

When using partial counts, or counts undertaken over a long period of time, in a large area, the dynamic behaviour of the wader populations needs to be taken into account.

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DOES THE NEARCTIC KNOT *CALIDRIS CANUTUS* ISLANDICA MIGRATE THROUGH THE SOUTH-WESTERN BALTIC?

H.W. Nehls

The Knot *Calidris canutus* is a regular migrant along the Baltic coast in the German Democratic Republic (GDR) in autumn, but more than 100-200 are seldom seen at the resting grounds at any one time. However, observations of their migration indicate that more birds occur in this part of the Baltic than the number of resting birds suggests. It seems probable that most of them pass through the area on their way to the North Sea without resting.

Autumn migration starts with the adults in mid-July, reaches its peak during the last 10 days of July and the first 5 days of August, and continues until late September. The first juveniles appear around mid-August. Their migration reaches a peak between the last 5 days of August and the first three weeks of September. The last Knots leave the region in late October (Figure 1). Adults have been observed to rest here for only a short time, but juveniles often stay for a considerable period.

It is extremely rare for Knots to rest on our coastline during the spring migration. Usually only single birds, or groups of less than 10, are observed. Occasional birds appear towards the end of March, and there are scarcely perceptible peaks in the first half of May and mid-June. Birds have not been observed overwintering in this region, but in mild winters, individual Knots sometimes appear between December and February, probably flying in from the North Sea.

Since only a few Knots rest on our coastline, trapping and ringing are possible to only a very restricted extent. The total number of Knots ringed in the GDR during the autumn migration up to and including 1986 is only

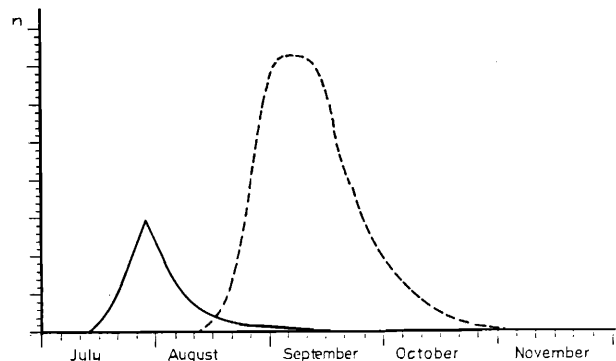


Figure 1. Timing of occurrence of adult (solid line) and juvenile (dotted line) Knots resting on Langenwerder, Wismar Bay, during their autumn migration.

about 2 200. Of these, 1 700 were ringed on the island of Langenwerder in Wismar Bay, where Knots have been ringed since 1959, although on a large scale only since 1976. The birds are caught mainly with wader traps, although mist nets are sometimes used.

Knots caught on Langenwerder are weighed and the following measurements taken: wing length, bill length (culmen to tip, sometimes also from front margin to nostrils to tip), and tarsus length. Only about 17% of the birds caught have been adults. These birds had not yet started moulting their primaries when they migrated along our coast.

So far 36 of the birds ringed in the GDR have been recovered in other countries, a recovery rate of about 1.6%. Of the birds caught in the

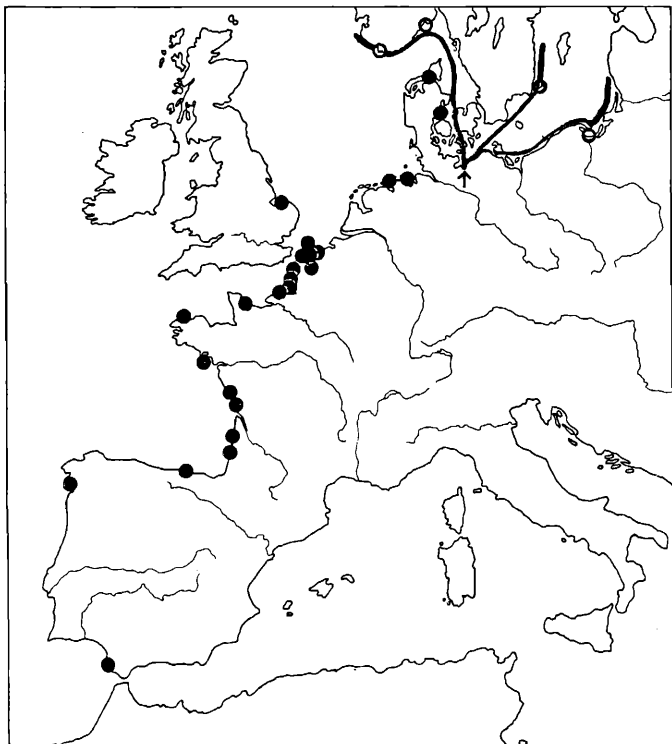


Figure 2. Reports elsewhere of Knots ringed in the GDR (●), and reports in the GDR of Knots ringed elsewhere. All records are for birds during autumn migration. The arrow indicates the location of Wismar Bay.

