Early records of Knot migration in Iceland

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This paper reviews early literature (covering the period 1772 up to 1955) concerning the occurrence of Knot in Iceland. Early reports were typically from the more populated or accessible parts of the country, usually involving the northward passage of adults in the latter part of May and the southward passage of juveniles in August. Possible reasons for differences between early and modern observations are discussed. No substantiated records exist for the breeding of the Knot in Iceland.

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INTRODUCTION

It has long been known that Knots *Calidris canutus* occur on migration in Iceland. Early accounts, however, generally give few details and there has been some confusion over whether Knots might breed in Iceland. This review brings together most of the early literature, some of which is not readily accessible, concerning observations and speculations about Knot migration in Iceland, up to the time of the first systematic observations by Ingolfsson and Gardarsson (1955) and those made during studies of wader migration in the early 1970s (Morrison *et al.* 1971; Morrison & Wilson 1972, 1992; Morrison 1977; Wilson 1981). The latter studies provided a basic overall picture of Knot migration in southwest Iceland. More recent work has improved our knowledge of the wider distribution of Knots in Iceland and has provided more information on passage and orientation, especially during spring migration (e.g. Gudmundsson & Gardarsson 1992; Gudmundsson & Alerstam 1992; Tiedemann 1992).

Many of the early reports of Knots in Iceland provide fascinating glimpses into what was then an unknown migration system. The significance of these observations has become apparent with our present much improved, though still incomplete, knowledge of the birds' annual movements (see Morrison 1977, 1984; Davidson & Wilson 1992). Early ornithologists faced many difficulties in gathering observations, not the least of which was the remote and inaccessible nature of many of the coastal wetlands and the difficulty of travel especially in the spring. This may account for some of the different conclusions drawn concerning, for example, timing of migration, so that care must be taken in assessing whether real changes may have taken place. With this in mind, it is useful to present a brief summary of the general picture of Knot migration in southwest Iceland (see Figure 1 for a map of the area) which had emerged by the early 1970s, against which to compare earlier observations.

Knot migration in the spring starts somewhat after mid April, with main arrivals not taking place until early May and continuing until about mid May. Peak numbers are present from mid May onwards. Mass departures occur in the last few days of May, and by early June very few Knots are left in Iceland. Some Knots do remain during the summer period, and these include many which have not attained breeding plumage and which are likely mostly one year old birds. The autumn passage starts about mid July, with peak numbers occurring at the end of July and in early August. Juveniles return south from about mid August onwards, though few may be seen in years of poor breeding success. In the spring, large numbers of Knots are found on the west coast both north and south of the Snaefells Peninsula and birds appear to stage at traditional stopover sites with little turnover. In contrast, numbers in autumn are much lower and appear to be centred around the bay systems south of the Snaefells Peninsula. Weights of birds are generally lower than in the spring and there appears to be

