New Luce, Newton Stewart, Dumfries & Galloway DG8 0AJ*

*Revised manuscript accepted December 2002*



*Eurasian Oystercatcher by Dan Powell*

## **Female Eurasian Sparrowhawk caching prey**

Last Summer I had a similar experience to K Headle (*Scottish Birds* 2001 page 104). A female Eurasian Sparrowhawk *Accipiter nisus* killed a female Blackbird *Turdus merula* early in the morning in our garden and took it under the overhanging branches of a conifer hedge where she plucked and fed from it. After about 20 minutes she moved the remains further under the hedge and flew off. Several hours later she was seen again feeding from the Blackbird and after another 20 minutes moved what little was left further down the hedge and flew off. I examined

the remains, which were mainly the skeleton. That afternoon, I saw the hawk fly into the garden, grab the remains of the Blackbird from under the hedge and fly off with it.

*RN Cinderey, The Glebe, Church Road, Kirkpatrick-Durham, Castle Douglas DG7 3HF*

*Revised manuscript accepted February 2003*

*We do not intend to publish any more examples of this behaviour.*



## Treecreeper feeding from a food cache in a brick wall

On 12 February 2003 I was sitting in my office in the John Muir Building at about 1700hrs, facing a small side window looking out along the external wall, when I happened to notice a Treecreeper (*Certhia familiaris*) alight on the wall immediately outside. It moved up the wall in the manner characteristic of the species when foraging on tree trunks, but there was no obvious sign of it feeding. Then, when approximately level with the top of my window, it stopped and began to probe its bill energetically into a crack in the mortar at the corner of a chipped brick. It was clearly feeding, and occasionally a pale, shiny substance, which looked superficially like fat, was observed on its bill as it was withdrawn from the hole. The bird either licked this off with its tongue, or alternatively cleaned its bill on the brickwork before continuing its feeding. The bird continued to feed in this same spot for some 10 minutes, before cleaning its bill thoroughly on the brickwork and then moving off up the wall and out of view.

It seems probable that the bird was feeding at a food cache previously deposited in the brickwork, since it seems unlikely that it could have found the food so directly just by coincidence, particularly since this was my first observation of a Treecreeper on this wall in some 7.5 years. Whether the food had been deposited by the Treecreeper itself or by another species is uncertain, as I have previously observed Blue Tits (*Parus caeruleus*) and Great Tits (*Parus major*) storing food in crevices on this same wall. These food items were probably insects, which over time could conceivably break down into a fatty detritus, such as that observed here.

I am not aware of previous records of Treecreepers utilising cached food stores, either deposited by themselves or in a kleptoparasitic fashion (if deposited by other birds).

*AR Lyndon, School of Life Sciences, John Muir Building, Heriot-Watt University, Riccarton, Edinburgh, EH14 4AS*

*Revised manuscript accepted March 2003*



*Treecreeper by Dan Powell*

## OBITUARIES

**C N L Cowper**

**27 April 1928–18 August 2002**

### *An unexpected adventurer*

It doesn't do to take people at face value. Charlie, with his old fashioned way of considering you and what you had to say, always seemed the archetypal Edinburgh professional man. Given his family background and education, this was perhaps to be expected, but the sometimes offputting exterior concealed an adventurous spirit, highly sociable inclinations, a dry, not always politically correct, sense of humour and a multitude of unsuspected interests and talents. Above all, a lifelong passion for the outdoors, for wildlife and especially for birds underlay most of his activities and adventures and many of the lifelong friendships he forged.

Charlie was born in Edinburgh and educated at The Edinburgh Academy. As an early member of the SOC, he was a regular visitor at Aberlady, with contemporaries such as Keith Macgregor, Frank Hamilton, Jim Stewart and Bill Birrell.

Charlie loved the Cairngorms and, after National Service in the Royal Signals, established a number of links there, keeping a family cottage at Newtonmore and making trips in search of Golden Eagle and other Highland birds with Doug Weir and Roy Dennis. When the Osprey project began, Charlie, with the expertise in electronics gained from his employment at Ferranti, was instrumental in the design of the electronic alarm system and its installation in the nest tree at the Loch Garten site and renewed and tested the system every spring for many years. He loved the Osprey Camp in its early, tent and caravan days but did not approve of its later development, which he felt was out of keeping with the spirit of the place.

