

THE WINTERING OF SHOREBIRDS IN ICELAND

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Introduction

Although counts of shorebirds have been made for some years in the Reykjavik area of south-west Iceland over the Christmas period, and there are several published records referring to wintering shorebirds (Timmermann 1949, Ingólfsson & Gardarsson 1957, Gardarsson 1975a, 1975b), there have been no published counts throughout a winter period. This paper records shorebird counts, and some observations on feeding, made between Stokkseyri in the south to Akranes in Faxaflói Bay, south-west Iceland (Figure 1) in the winters 1973/74, 1974/75 and 1976/77.

Winter is defined as the period November to March. Observations on species such as Golden Plover *Pluvialis apricarius*, which occurs in November and March, but is a summer migrant, are not included. 'B' means the species breeds in Iceland, and 'NB' that it does not. Numbers recorded at each site are listed in Tables 1, 2 and 3.

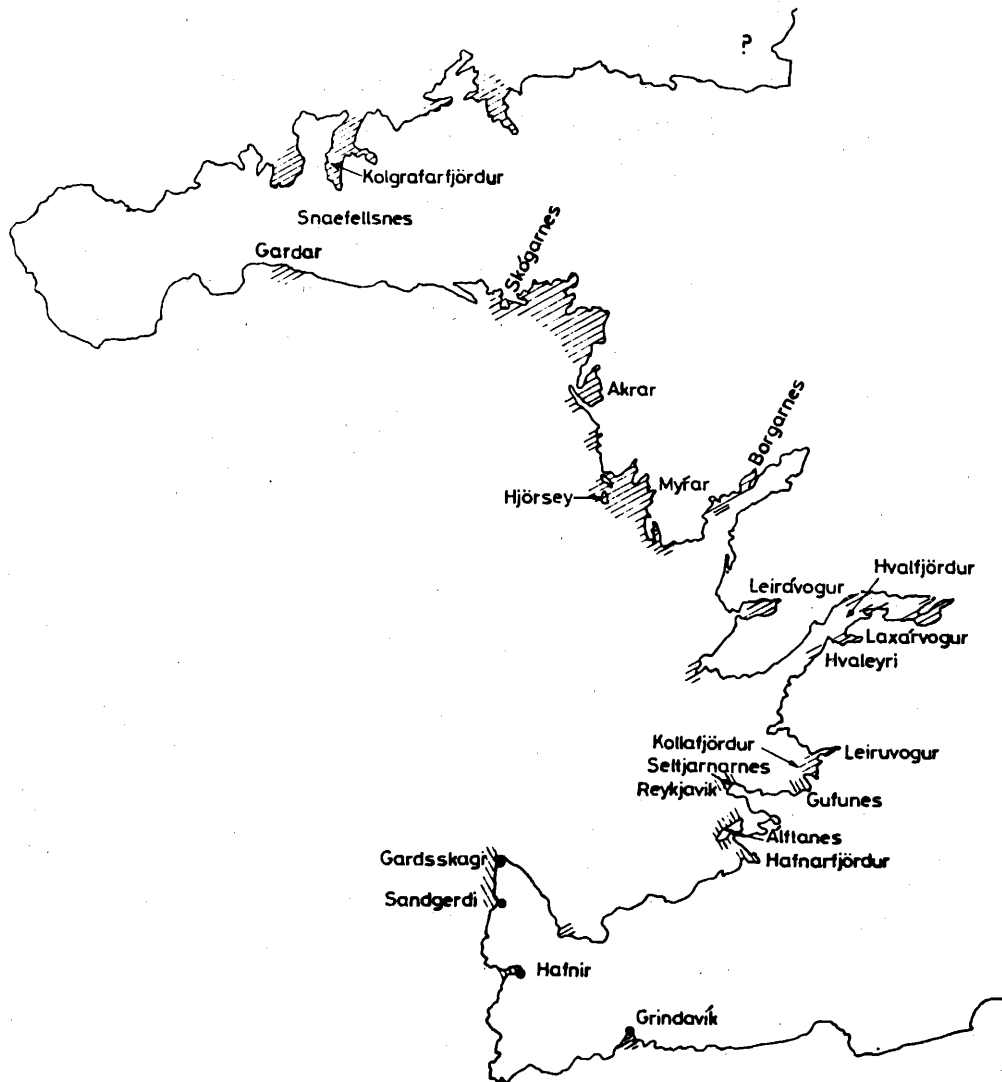


Figure 1. Faxaflói Bay, south-west Iceland showing place names mentioned in the text. Hatching shows the most important known feeding areas during spring and autumn migration.