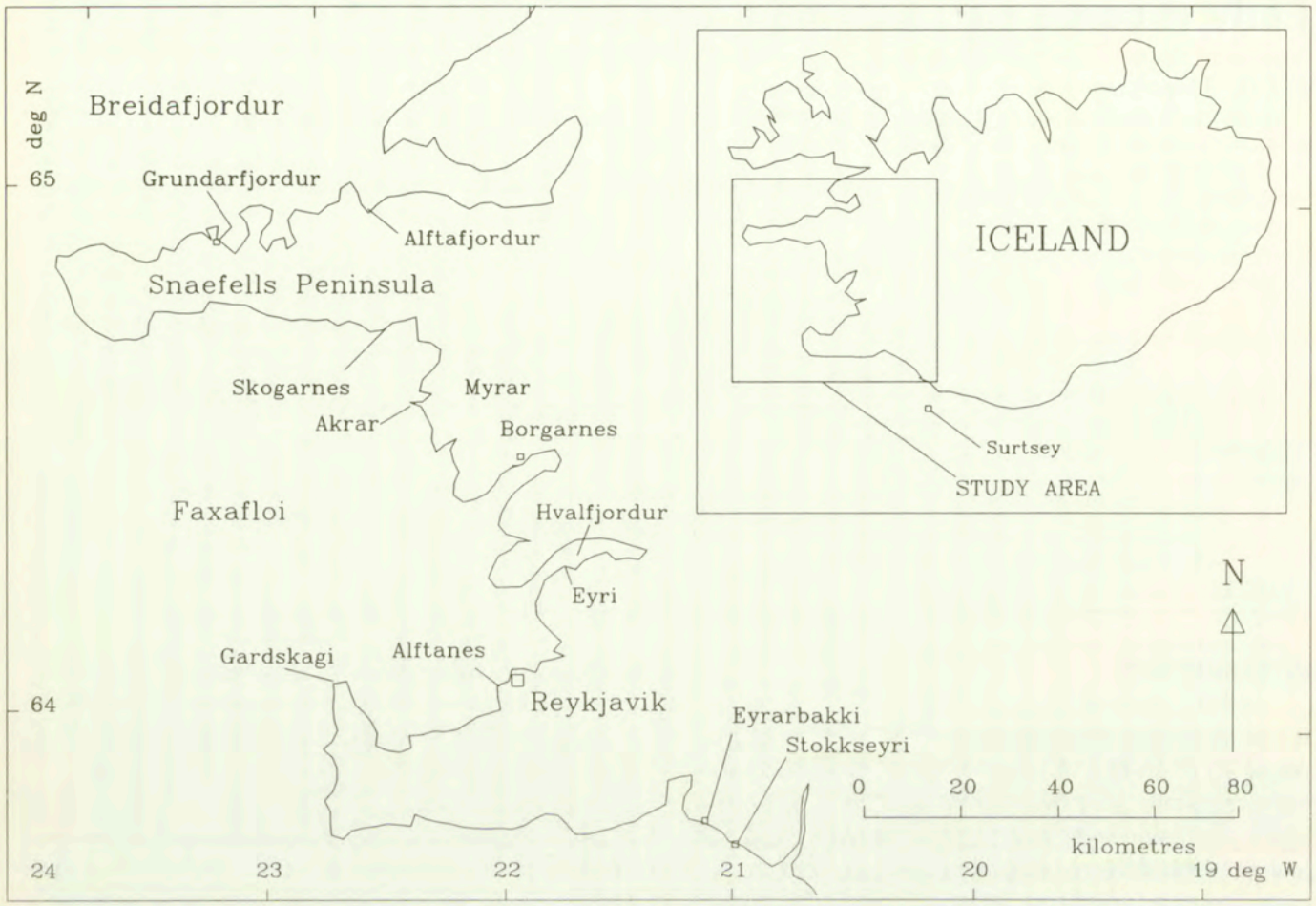

Figure 1. Map of the relevant parts of Iceland.

much higher turnover in the flocks as birds move through the west coast (Morrison & Wilson 1992; Wilson & Morrison 1992).

SPRING PASSAGE

Early historical records of the arrival of Knots in Iceland were typically in the latter half of May. This may be because the small numbers which are present in the latter half of April are often found in relatively inaccessible areas which would likely have been overlooked by earlier ornithologists, especially at a time of year when travel is difficult. The large numbers occurring during the peak of spring migration in the last half of May would also make the species much more conspicuous at this time.

Olafsen (1772) [and in a translation into German of the original Danish by Geuss (Olafsen 1774)] mentioned that the Knot 'kommt in Frühjahre hier an, und halt sich meistens am Seeufer auf, ...' [arrives in the spring and is found mostly on the shore]. He commented that the bird is fat, a unique observation amongst early records, but is unlikely to have appreciated the significance of his remark in relation to the position of Iceland as a stopover point where the Knot increase their weight dramatically in preparation for the next stage of their migration to Greenland and arctic Canada, as shown 200 years later (Wilson & Morrison 1972; Morrison 1977). In fact, his comment was directed towards the edibility of the Knot: 'Er ist fett und hat ein sehr wohlschmeckendes Fleisch, und wird deswegen häufig geschossen und ge-essen' [It is fat and has a fine-tasting flesh, and is therefore commonly shot and eaten].

The early lack of knowledge about the migration of the Knot led to speculations and misconceptions about the possible breeding of the species in Iceland. Olafsen (1772, 1774), having stated that the Knot occurs mostly on the shore, added that it 'wird aber jedoch auch zuweilen höher hinauf in Lande gesehen' [is also however sometimes seen higher up in the land]. Faber (1822) stated that the Knot

arrived in the last days of May, and supposed that it bred on the uplands, an opinion which Newton (1863) considered was probably correct. Jonas Hallgrimsson (1847) in his 'Survey of Birds in Iceland' [Yfirlit yfir Fuglana á Islandi] wrote in much the same way: '[Comes in the spring at the end of May and is then in blood red summer plumage all over the breast - then they go away to breed, possibly up to the mountains ....]'.