Although a keen walker, Charlie was also addicted to unorthodox means of locomotion, whether to get where he wanted or just for the hell of it. He was an early skiing enthusiast, taking a carload of friends on winter Sundays over the first ferry at Queensferry and on up to Glenshee, returning the same evening. One New Year, in that era of very cold winters, first footing in Edinburgh, he startled Keith and Dorothy Macgregor by appearing on skis at their door in Merchiston. He built a canoe and used it for many years for trips on the Spey and Highland lochs. His enthusiasm for esoteric motor vehicles and for rallying combined with his keenness for birding sometimes led to awkward situations: once he had to winch his Landrover from an impassable track across the Lammermuirs and on another occasion to manhandle his MGB out of the dunes at Barns Ness. He also tried his hand at gliding and hot air ballooning.



*Charlie on top of the Loch Garten nesting tree wiring up the alarm*

Charlie's membership of the SOC was a basis not only for friendships and excursions but also for much co operative activity. He was active in the (unauthorised) attempt in the late 50's to create open pools on the saltmarsh at Aberlady. He took part over many years in the Wednesday night meetings at Regent Terrace, regularly tackled Threipmuir for Willie Brotherstone's goose counts and organised and wrote up a survey of Edinburgh rookeries, (*SB* Vol 3, p177) and a survey of breeding Grey Wagtails, Dippers and Common Sandpipers on the Midlothian Esk (*SB* Vol 7, p302). The Isle of May was another of his great loves: he made annual visits there from the early 50's and served as Treasurer to the Trust for many years.

He worked at Ferranti in potentiometers, microelectronics and quality engineering from 1952 to 1990, and his technical interests ranged from electron microscopy through CB radio to astronomy. Charlie enjoyed overseas birding, making a pioneering trip in the early days to Sweden (in his Morris Minor) and to the Camargue. He had never much approved of things American, but, soon after retiring, relented and took an organised birding trip to Arizona... he was surprised to find the country and the people quite to his liking. Latterly, combining family and birding interests, he made regular visits to Australia, clocking up an outstanding list of exotic species.

Charlie is survived by his wife, Rosemary, and children Gordon and Catriona.

*Tom Delaney*

### **Donald M Macdonald, MBE 1912–2002**

Donald (Donnie) Macdonald passed away on 31 March 2002 aged 90 years. For almost 70 years he recorded the bird life around his native

Dornoch having been resident there all his life apart from one year in Edinburgh and 4 years in the Royal Navy during the war. His father, Captain Macdonald of the Seaforth Highlanders, had been killed in action when he was only 7 and it may be, in a strange way, that this gave him the strength of character to forge ahead with his hobby of bird watching when such a pursuit would have been regarded locally as almost slightly eccentric. He once told me how he would hide his binoculars under his jacket until he passed beyond the outskirts of the burgh.

A meeting with Dr I D Pennie began a life long friendship and together they travelled to many SOC conferences. These conferences were major occasions in Donnie's life and must have acted as a tremendous stimulant to his own research on Corn Bunting and Whitethroat. In his diaries conference programmes are displayed with each lecture and even the dinner being allocated a rating varying from superb to good. His diaries start in 1933 and form an extraordinarily detailed account of the weather and bird life in SE Sutherland spanning a period of almost 70 years. His wish was that his journals would be deposited in the SOC library and it is easy to imagine some young researcher finding them a fascinating source of information in years to come, for in them are recorded arrival and departure dates of migrants along with changes in bird life over the years.

Donnie was an all round naturalist and would enthuse just as much about a previously unrecorded billing display between male and female Blackbirds as he would about notable finds such as the first Stilt Sandpiper for Scotland.