Results

Oystercatcher *Haematopus ostralegus* (B). Gardarsson (1975a) states that there are 2000 to 3000 Oystercatchers wintering in Iceland. In 1977, this figure would have been too low as there were over 1000 in the Reykjavik area in February, at the same time as Gardarsson (pers. comm.) recorded 700 at Skógarnes. There is also an important winter flock at Leirarvogur (Gardarsson 1975b), an area not visited in this study. Although cold weather may have forced the birds to concentrate onto the better feeding grounds it is unlikely that over half of the winter population should occur in these two limited areas. The main Oystercatcher flocks were strongly associated with mussel *Mytilus edulis* beds. However, birds were also recorded on mudflats, mostly during warmer weather, where they took worms (probably *Nereis* spp.). About 5% of the Oystercatchers were immatures (i.e. less than three years old), although the proportion varied with different flocks. Preliminary observations suggested that immatures tended to occur on poorer feeding areas and were less strongly associated with mussels. Wilson and Morrison (1981) suggested that birds wintering in the south-west had probably bred there or further north in Iceland, and that those breeding in south Iceland, where late autumn food resources are inadequate, migrate to moulting and wintering grounds in the British Isles.

Table 1. Numbers of waders counted during 1973/74

	Oystercatcher	Turnstone	Curlew	Redshank	Purple Sandpiper
13 Feb Gardsskagi					250
14 Feb Seltjarnarnes	88	10			200
16 Feb Akranes	2	4			30
17 Feb Akrar					60
24 Feb Stokkseyri				9	2
2 Mar Alftanes	150				200
2 Mar Seltjarnarnes	194				
9 Mar Alftanes	100	35			400
10 Mar Gardsskagi					200
10 Mar Sandgerdi	14				
16 Mar Hafnarfjörður	19	50		30	350
16 Mar Alftanes	220	30			15
17 Mar Hafnir		1		15	1
17 Mar Grindavík				7	
24 Mar Stokkseyri	18		2	10	
25 Mar Alftanes	200	100			50
30 Mar Hafnarfjörður	40	15		42	400
31 Mar Hvalfjörður	120				200

Table 2. Numbers of waders counted during 1974/75

	Oystercatcher	Turnstone	Curlew	Bar-tailed Godwit	Redshank	Knot	Purple Sandpiper	Dunlin
2 Nov Alftanes	200	20	8		10		700	
2 Nov Hafnarfjörður	150	200			50	11	50	
3 Nov Gufunes	92							
9 Nov Alftanes	100	50		3	10	1	1500	
10 Nov Alftanes	321	50	10	3	15	13	500	
10 Nov Hafnarfjörður					35			
10 Nov Reykjavik	60							
16 Nov Hvalfjörður	619				12		20	
30 Nov Seltjarnarnes						4		
7 Dec Alftanes	50	10					50	
8 Dec Alftanes	20	10						
8 Dec Hafnarfjörður	40	10	5	2			50	
15 Dec Hafnarfjörður	35	4	4		32			
8 Mar Hafnarfjörður	100	100	9		50	4	500	1
14 Mar Reykjavik							500	
15 Mar Hafnarfjörður	80	50			74	1	400	
15 Mar Alftanes		50					10	
15 Mar Reykjavik	50							
22 Mar Hvalfjörður	280						320	
31 Mar Hvalfjörður	310						520	

Table 3. Numbers of waders counted during 1976/77

	Oystercatcher	Turnstone	Curlew	Bar-tailed Godwit	Redshank	Knot	Purple Sandpiper	Dunlin
10 Nov Hafnarfjörður	50	70		1	50		70	
28 Nov Seltjarnarnes	30	50					200	
5 Dec Hafnarfjörður	90	100	5		50		250	6
7 Dec Reykjavik	80	5			1		50	
8 Dec Seltjarnarnes	2	21			4		200	
10 Dec Hafnarfjörður	124	20	4		15		20	6
18 Dec Reykjavik	79							
19 Dec Gufunes	1				1			
13 Feb Hafnarfjörður	20						250	
16 Feb Leiruvogur	304	20			2		300	2
19 Feb Hvalfjörður	81	22			14		450	
23 Feb Leiruvogur	654				3		500	
24 Feb Reykjavik	81	10			1			
26 Feb Alftanes	30	10			14		200	
10 Mar Gufunes	85				2		150	
12 Mar Leiruvogur	500	8			1		500	

Grey Plover Pluvialis squatarola (NB). Recorded four times in autumn. Timmermann (1949) gives one winter record.

