

# Routes of spring migrant Siberian and Nearctic Knots *Calidris canutus* diverge over Sweden

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Blomqvist, S. & Lindström, Å. 1992. Routes of spring migrant Siberian and Nearctic Knots *Calidris canutus* diverge over Sweden. *Wader Study Group Bull.* 64, *Suppl.*: 91-94.

The timing and regional distribution of Knots recorded in Sweden in spring is reported. Siberian as well as Nearctic birds seem to occur. Nearctic Knots are found during two stages. A small number of early vagrants regularly visit the southwest coast during March and April. Later in the season (median date 16 May), northern Sweden is overflowed by Knots migrating to stopover sites in northern Norway. Siberian Knots pass south Sweden in large numbers in late May and, especially, the first half of June (median date 8 June), during a short and concentrated migration period.

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## INTRODUCTION

During the last twenty years the spring migration pattern of Knots in western Europe has received much attention (Dick *et al.* 1987; Piersma *et al.* 1987; Uttley *et al.* 1987, and references in these), including co-operative projects launched by the Wader Study Group (Davidson *et al.* 1986; Dick *et al.* 1987). However, the spring occurrence of Knots in Sweden has so far not been the subject of a separate analysis. This gap in information has led us to compile data from Sweden. In the present paper we pay special attention to regional differences in the number of birds recorded and the timing of passage in different parts of the country. We also briefly refer to what is previously published in the native literature about the spring occurrence of Knots in Sweden.

## MATERIAL

The data originate chiefly from three sources: (1) replies to inquiries sent to regional report committees and also direct personal communications from certain observers, (2) literature searching (mainly in local bulletins), and (3) records in the diary of Ottenby Bird Observatory. We have received replies from all 30 report committees in Sweden. Since observa-

tions of Knots are not common during spring in Sweden, observed birds are usually reported. Therefore, we believe that we have got a large proportion of the observations made until today. The single place where most Knots (40%) have been recorded in Sweden is Ottenby Bird Observatory. In order to avoid a too strong influence from this locality on the general account, data from Ottenby have been treated separately.

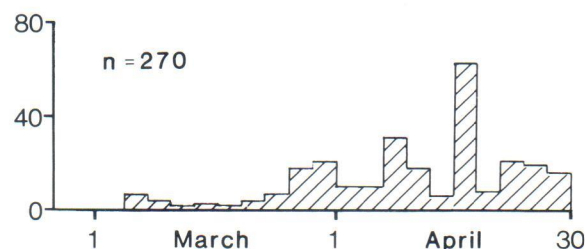


Figure 1. Number of Knots per three-day period, recorded during March to April in Sweden. More than 90% of these birds have been observed within the cross hatched area in southwest Sweden on the map in Figure 2.

## GENERAL PATTERN OF OCCURRENCE

During winter, Knots have been observed only rarely in southern Sweden (Lennerstedt 1963, SOF 1990). In March and April, the occurrence of Knots is more



regular, but few in number (Figure 1). More than 90% of these early birds have been seen within the cross hatched area of the map in Figure 2. From the beginning of May the number of observed Knots increases (Figure 2). Most birds are reported from south Sweden. The major passage across south Sweden is very concentrated in time, peaking between 6 and 11 of June. In this period, 73% and 70% of all Knots have been observed at Ottenby and other areas of south Sweden, respectively.

A remarkable difference exists between the dates of birds observed on both sides of a line stretching from the narrow coastal plain of Halland in the west to the Lake Mälaren Region in the east (Figure 2). The majority of birds north of this line are passing about three weeks earlier (median date 16 May) than birds recorded south of it (median date 8 June). The number of birds observed in the north is much smaller ( $n = 407$ ; largest flock consisting of 75 individuals) than in the south ( $n = 55,288$ ).

