Green (1984) suggested that bill-length could provide a good estimate of age and that it might also allow the relative condition of a wader chick to be assessed. It certainly appears that bill-length is a better indicator of age over the first 4 days of life than is mass and this is possibly true after fledging as well. Figure 3 indicates that in the middle period of chick growth, when bills measure between 12 mm and 20 mm (equivalent to ages around 4 to 20 days - Figure 2), the bill-length and mass are well correlated and so their relative values should give a useful indication of the chick's condition. Over this range of bill-lengths, the (reduced major axis) regression is $y = 3.88x - 37.98$ (Pearson's $r = 0.97$, $t = 21.9$ $P < 0.001$).

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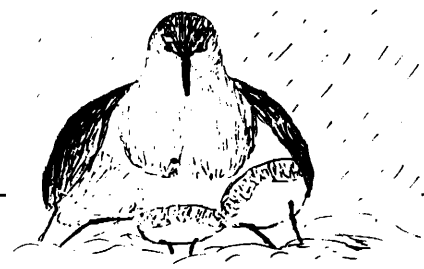

The Northern Dunlin Puzzle

Hans Meltofte

The migratory patterns of different populations of the northern subspecies of the Dunlin *Calidris a. alpina* have been a matter of debate for decades. The picture is still far from clear, but recent results published by Brenning *et al.* (1987, 1989), Gromadzka (1989), Goede *et al.* (1990), and Rosner (1990), have shed significant new light on the problems.

During my current work preparing an overview of wader migration through Denmark I have tried to add these new "bricks" into a common picture of the vast bulk of European Dunlin literature and the data on censuses, migration, phenology and ringing data from Denmark. It is not a very detailed analysis as I am dealing with 36 wader species on a two-year grant. Nevertheless, it is possible from the synthesis to suggest a general pattern of the migration of different populations of northern Dunlins migrating to Europe. I will not present here all the primary data and the evidence. My purpose is to present the model, with the aim of provoking more thoughts and analyses along these lines.

In general there appear to be several trends within the breeding range from Scandinavia to central North Siberia. In birds from further to the east:
1) adults migrate later both in spring and autumn;
2) moult earlier; and
3) the major part of the birds winter more to the south. On the contrary, juveniles from the eastern populations pass through northern Europe earlier and faster than juveniles from the western populations. To what extent the Scandinavian mountain population fits into this pattern is unknown.

Based on available data it is possible to separate at least three sub-populations, each with more or less clearly distinct annual schedules. In several aspects there are considerable overlaps, such as in wintering areas (Greenwood 1984), but nevertheless there appear to be different core wintering areas. Below I use these starting points for the three sub-populations.

1. The majority of Dunlins, *that winter in the British Isles,* migrate to the German and Danish parts of the Wadden Sea and a number of major Danish spring areas during March. Here they stay until mid May, when they leave for the breeding grounds in northern Europe.

Most of the autumn migration of adults is concentrated over southern Scandinavia in July and early August, these birds heading rapidly and directly to the Wadden Sea and the

Wash, where they moult. After moult most of the birds move on during October and November to the wintering grounds in the British Isles.

The migration of the juveniles takes place relatively slowly across Scandinavia to the Wadden Sea and the British Isles during September to November.

2. Dunlin whose *core wintering area is in France*, move to the Dutch Wadden Sea and the Danish coasts in late April and early May. From here they fly to the breeding grounds in mid or late May. This breeding area is to the east around the Ob river in northwestern Siberia; the western boundary with the previous sub-population is unknown.

The autumn migration of these birds takes place a little later than the British wintering population,*i.e.* mainly during the second half of July and in August, and it predominantly passes via the Baltic. Most of the moult takes place during the migration, and is finished either in the Wadden Sea or in the winter quarters having been suspended during part of the migration. Relatively few birds occur in the British Isles.

The juveniles migrate relatively slowly through the Baltic area from late August to October. Some pass straight over the Continent to the French Atlantic coast or to the Mediterranean, but most follow the coast to the Channel area, western France and the Iberian Peninsula.

3. The *core wintering area for the western part of the north Siberian alpina Dunlins is apparently in the western Mediterranean.* Tunisia seems to be the core area, but these birds are also found scattered along the coasts of western Europe north to the British Isles. Most of the birds wintering in the Mediterranean probably migrate via the Black Sea to the breeding grounds east of the river Ob during May and early June. Some go to the Black Sea from the second half of March and stay there whilst moulting into breeding plumage. Others use the Wadden Sea and the Danish staging areas from early to late May or early June. From here they either fly straight to the breeding grounds or have a short stop-over on the coast east of the White Sea in northern Russia.

