MOVEMENTS OF WADER POPULATIONS BETWEEN ESTUARIES: SOME QUESTIONS RAISED BY STUDIES AT TEESMOUTH

by P.R.Evans

Since the beginning of 1977 about 10,000 shorebirds have been caught on the Tees estuary, Co. Cleveland, by the wader research group at Durham University. All unringed birds have been ringed before release; some have also been colour-marked, and biometric data obtained from large samples. From the controls, recoveries and sightings of these marked birds, several important questions have arisen, to which answers may well be given by examination, not only of the recoveries, but also of the original ringing (and any retrap) data held by wader ringers throughout the British Isles.

The first set of questions relates to movements by adult shorebirds from the estuaries where they moult their flight feathers in late summer to the estuaries where they spend the rest of the non-breeding season. Many adult Knot Calidris canutus, Dunlin C.alpina and Sanderling C.alba, that have been ringed on The Wash between August and October, have been caught again on the Tees estuary in the winter months. A few movements are known to have taken place within a single autumn, but in most cases there has been a gap of some years before the ringed birds have been "controlled" at Teesmouth. Since rather few waders moult at Teesmouth, it is likely that these individuals had returned to moult on The Wash each late summer and then had moved north, but this needs confirmation. The questions that arise, then, are (i) are adult birds faithful to moulting sites year after year, and, if not, what proportion change sites? (ii) since many Knot, Dunlin and Sanderling are present on The Wash during the winter, do individuals either stay on The Wash after moulting every year, or move away after moulting every year; or do some individuals stay one year and move away in another, perhaps depending on food resources and total numbers of birds on The Wash in early autumn? (iii) if birds move away after moulting do they always move just to the same estuary that they visited first in the previous autumn? (iv) how do birds moulting on other estuaries behave when they have completed wing-moult?

Some species, e.g. Knot, are known to move around extensively within large estuaries, as has been shown recently by observations of colour-dyed birds, as well by recoveries of ringed birds. Others, such as Dunlin, seem more faithful to particular roost sites and feeding areas within large estuaries. First attempts to quantify such site-faithfulness can be made by observations of the proportions of colour-marked birds in roosts or on feeding areas (see, for example, Pienkowski and Clark, WSG Bulletin 27: 16-18). In site-faithful species, the possibility arises that different sub-populations within large estuaries may behave in different ways. Perhaps it is more than chance that almost all Dunlin movements from The Wash to Teesmouth have involved birds marked on the western (Lincolnshire) shore of The Wash. Do birds from the Norfolk side stay throughout the winter, or do they move elsewhere in Britain? Is there any tendency for a greater proportion of males than females to move from the moulting areas?

A second set of questions relates to the movements of juveniles. These are not constrained by the need to renew flight-feathers in their first autumn and they often leave the breeding grounds later than the adults. To what extent do they follow similar routes to the adults to their "wintering" areas? Dunlin controlled on the Tees in winter had been ringed on migration chiefly in north and southwest Norway, whereas adults had been marked chiefly in Finland and Southern Sweden (and presumably reached Teesmouth via The Wash; see also Leslie and Lessells Ornis Scand 9(1978) 84-86). Juveniles of many species use a wider variety of habitats in Britain in late summer and autumn than do the adults, but are certain estuaries preferred by juveniles in the same way that certain sites are important for moulting adults? And at what age do the movement patterns of immature waders come to coincide with those of the breeding adults?

A third set of questions relates to the movements of all the age- and sex-classes of shorebirds during the winter months. Because many individual birds have been retrapped in later winters on the estuaries on which they were first ringed, the extent of movements between estuaries within a winter has not been fully appreciated. As a result of dye-marking of Knot at Teesmouth in winter 1979/80, it became clear that there was a considerable turnover of the population. Several of the birds dye-marked soon after arrival in November 1979 were seen within a few weeks along the Northumberland coast and in the outer Forth estuary. Many stayed at Teesmouth, and others arrived at Teesmouth to take the places of the early emigrants. This indicates that the northward movements along the east coast of England, first suggested by Dugan (WSG Bulletin 27: 19), do not occur by a straight foward leap-frog mechanism, with later departures from The Wash being required to overfly estuaries, such as the Humber and Tees, already full of birds. Rather, the timings of movements of individuals into and out of the Tees are much less predictable, and occur for reasons not yet understood. (One Knot which had reached Teesmouth, presumably from the Wash, was seen a few weeks later on the Humber estuary, in contradiction to the general northward pattern of autumn movements.) These observations raise the question whether individual birds follow the same circuit of estuaries, to be visited during a winter, in successive winters? Are the patterns of estuarine use predictable for a species? Or are some species opportunistic in their use of estuaries, visiting some in some winters, others in other winters?

It would be wrong to assume that all arrivals of birds on one British estuary during a winter have necessarily come from other British estuaries. Arrivals of certain colour-ringed Grey Plovers Pluvialis squatarola at Teesmouth occur fairly predictably in January each year (other colour marked birds establish themselves there in each autumn). Yet none of these late immigrants has ever been seen elsewhere in Britain during the autumn. Until we can establish from whence they have come, no answer is possible to the question why they come to Teesmouth at the worst time of the year, from the standpoint of feeding.

Finally, questions can be asked about movements during the period of moult in spring, the time when breeding plumage is attained. Because flight feathers are not shed then, the birds may not have to assemble in estuaries where they are relatively safe from predation, as may be true in autumn. Nevertheless, both Knot and most Dunlin leave the Tees in early March to go elsewhere to moult. We do not yet know where, but we suspect that some Dunlin return to the Tees in May before heading for their western Siberian breeding grounds. Do large departures of birds from other estuaries occur before birds attain breeding plumage; if so, where are the important moulting grounds? (The Waddensee would appear to be one - see G.C.Boere Ardea (1976) 64: 210-291.)

Answers to all these questions are needed before the conservation importance of British and European estuaries can be assessed realistically. We need now to identify the gaps in our knowledge that cannot be filled by use of the data already collected by wader-ringers, and to expand the use of short-term colour-marking schemes for collecting information on movement patterns within a single winter - but these schemes must be centrally controlled if they are to produce unambiguous results.

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