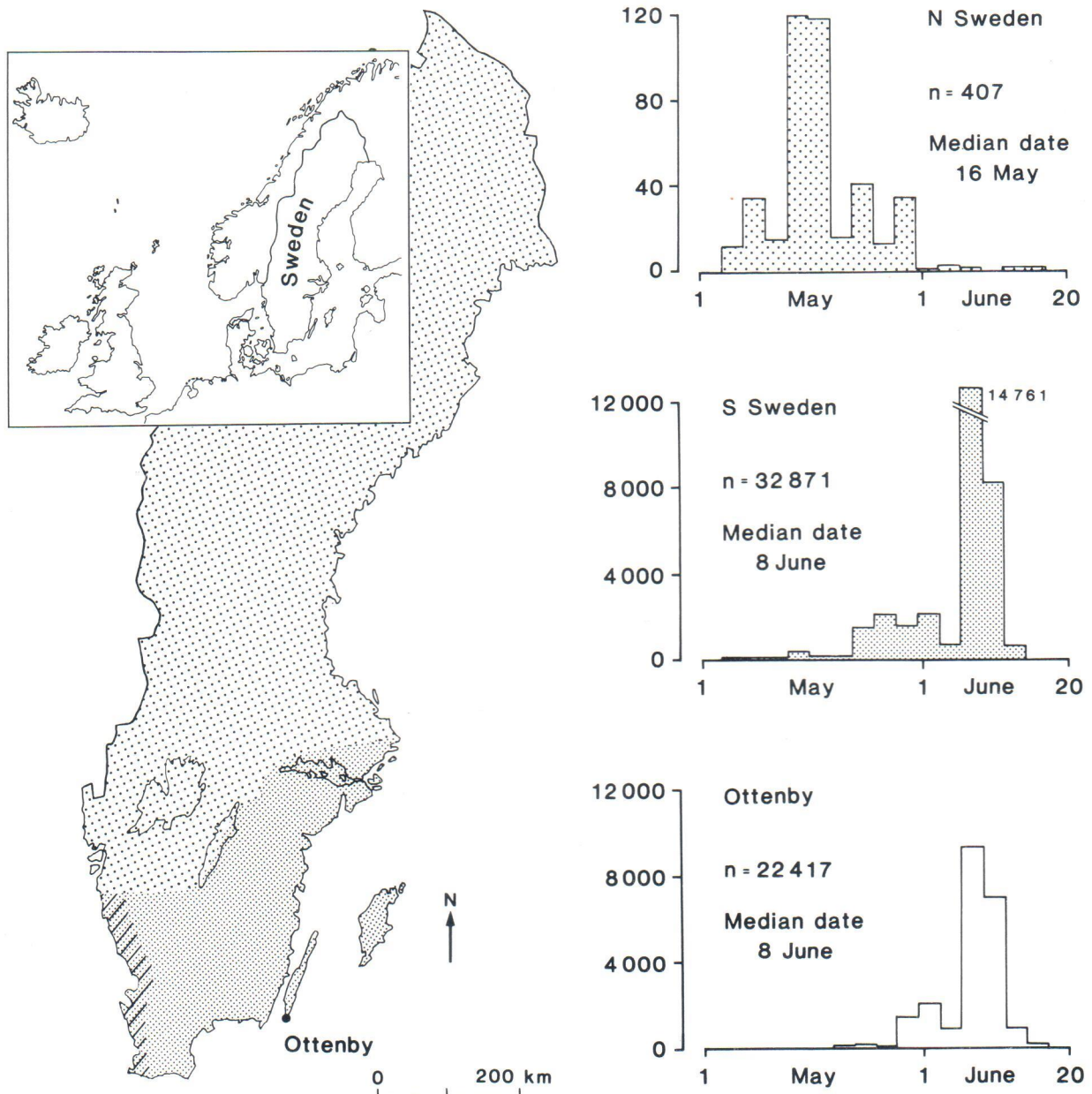


Figure 2. Number of Knots per three-day period, and relative timing of Knot occurrence in different parts of Sweden, 1 May to 20 June. Upper diagram shows records reported north of a line stretching from northern Halland in the west to the Lake Mälaren Region in the east. Middle diagram shows records

reported south of this line (except observations from Ottenby). Lower diagram is records from Ottenby. Cross hatching in the map refers to the area where more than 90% of early Knots (March to April) have been observed (cf. Figure 1). Inset map shows the position of Sweden in northwest Europe.



Reports of number of birds exceeding thousand individuals during a day are all from the provinces of Scania (Källström 1963), Blekinge (Nilsson 1985) and the islands of Öland (Andreason-Blockhammar & Eriksson 1963; Svensson 1975) and Gotland (Hedgren 1988) in the Baltic Sea. The largest flock ever recorded is from Eckelsudde on Öland (8 June 1984), amounting 5,000 resting individuals (P. Svensson pers. comm.).