Along with many contributions to the *Scotsman*, *Scottish Naturalist* and *Scottish Birds* he wrote 2 major papers for *Scottish Birds* on the Whitethroat and the Corn Bunting. Neither bird was particularly common in SE Sutherland and

this makes the data he gathered from finding nests and watching breeding behaviour all the more remarkable. Sadly, Corn Buntings are now extinct in his old stamping grounds and the subtle differences he detected between breeders in Sutherland and Southern England can no longer be examined in more detail. I sometimes sit on the scrubby slope above the golf course where Donnie studied Whitethroats and it is very easy to understand why he spent so many early mornings here watching his favourite bird. Before his death he had the distinction of being the longest contributor to the BTO nest record scheme. It always was a matter of great pride for him to obtain as full documentation of each nesting attempt as possible.

Some of my most pleasant memories of Donnie are of winter nights, visiting him in his home, when the coffee cups would be put away and a particularly cherished book of bird paintings would be opened out on the dining room table. He was proud of the D Watson and G E Lodge paintings that adorned his walls. With infectious enthusiasm he would tell of his latest sightings and recount the challenges of the nesting season just gone, describing in exact detail the problems each nest presented him before he finally found it.

A keen sportsman being both a fine tennis and badminton player in his younger days his tale of playing in remote village halls when the shuttlecock would get singed in the paraffin lamps hanging from the rafters reflect an era long gone. Later in life he enjoyed the challenge and social occasion provided by bowls. He had a good life, on the morning he died he was sweeping up leaves in his garden. Along with a very happy family life his interest in natural history gave him deep satisfaction.

When Donnie died, Dornoch lost one of its most prominent citizens, a retired sheriff clerk, a Justice of the Peace and honorary sheriff and, for

those of us who were fortunate enough to call him a friend, there is a feeling of gratitude that we had known a man of quality.

*Donald Bremner*

### **John Michael Stewart Arnott, OBE 1933–2002**

I first met John early in 1955 as a fellow fresher at Cambridge. My main memory of him in his early career is of an attractive but somewhat solitary person with a remarkable fund of self reliance and incisive intellect. Add to these attributes his National Service as a Vampire pilot and his starting position of at least one rung on the ladder above most of us was fully merited. It was not that John competed and won; it was that he was already extraordinary, able to enjoy life as the rest of us but unusually primed to tackle personal challenges and true adventures. Who else but John would have decided that he would walk the whole way from Cambridge to Norway's northernmost coast? And if such footslog struck one as a mite pig headed, then John would point with visible pride to an ashtray fashioned from a piece of the North Cape. It was inscribed 'Operation Hogshead'. How we coveted that memento of an epic 'one man power' journey, and also John's photograph of the Norwegian/Russian border taken from the Soviet side!

Unlike the wholly bird obsessed contingent at Cambridge, John had other interests and skills and none was earlier honed than his ability to act. Within friendships, this facility was used sparingly to provoke laughter, but on the University's stages in the mid 1950s it commanded wide attention and respect. To me, his Jaques in *As you Like It* remains a role model for all other actors – and at the time John led casts which included now great actors like David Buck and Derek Jacobi. Knowing that he found

his annual examinations in Law somewhat irksome, if not tedious, we rather expected John to spend his life treading boards to ever more acclaim. When I asked him why he had not done so, he just shrugged and said that his inheritance of a strong family work ethic had prevented such an indulgent occupation.

In 1960, with his birdwatching still essentially recreational, John decided that the BBC offered him the best conduit for his creativity. He joined BBC Scotland, and it was from my mother that I learned that John was performing again – as a television newsreader. It was nerve wracking to witness the day's events being broadcast in John's wonderfully resonant but slightly sardonic voice and worry that at any moment he might raise a quizzical eyebrow at their inherent folly!

Married to his delightful wife Lynne in 1965, John established a family home firstly at Balmore near Glasgow, then in Aberdeen, and finally at East Redford House, Edinburgh. This was to be the unchanged 'base camp' for his career in the BBC's Edinburgh office and all his later adventures. Happily, work and personal interests often ran close together, and as a master of atmospheric tape recording, John could bring up the hairs on one's hindneck. Who can forget the forthright admission of egg collecting that he elicited from Desmond Nerthersole-Thompson? It was a classical example of John's candour producing a similar response.