Newton (1863) was the first to mention large numbers of Knots on spring passage in Iceland and stated 'One morning, at the end of May, 1858, I found the shore at Kirkjuvogur literally alive with a large flock of Knots, all in their beautiful red plumage'. Though he thought that some Knots might breed in Iceland, he quoted the unpublished opinion of his friend Mr. Fowler, who believed that it did not occur inland in Iceland during the breeding season and that the Icelanders themselves knew nothing of it. Newton's conclusion was that 'I still conceive it possible that a few pairs may remain to breed in the island, though undoubtedly the majority pass on to Greenland, or perhaps to land further north of which we have no knowledge'. He later wrote 'Large flocks are known to occur in Iceland, but these do not stay there many days and pass on - obviously to the northward. It has not been met with on the east coast of Greenland or in Spitzbergen; the presumption, therefore, is that the countries to the west or north of Greenland are the goal of its vernal migration' (Newton 1875). These words were indeed prophetic, in that we now know that many Knots breed in the northeastern Canadian High Arctic. In Newton's day, however, geographical knowlege of the far north was still incomplete. It was not yet known, for instance, whether land might extend to the North Pole, and although expeditions which were then taking place to northern Ellesmere Island did report finding Knots (e.g. Feilden 1877; Moss 1878), it was not until 1909 that the first Knot nest was found (Feilden 1920).

Lamby (1931) stated that it was not known whether Knots breed in Iceland, and in response to his request in the Icelandic journal *Natturufraedingurinn* for information on possible breeding, Johannesson (1931) indicated he had found Knots nesting on Mid-Langey in the district of Skaleyjar while hay-making on the islands in the latter part of July. The habitat probably involved suggests that there may have been some confusion with Red Phalaropes *Phalaropus fulicaria*, which nest in small numbers in Iceland. Isolated reports of Knots breeding in remote parts of Iceland have usually been unsubstantiated (F. Gudmundsson pers. comm., and see Watson 1952). There are still no authenticated breeding records of the Knot in Iceland.

Gröndal (1886b) recorded seeing more than one hundred Knots near Reykjavik on 14 May 1886, describing them as flying here and there and shining like a golden veil moving in the wind in the sunlight, and again recorded large flocks in this vicinity on 21 May 1889 (Gröndal 1897-98). Gröndal (1886a) also mentioned that they are not so common and described them as resident and grey in winter. This first published reference to wintering Knot was corroborated by Saemundsson (1905), who reported a large flock near Reykjavik around New Year 1902 (and see Hantzsch 1905). Ingolfsson & Gardarsson (1955) gave records of Knots wintering at Sudurnes near Reykjavik (40 on 5 December 1954; 3 on 21 February 1953) and F. Gudmundsson (pers. comm.) has stated that Knots are regularly observed in the winter in small numbers.

Slater (1901) reiterated that Knots occur sometimes in considerable numbers around the end of May but soon move on, and Hachisuka (1927) described the species as a passing migrant occurring in great numbers, arriving in May and staying two weeks. Nielsen (1919) spoke of 'enormous flocks, which number thousands' at Eyrarbakki (see Timmermann 1938-49), and a flock of approximately 1,000 Knots was observed at the same place late in May 1972 (pers. obs.).

Timmermann (1938-49) stated that the main passage in the spring is through the west coast, generally between 8 and 30 May, and that large numbers may occur. Skulason (1949) stated that Knots may occur in large flocks in Breidafjördur, north of the Snaefells Peninsula, in the spring though the bird has never bred there. Timmermann quoted a letter from Skulason in 1937 describing the flocks in Breidafjördur as thousands, and also gave other sight records around the west coast of Iceland. Recent evidence suggests that Breidafjördur may hold the largest number of Knots on the west coast in spring (Gudmundsson & Gardarsson 1992). Lamby (1931) reported seeing many Knots at Kirkjusandur on 12 May and that these remained until at least 20 May, leaving sometime soon after that date.