During spring, Knots are usually not resting and feeding in large numbers in Sweden. However, during certain inclement weather conditions such as a strong head wind (of gale force) or rain and coldness, hundreds or thousands of birds have been found staging at the Baltic proper. The majority of these observations are from shore habitats on the islands of Öland (Breife 1976; Waldenström 1987) and Gotland. Large numbers of staging birds have also been recorded in the province of Blekinge. From coastal areas of the Kattegat, west Sweden, there are a couple of records of staging Knots in hundreds. From the province of Scania observations of such numbers of birds refer only to passing flocks.

The occurrence in Sweden of spring migrating Knots can be summarized as follows: (1) Only a minor fraction of Knots have been observed inland, whereas the overwhelming majority of birds are recorded in coastal areas. (2) Southwesternmost Sweden regularly holds small numbers of Knots during March and April. (3) Most spring migrating Knots have been recorded in south Sweden during late May and the first half of June. (4) During this time, resting and feeding occur irregularly and then mainly during weather conditions unfavourable for migration. (5) The minor fraction of birds recorded north of line stretching from northern Halland eastward, via Lake Vättern, to the Lake Mälaren Region passes much earlier than the major fraction passing more south across Sweden.

## INTERPRETATION

Considering the timing of occurrence of Knots during spring in Sweden, Siberian as well as Nearctic birds seem to occur. Firstly, those birds observed from March to April (Figure 1), mainly on the Swedish south and west coast, are most certainly vagrants of the Nearctic population (*C. c. islandica*) which overwinter chiefly around the coasts of the British Isles, the southern North Sea and western France (Dick *et al.* 1976; Prater 1981; Roselaar 1983; Prokosch

1988). At this time of the year, the Siberian Knots (*C. c. canutus*) are still in Africa (Piersma *et al.* 1990).

Secondly, it is known that up to 70,000 Knots are staging in northern Norway during May (Strann 1990, 1992). The majority of birds arrive in the middle of May from the wintering grounds around the North Sea. Bill lengths, ringing controls/recovery and migration timing suggest these birds belong to the Nearctic breeding population (Davidson *et al.* 1986; Uttley *et al.* 1987). The timing of this migration matches the median date (16 May) found for Knots observed in northern Sweden (Figure 2), which indicates that Swedish birds also have a Nearctic destination. So far, the number of birds recorded in northern Sweden is small, which suggests the flyway up along Sweden to be a minor route only. However, the low observer density in this part of Sweden, combined with the fact that migrating Knots may be difficult to recognize, mean that this route may be more significant than present data shows.

Thirdly, Siberian Knots pass southern and southeastern Sweden mainly in the beginning of June (Dick *et al.* 1987; Prokosch 1988). The virtual absence of Knot observations in northern Sweden during this time of the year suggest a narrow migration corridor over south Sweden for Siberian birds (Figure 2). The remaining Knots, observed in south Sweden in the early and middle of May, can not yet be designated to either the Nearctic or the Siberian breeding population.

In essence, the outlined pattern of spring occurrence of Knots in Sweden brings us to suggest this area as a boundary area, overflowed by Nearctic as well as Siberian birds. The Nearctic Knots occur during two stages: early vagrants which presumably have overwintered around the North Sea, and later in the season birds migrating to stopover sites in northern Norway. The Siberian Knots pass across south Sweden in the beginning of June, during a short, concentrated migration period.

## ACKNOWLEDGEMENTS

Knot information to this paper have been provided by courtesy of Per Adenäs, Thomas Alerstam, Lars Blomqvist, Erik Borgström, Henrik Druid, Åke Eliasson, Johan Elmberg, Gudmundur A. Gudmundsson, Stellan Hedgren, Lars Hellman, Kurt Holmqvist, Björn



Höök, Gunnar Jakobsson, Kjell Johansson, Lage Johnson, Göran Junevik, Leif Karlsson, Dan Korn, Tommy Larsson, Sören Lindén, Sigvard Lundgren, Nils Lundmark, Anders Lundquist, Roger Nääs, Johan Nilsson, Thomas Nilsson, Erik Norén, Jerry Nyman, Jörgen Petersson, Jan Pettersson, Thomas Pettersson, Kristian Ståhl, Lars Strindberg, Martin Tjernberg, Sölve Westlund and Anders Wirdheim.

This is contribution No. 123 from the Ottenby Bird Observatory.

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