GDR, 17 (c. 0.8%) had been ringed abroad. Data are therefore available for only 53 birds in this region, so their statistical value is limited. However, the majority of the data are consistent with what we already know about the migration of the Siberian Knot *Calidris c. canutus*, so the majority of the birds migrating over the Baltic probably belong to this race.

The directions from which the birds come are indicated by 16 birds (15 juveniles and 1 adult) that were ringed abroad 1-2 weeks before being caught in the GDR (Figure 2). The birds come from three possible directions:

1. west along the south coast of the Baltic (10 birds ringed in Gdansk Bay, Poland),
2. south from the eastern Swedish coast (2 birds ringed on Oland),
3. south-east from south Norway (4 birds).

Although it seems most probable that the birds arriving at the GDR coast from across the Baltic come from Siberia, the origin of the Knots arriving from southern Norway is uncertain. Since Siberian and Nearctic Knots both occur there in autumn (Andreassen and Rad 1977), it seems quite possible that Nearctic *C. c. islandica* might also migrate further via the Kattegat and Danish islands into the western Baltic, perhaps particularly if there are strong westerly winds at this time.

Except for one bird, the 24 autumn recoveries (22 juveniles and 2 adults) of Knots ringed in the GDR were all made in the year of ringing. The recoveries confirm the route that *C. c. canutus* is already known to follow. In only a few days or weeks (by November) later they have crossed the southern North Sea and reached the French or even the Spanish coast. Two birds took a north-north westerly course (to Jutland)

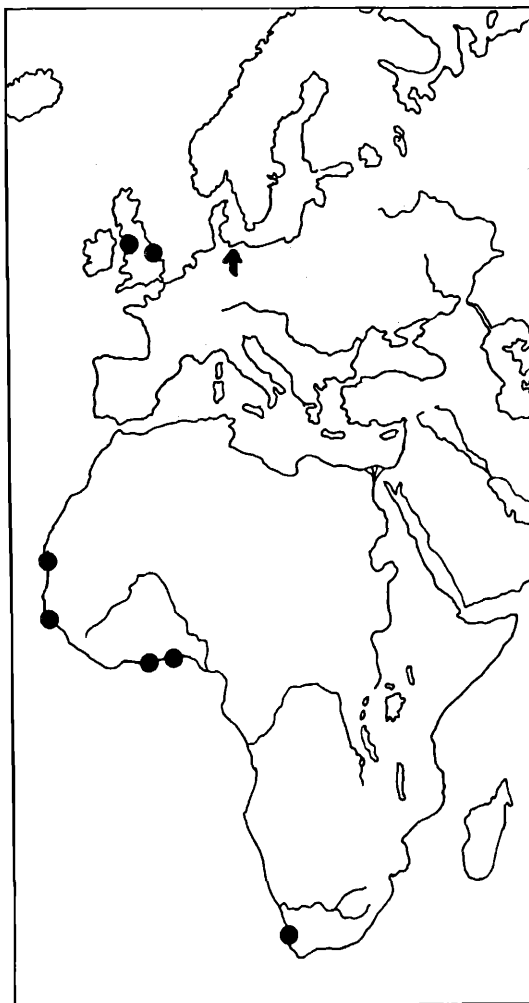


Figure 3. Reports elsewhere during winter of Knots ringed in the GDR. The arrow indicates the location of Wismar Bay.

after being ringed (Figure 2). It is not clear whether the 4 birds recovered in mid-November (one in Jutland, 2 in northern France and one in western France) would have overwintered in Europe, or were migrating further south.

Of the 8 juvenile Knots ringed in the GDR and recovered in their winter quarters or between mid-November and the end of February (Figure 3), 6 were found in Africa (2 each in Ghana and one each in Mauretania, Guinea-Bissau and Langebaan Lagoon, South Africa). The 2 others were recovered in England in mid to late February; a juvenile in Lancashire and an adult in Norfolk. These may have been Nearctic Knots that overwintered in Great Britain (Figure 3).

Finally, 4, possibly 5, birds ringed on autumn migration have been recovered during the spring migration from March to May. An adult ringed on 7 March in Norfolk, England, where it may have been overwintering, was recovered on 21 July 11 years later on Langenwerder, and a juvenile ringed on Langenwerder was found on 19 May in Essex, England, although after it had been dead for some time. Two others were recovered in the German Waddensea on 4 March and 22 April, a time when only Nearctic Knots are considered to be present, according to Dick, Piersma and Prokosch (1987). The remaining bird was found as a five-year-old in early May in Balsfjord,