Knot Calidris canutus (NB). It is probable that wintering Knots come from the breeding grounds in Greenland and Canada as large numbers of these populations pass through Iceland in spring and autumn (Wilson 1981). Adults and juveniles were recorded. The decrease in numbers at Álftanes/Hafnarfjörður in November 1974 suggests that emigration may still have been taking place. There were 3 at Seltjarnarnes on 21 February 1953 and c40 on 5 December 1954 (Ingólfsson & Gardarsson 1957). As these had not been recorded earlier in the winter they may have moved in from other parts of Iceland, perhaps from further west, where there are large numbers in autumn.

Purple Sandpiper Calidris maritima (B). The Purple Sandpiper is the most numerous wintering shorebird and the only species to occur on all coasts. Birds arrive on the north coast between 10 and 20 October (Timmermann 1949). In the south-west there was an influx at the end of September and beginning of October, and in 1974 there was a passage in October and early November. Numbers are much higher in winter than autumn, when Icelandic breeders moult in flocks on the shores (Morrison 1975). It is probable that many of the wintering birds are from east Greenland: those from west Greenland mainly winter in south-west Greenland (Salomonsen 1967), although two ringing recoveries suggest that some reach the British Isles. In early winter, flocks were confined to rocky shores, but there was a movement onto mudflats in late February and March, possibly in response to some food supply which was unavailable until then. Numbers decreased in late April, when there were also signs of a return passage from further south. These arrival and departure dates coincide with those from east Greenland (Salomonsen 1950).

Dunlin Calidris alpina (B). Some wintering Dunlins were noticeably large, and so it is possible that wintering birds belong to the race C.a.alpina, which breeds from northern Scandinavia eastwards, and winters in west Europe. Dunlin breeding in Iceland belong to the smaller race C.a.schinzii, and winter mainly in West Africa (Pienkowski & Dick 1975). They leave Iceland from June to September and return in late April and May (Wilson 1981).

Jack Snipe Lymnocyptes minimus (NB). Recorded on 24 February 1977 near Reykjavik. Timmermann (1949) gives two December records.

Snipe Gallinago gallinago (B). One recorded flying over Reykjavik on 17 December 1976. Snipe winter in Iceland near hot or cold springs which do not freeze over (Gardarsson 1975a).

Woodcock Scolopax rusticola (NB). One near Reykjavik on 29 December 1976. Timmermann (1949) states that Woodcock occur from October to December.

Bar-tailed Godwit Limosa lapponica (NB). Bar-tailed Godwits breed from northern Scandinavia eastwards. They probably arrive in Iceland as autumn drift vagrants, the nearest main wintering ground being on the Outer Hebrides. Although Timmermann (1949) gives only one record, Gardarsson (1975b) states that they winter every year from Sandgerdi to Gardsskagi. Three immatures were recorded at Skógarnes on 18 May 1974 and one at Sandgerdi on 11 April 1975. Since the habitat at Skógarnes seems ideal for Bar-tailed Godwits, it is possible that birds winter there.

Curlew Numenius arquata (NB). Curlews are regular winter visitors in small numbers between Kollafjörður and the mouth of the river Þjórsa (Gardarsson 1975a). However, they may occur almost anywhere on the Icelandic coasts on passage. Gudmundsson's (1957) statement that these Curlew are presumed to be of Norwegian origin is reinforced by recent ringing analysis showing that Norwegian Curlews winter as close to Iceland as Scotland (Bainbridge & Minton 1978). They are also abundant winter visitors to the Faroes (Salomonsen 1942). Timmermann's (1949) statement that they occur from September to March is incorrect. The first birds arrive in July and some do not leave until May. These dates are similar to those of arrivals and departures in Norway (Haftorn 1971). In winter, Curlews in Iceland occur mainly on rocky shores.