In the late 1970s John found time to become a major force in Scottish field ornithology. He took on a whole line of new duties, from Secretary and Chairman of the Isle of May Bird Observatory Trust, to chairman of the Fair Isle Bird Observatory Trust and on to President of the Scottish Ornithologists' Club. Among his contemporaneous physical achievements, John's design and construction on the Arnott trap on the Isle of May has produced much pleasure among bird ringers.

Along his wider broadcasting remit, John's viewpoint was often that of a distinctive human community on the edge of its ecosystem. This undoubtedly stemmed from his own preference for the Arctic, where he explored Spitsbergen, Siberia and Greenland several times, but it also enabled him to portray his particular brand of 'vivid radio' places as far apart as Scotland and the Falkland Islands and Peru and China.

At home, John presented a calmer attitude to bird quests. I have no record of him ever chasing a rarity. But this did not stop the Presbyterian in him being occasionally seduced by such joys as the marsh birds of East Anglia. I remember well his delight in getting 3 lifers at Walberswick on 8th June 1955 – and their proper celebration in a sit down lunch at a nearby hostelry.

John's first membership of an expedition was in 1956 when he was one of the Edinburgh/Cambridge 8 who survived 10 days on St Kilda with final provisions reduced to digestive biscuits, Gallagher's cigarettes and, for him, pipe tobacco. His entries in the expedition's log still read very well, being full of the warm perceptions that were to characterise his later broadcasting.

*Ian Wallace*

John's keen interest in the countryside continued throughout his life. It took him to the Arctic, and it also took him into the world of countryside politics. Here the Nature Conservancy and the Countryside Commission for Scotland reflected a new thinking about the countryside in the second half of the twentieth century, and brought naturalists into the establishment.

Visiting Greenland for the first time in 1979, John became fascinated with the arctic landscape and the wildlife. He also went to Spitsbergen, based on a boat which had variable

seamanship! Another year he explored Arctic Siberia, where flocks of Reindeer swam the rivers, and mosquitoes reached a new intensity around the tree line. In 195 he took part in an expedition to Peary Land. This was to be his last camping expedition, though he and Lynne later took a couple of boat cruises in the north. Interested in sharing experience with other Arctic enthusiasts, he served as Chairman of the Scottish Arctic Club from 1996 to 1999.

In the public field, he became in 1983 a member of the Countryside Commission of Scotland, and later its Vice Chairman (1986–1992). His thoughtful and well informed consideration of matters such as access and conservation made an important contribution to thinking at that time. Building on the Commission's reports, *A Park System for Scotland* (1974) and *The Mountain Areas of Scotland* (1990), he played an

influential role in the establishment of National Parks in Scotland.

In 1999 John became Chairman of the Scottish Wildlife Trust. This coincided with a period of great difficulty in the Trust's affairs which took enormous toll of his deteriorating health, and he was forced to resign in June 2002. His steadfast commitment at this time was instrumental in making it possible for the Trust to go forward.

Those of us who worked with him and were his friends greatly lament his passing and cherish our shared memories. He was a great companion, considerate and thought provoking wand with a gently astringent sense of humour – a person who served Scotland and its countryside with selfless devotion.

*Jean Balfour*



*John Arnott ringing birds on the Isle of May, May 1991*

---

## 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 are normally reviewed by at least 2 members of the editorial panel and, in most cases, also 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 and of good quality; 2 copies are required and the author should also retain one. We are also happy to accept papers on disk or by email at: [mail@the-soc.org.uk](mailto:mail@the-soc.org.uk), stating the type of word processing package used. If at all possible please use Microsoft Word . Contact the Admin Officer on 0131 653 0653 for further information.