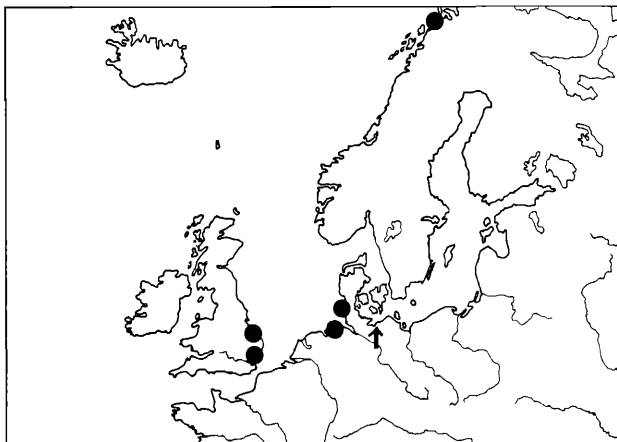


Figure 4. Reports elsewhere during spring migration of Knots ringed in the GDR during autumn migration.

North Norway, where Nearctic Knots occur in spring (Davidson *et al.* 1986). This last Knot was ringed as a juvenile on Langenwerder on the 3 September, and had a bill-length of only 27.6 mm, suggesting Nearctic origin.

Hence the location and timing of several recoveries suggest that Knots in autumn on Langenwerder are of mixed Siberian and Nearctic origin, and that Nearctic birds reach the west Baltic via south Norway. Knots that occasionally appear in the West Baltic in late winter and early spring definitely belong to the populations overwintering in the North Sea.

Morphometrics also suggest that *islandica* appears in our region. Although it is impossible to identify a single bird as definitely belonging to a particular population, owing to the considerable overlap of the ranges of the bill-length and other measurements, the mean bill-lengths of *canutus* and *islandica* differ significantly (Cramp and Simmons 1983, Dick, Pienkowski, Waltner and Minton 1976). Table 1 compares bill-lengths of the two subspecies with those from Langenwerder.

This shows the mean bill-length of the Knots caught on Langenwerder mid-way between the mean bill-lengths given in the literature for the two subspecies. The measurements of birds made by a few ringers on Langenwerder have been excluded from the calculations because they had been taken using different measuring methods. If all these measurements are taken into account, the mean bill-length of adult Knots is only 33.6 mm ($n = 317$) and of juveniles is only 32.3 mm ($n = 1398$) (Figure 5). Comparison of the wing-lengths of Knots measured on Langenwerder with the corresponding data given in the literature is given in Table 2. Again the mean for Langenwerder falls between those of the two subspecies, suggesting a mixed population. However, final confirmation that *islandica* Knots occur in the Western Baltic during autumn, along with Siberian *canutus* must await the discovery of birds ringed on Langenwerder on their Nearctic breeding grounds.

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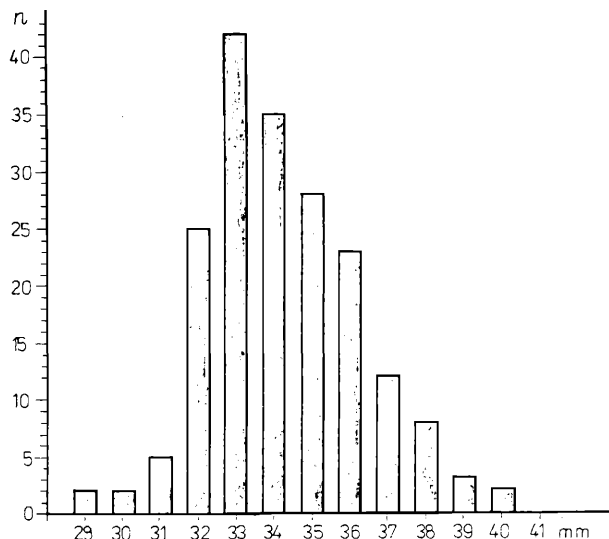


Figure 5. The frequency distribution of bill-lengths of adult Knots measured on Langenwerder.

Table 1. Bill-lengths of Knots measured on Langenwerder, compared to those of known subspecies (from Dick *et al.* 1976, Cramp and Simmons 1983). Measurements are for males and females combined, in mm.

	n	mean	range
<i>C. c. canutus</i> adult	89	35.6	32.8-40.4
<i>C. c. islandica</i> adult	64	33.5	28.0-38.0
Langenwerder adult	187	34.2	28.8-40.3
juveniles	530	33.3	27.6-40.0

Table 2. Wing-lengths of Knots measured on Langenwerder, compared to those of known subspecies (from Dick *et al.* 1976, Cramp and Simmons 1983). Measurements are for males and females combined, in mm.

	n	mean	range
<i>C. c. canutus</i> adult	61	168.5	161-176
<i>C. c. islandica</i> adult	88	171	162-181
both races juvenile	67	163.0	155-171
Langenwerder adult	199	170.6	159-182
juvenile	559	165.5	155-174

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H.W.Nehls, Zoologischer Garten Rostock,
Rennbahnallee, 2500 Rostock, GDR