Redshank Tringa totanus (B). Wintering Redshanks probably belong to the Icelandic breeding population. It is unlikely that Scandinavian birds occur in Iceland since they mainly winter in south Europe and north Africa (Prater 1981). Birds feed on both mudflats and rocky shores.

Turnstone Arenaria interpres (NB). It is probable that wintering Turnstones come from the breeding grounds in Greenland and Canada, as these populations occur in large numbers on passage in Iceland (Wilson 1981).

Discussion

On the basis of the information presented in this study, and on other published studies, wintering shorebirds in Iceland can be split into four main groups according to their area of origin.

1. Winter visitors from Greenland and Canada: Knot, Purple Sandpiper and Turnstone.
2. Icelandic residents: Oystercatcher, Snipe, Purple Sandpiper and Redshank.
3. Regular migrants and drift vagrants from Scandinavia and Russia: Grey Plover, Dunlin, Jack Snipe, Woodcock, Bar-tailed Godwit and Curlew.
4. Drift vagrants from west Europe which immigrate during the course of the winter: the main species concerned is Lapwing Vanellus vanellus, with flocks of 100 having been recorded (Timmermann 1949, Sigurdsson 1967). These immigrations are associated with cold weather movements further south.

No counts and few observations have been made in other parts of Iceland in winter. Densities in the Reykjavik area and Snaefellsnes are liable to be higher than elsewhere because of the more favourable climate and the extensive feeding areas (Wilson 1981).

Oystercatchers have been observed at Höfn, on the east coast in winter (Gardarsson pers. comm.) and Purple Sandpipers are known to occur in most areas. Nothing is known of the distribution of most other species, but it is probable that most are restricted to the south-west.

Based on the counts in this study, numbers of Turnstones are unlikely to exceed a few thousands, but there are probably many thousands of Purple Sandpipers. The wintering population of Curlews, with their known restricted winter distribution, is not likely to exceed 100 birds and that of Redshanks 200 birds. All other species are either very scarce or vagrants.

The ability of shorebirds to winter in Iceland is associated with the climate, which, considering the latitude, is not severe in the south-west owing to the warming influence of the Gulf Stream. The average annual air temperature in Reykjavik from 1931 to 1960 was -0.4°C and the average sea temperature $+2.3^{\circ}\text{C}$ (Eythorsson & Sigtryggson 1971). However, the north and east coasts are less favourable as they are cooled by the East Greenland current and in late winter by the proximity of the pack ice.

Although air temperatures may frequently be below freezing this was never the case for more than a four week continuous period (in January 1977). Inner bays freeze over for a time, but rocky shores, where there is a strong wave action or tidal current, remain ice free. Certain important mussel beds (e.g. Skógarnes) lie in tidal streams and probably never freeze over.

Provided that birds can still obtain enough food they are well able to survive. Thus those species which use surface shell foods or foods from rocky shores, such as Oystercatchers, Purple Sandpipers and Turnstones are by far the most numerous species.

In mid-winter there are only five hours of daylight, and when these coincide with high tide birds must be capable of feeding during the hours of darkness.

No birds were found in a weak condition. The only bird handled, an adult Oystercatcher, recently killed by a Gyr Falcon Falco rusticolus on 9 March 1975, weighed 575g. This is a higher weight than many moulting adults in autumn (Wilson & Morrison 1981).

It is interesting that Redshanks winter in Iceland, since in parts of Britain some are unable to regulate fat reserves even in mild winters (Davidson 1982), and more Redshanks than other shorebird species die in severe weather (Clark 1982). However, the race in Iceland, T.t.robusta, is larger than many British wintering birds, where both T.t.robusta and T.t.totanus occur. It may be the smaller T.t.totanus which are more liable to die. Redshank wintering in Norway are also of the Icelandic race (Haftorn 1971): the local breeding T.t.totanus do not winter there.

Summary

The paper records counts of shorebirds made in south-west Iceland in winters 1973/74, 1974/75 and 1976/77. The commonest species were Oystercatcher, Turnstone and Purple Sandpiper. There were small numbers of Curlew and Redshank, a very few Bar-tailed Godwit, Knot and Dunlin, and singles of Snipe, Jack Snipe and Woodcock. The ability of shorebirds to winter in Iceland is discussed. This is related to the climate, which, owing to the influence of the Gulf Stream, is not unduly severe, and to food availability. Those species which regularly feed on surface shell foods or foods from rocky shores are most numerous.

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