Headings should not be underlined, nor typed entirely in capitals. Scientific names in italics should normally follow the first text reference to each species unless all can be incorporated into a table. Names of birds should follow the official Scottish List (*Scottish Birds* 2001 Vol 22:33–49). 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 not ...on the 5th... (if the name of the month does not follow). Please **do not** use headers, footers and page numbers. Please note that papers shorter than c700 words will normally 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, graph or map should be on a separate sheet, and if on disc each table, graph, map etc should be on a separate document. Please **do not** insert tables, graphs and maps in the same document as the text. Maps and diagrams should be either good quality computer print out and in black and white (please **do not** use greyscale shading) or drawn in black ink , but suitable for reduction from their original size. Contact the Admin Officer on 0131 653 0653 for further details of how best to lay out tables, graphs, maps etc.

---





The Scottish Ornithologists' Club (SOC) was established by a group of Scottish ornithologists who met together in the rooms of the Royal Scottish Geographical Society in Edinburgh on 24 March 1936.

Now, 67 years on, in 2003, the Club has 2200 members and 14 branches around Scotland. It plays a central role in Scottish birdwatching, bringing together amateur birdwatchers, keen birders and research ornithologists with the aims of documenting, studying and, not least, enjoying Scotland's varied birdlife. Above all the SOC is a club, relying heavily on keen volunteers and the support of its membership.

Headquarters provide central publications and an annual conference, and houses the Waterston Library, the most comprehensive library of bird literature in Scotland. The network of branches, which meet in Aberdeen, Ayr, the Borders, Dumfries, Dundee, Edinburgh, Glasgow, Inverness, New Galloway, Orkney, St Andrews, Stirling, Stranraer and Thurso, organise field meetings, a winter programme of talks and social events.

The SOC also supports the Local Recorders' Network and the Scottish Birds Records Committee. The latter maintains the "official" Scottish List on behalf of the Club. The Club supports research and survey work through its Research Grants.

The Club maintains a regularly updated web site, which not only contains much information about the Club, but is also the key source of information about birds and birdwatching in Scotland. [www.the-soc.org.uk](http://www.the-soc.org.uk)

### **SOC Subscription Rates**

Annual membership subscription rates (as of August 1999) are as follows, with reduced rates for those paying by Direct Debit given in brackets:

Adult	£ 20.00	(£18.00)
Family (2 adults and any children under 18 living at one address)	£ 30.00	(£27.00)
Junior (under 18, or student under 25)	£ 8.00	(£ 7.00)
Pensioner (female over 60, male over 65) or Unwaged (and claiming benefit)	£ 11.00	(£10.00)
Pensioner Family (both over 65) (2 adults living at one address)	£ 16.00	(£14.50)
Life	£400.00	
Life Family	£600.00	

All subscriptions are due on 1 October. They may be paid by Direct Debit and Gift Aided. Subscriptions paid by Direct Debit greatly assist the Club. Please ask for a Direct Debit form by contacting HQ or visiting our web site.

# Scottish Birds

Volume 24

Part 1

June 2003

## Contents

### Main Papers

- Mandarin Ducks in northern Scotland and the potential consequences for breeding Goldeneye - *P Cosgrove* 1
- The distribution and status of the Red-billed Chough in Scotland in 2002 - *S K Finney & D C Jardine* 11
- Scotland's endemic subspecies - *R Y McGowan, D L Clugston & R W Forrester on behalf of the Scottish Birds Records Committee* 18
- Eurasian Reed Warblers in Scotland: a review of probable breeding records - *D Robertson* 36

### Short Notes

- Unusual behaviour of Common Redshanks and Common Starlings towards dead Common Redshank - *P Cosgrove & R McGregor* 40
- Eurasian Oystercatcher apparently brooding young of Ringed Plovers - *R C Dickson* 40
- Treecreeper feeding from a food cache in a brick wall - *A R Lyndon* 42
- Female Eurasian Sparrowhawk caching prey - *R N Cinderey* 42

### Obituaries

- C N L Cowper 1928–2002 - *Tom Delaney* 43
- Donald M Macdonald, MBE 1912–2002 - *Donald Bremner* 44
- John Michael Stewart Arnott, OBE 1933–2002 - *Ian Wallace & Jean Balfour* 45

Advice to contributors 48

Front Cover

Mandarin *Jim Dickson*

**Published by the Scottish Ornithologists' Club,  
Harbour Point, Newhailes Road, Musselburgh, EH21 6SJ. © 2003**