Although first arrival dates of migrant birds at weather stations have been published in the Icelandic weather journal *Vedrattan* since 1925, records

for Knots do not begin until 1956. First dates of arrival during the period up to the early 1970s (1956 - 1971) range between 1 and 22 May and were all from the northeast coast at Thorvaldsstadir.

The observations of Ingolfsson & Gardarsson (1955) at Seltjarnarnes near Reykjavik sum up the general picture in southwest Iceland very well. These authors first observed Knots on 22 April 1953 and 19 April 1954, and mention seeing a single bird once on 10 April 1953. The peak of the passage occurred around the end of May, when 3,000 Knots were present. These had mostly disappeared by early June.

Gudmundsson (1968, 1970) reported observations of Knots passing the volcanic island of Surtsey off the south coast of Iceland during the early spring passage. Two large, very compact flocks were seen on 3 May 1967 after a preceding week of poor weather (Gudmundsson 1968), and a flock of 200 - 500 was recorded on 29 April 1968 (Gudmundsson 1970).

AUTUMN PASSAGE

Early observations of the autumn passage of Knots in Iceland are generally somewhat scantier and more confused than those referring to the spring passage. This is probably because the autumn passage is rather lighter and because it is concentrated more in regions around Snaefellsnes in areas seldom visited by early ornithologists.

Faber (1822), for instance, mentioned that Knots return around the beginning of September and are then in winter plumage. This indicates Faber was probably observing juvenile birds in their grey plumage returning after the adult passage had ended sometime earlier. Hallgrimsson (1847) mentioned that '[... one does not see them again until later in August, and they are then once more in grey plumage on the breast; they are then on the coast here and there until they leave in the middle of September]'. Again, it seems that Hallgrimsson had missed the main passage of adults and observed the grey juveniles in small numbers on the coasts as they passed until mid September.

Slater (1901) did not mention the autumn passage and Hantzsch (1905) simply stated that it is in August-September. Hachisuka (1927) stated that Knots reappear in August with their young and stay for two weeks. Timmermann (1938-49) gave the autumn passage as mid August to mid September. Ingolfsson & Gardarsson (1955) again give the most complete picture published before the 1970s. They stated that Knots start returning around the beginning of July, after which they increase and then decrease in numbers again in August, being mostly gone by late August to early September, though later records did occur and some wintered (see above).

DISCUSSION

In summary, most early records of Knot on spring migration were from the latter part of May, which is when the peak migration period has occurred in recent years. Knots are most conspicuous during the peak of the passage, and early observers may have missed the smaller numbers occurring in the latter part of April and earlier in May. They also did not generally report the relatively light autumn passage of adults, which more recent studies have shown to occur in the second half of July and in early August. Numbers of adult Knots are low in the populated areas in the southwest, most birds being found towards the Snaefells Peninsula on the west coast, where fewer people live.

Though it seems most likely that the scarcity of past records from early May and late July/early August is due to less extensive observational coverage, other factors might be responsible. Changes in migration might result from such factors as alterations in climate or food resources in breeding and wintering areas, as well as in Iceland itself. Changes in numbers of birds overflying Iceland might result from population fluctuations in different breeding areas. A general warming trend has affected bird species in Iceland and the North Atlantic area during the first half of the present century (Salomonsen 1948; Gudmundsson 1951). Whether climatic changes on the wintering grounds might have led to earlier arrivals of Knots in Iceland in this century is not yet clear. There was no clear trend in arrival dates reported in *Vedrattan* at Thorvaldsstadir on the northeast coast in the period 1956-85 (after the climatic amelioration in Iceland had halted). Reports of wintering birds early this century (before the warming began) indicate that winter temperatures were not so low as to prevent survival. Little is known about fluctuations in population levels in different parts of the breeding range, which might affect the numbers of adults (and young) returning via Iceland. It does appear, however, that the main spring migration of Knots through Iceland was similar

in the 1870s to that in the 1970s, with the accounts of Newton (1863, 1875) matching well with those of Ingolfsson & Gardarsson (1955) and those of the expeditions in the 1970s (Morrison 1977). Knots have been consistently reported from most parts of their presently known breeding range during the past one hundred years, especially in the Canadian Arctic. Further investigations of the possible influence of climate and other factors on population levels and migration systems of high arctic shorebirds during this period would be of considerable interest.

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