The autumn migration passes fast and is scattered over Scandinavia and the Baltic during late July and August. Most of these birds fly straight over eastern Europe to the Mediterranean; on some occasions having touched the southeastern Baltic, en-route. The post-nuptial moult, which is most often initiated on the breeding grounds, is completed during the migration in August-September.

The juvenile migration is rapid over northern Europe in August, mostly before the juveniles from the other sub-populations have started to migrate. Most move on to the Iberian Peninsula and northwestern Africa, but many also arrive here via south-eastern Europe and the Mediterranean. The majority flies back to the breeding grounds via eastern Europe in spring together with the adults, but it is possible that a larger proportion of the one year old birds summer in the south than do juveniles of the other sub-populations.

Among the Siberian birds some have characters similar to the eastern subspecies *C. a. sakhalina.*

Based on the mid-winter counts the size of the three sub-populations wintering in Europe and North Africa may tentatively be set at 500,000-600,000 North European birds (sub-population 1); 500,000-600,000 North Russian/north-western Siberian birds (sub-population 2); and 200,000-300,000 North Siberian birds (sub-population 3).

One way to refute, moderate or confirm this model is to perform a thorough analysis of the whole European ringing material as Christoph Imboden did with the Lapwings nearly 20 years ago. The problem is first of all that the suggested sub-populations overlap considerably in migration phenology and wintering areas, so that such an analysis needs to be quite sophisticated. Until this is done, Dunlin freaks could consider to what extent "their" birds fit into such a general pattern.

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Status and breeding biology of Kentish Plover *Charadrius alexandrinus* in Hungary - a progress report

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Székely, T. 1990. Status and breeding biology of Kentish Plover Charadrius alexandrinus in Hungary - a progress report. *Wader Study Group Bull.* 62: 17-23.

A study of the status and breeding biology of Kentish Plover in Hungary was started in 1988. Here some results of the first year are presented. In Hungary the Kentish Plover breeds both on alkaline grasslands and on the bottoms of dried-out fish ponds. In both types of habitat vegetation is very scarce. Hatching success was 45.3% and the most important predators of eggs were mammals. I found no significant difference in morphology between the sexes but parental behaviour differed during both incubation and whilst attending young.

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INTRODUCTION

The Kentish Plover *Charadrius alexandrinus* is a widely distributed cosmopolitan bird. It breeds on coasts and on saline inland wetlands (Johnsgard 1981; Cramp & Simmons 1983). In Europe, the population is about 8,000 breeding pairs, the bulk breeding on the coasts of Spain, Portugal, France and West-Germany, with only a small population breeding inland in the Carpathian Basin (Bankovics 1984; Piersma 1986; Kohler 1988). While Rittinghaus (1956, 1961) and Lessells (1984) studied the birds in West Germany and France, respectively, hardly any information exists on the breeding biology in the Carpathian Basin. Here I report some results from the first year of a longer study.

STATUS OF KENTISH PLOVER IN HUNGARY

Old information suggests that in Hungary the Kentish Plover has always been restricted to alkaline habitats. Reports say that it bred in the vicinity of Budapest (Schenk 1934), and possibly the largest population was found in Fehér-tó near Szeged, where 20-100 nests occurred between 1947 and 1950 (Sterbetz 1963). In the 1950s, the Fehér-tó was converted into a fish-pond, and only small fragments of these alkaline grasslands have survived.

Recent estimates of the breeding population give 60-80 pairs for the whole of Hungary (Bankovics 1984). Three breeding areas can be identified: the southern part of the Great Hungarian Plain, Kiskinság, and Hortobágy (Figure 1). The main breeding habitats are alkaline grasslands (Figure 1) but recently the birds have also bred on the bottoms of dried-out declines at both Kiskunsag and Hortobágy (Table 1).

STUDY SITES

Kentish Plovers were studied in five localities (Figure 2). The areas between the study sites are cultivated agricultural lands and human settlements.

1. Fülöpszék. The shallow ephemeral lake Fülöpszék dried out at the end of May and Kentish Plovers started to breed there. The bottom of the lake is bare ground covered by salts. The vegetation is very scarce, consisting of halophyte plants