

PASSAGE DUNLINS CALIDRIS ALPINA ON THE RIVER SPEY

by Hugh Clark

Introduction

Between 1972 and 1977, 119 Dunlins Calidris alpina were caught on the river Spey at Garmouth, Moray, N.E. Scotland, during late July and early August each year. Ringing recaptures to date suggest the birds were on passage south: one was controlled at the Wash, another in Norfolk and a third in Morocco, 8, 36 and 45 days respectively after being ringed at Garmouth.

Three races of Dunlins occur in Britain, viz., the Northern race C. a. alpina, the Southern race C. a. schinzii which breeds in Britain, Iceland and southern Scandinavia, and the north-east Greenland race C. a. arctica. The race alpina occurs in Britain in large numbers in winter while the schinzii and arctica occur predominantly on autumn or spring passage (Wilson 1973).

The race alpina has, on average, longer wings and bills than the other two (Wilson 1973). Races schinzii and arctica have similar wing lengths but show some difference in bill length (Salomonsen 1950): on average, arctica is shorter billed than schinzii.

It will be shown that, based on wing and bill measurements, Dunlins caught at Garmouth in July and August were probably all schinzii.

Methods

The number of birds caught each year was small; 55, 7, 16, 8, 26 and 7 were the numbers for each of the years from 1972 to 1977. These were caught in daylight, between 5 and 9 a.m., with mist nets set across a narrow, muddy tributary of the Spey. The number of Dunlins moving up and down the tributary, between the place of catching and the river mouth about 200m away, rarely exceeded 50 on any one day, and was often less. The relative inefficiency of the catching method meant that only a small percentage of the birds present were caught.

Individual Dunlins were aged either as adult or juvenile; the adults still retained some black feathering on their bellies. They could not be reliably sexed.

Wing length (maximum length) of every bird was measured, according to the method described by Svensson (1970). The bill length of all birds caught in 1976 and 1977 was

Table 1. Wing lengths of C. a. alpina (Steventon 1972) compared with those of 'Garmouth' Dunlins.

	Mean Wing Length in mm.	Standard Deviation	Sample Size	Range in mm.
Nominate race	118.9	3.2mm	234	110--127
'Garmouth' Dunlins	114.7	3.4mm	119	107--123

measured with dividers from the tip to the start of the feathering on the upper mandible. Every bird caught was weighed in a plastic tube using a Pesola spring balance.

Results

Wing length. Student's t-tests showed no significant difference between the mean wing length from 1972 (when the largest catch was made) and the means from successive years ($p > 0.3$, $p > 0.1$, $p > 0.8$, $p > 0.05$, $p > 0.7$), so all wing measurements taken were used in the compilation of Table 1 in which wing measurements of all 'Garmouth' Dunlins are compared with those of alpina given by Steventon (1972). On average, Dunlins caught at Garmouth thus had shorter wings than alpina.

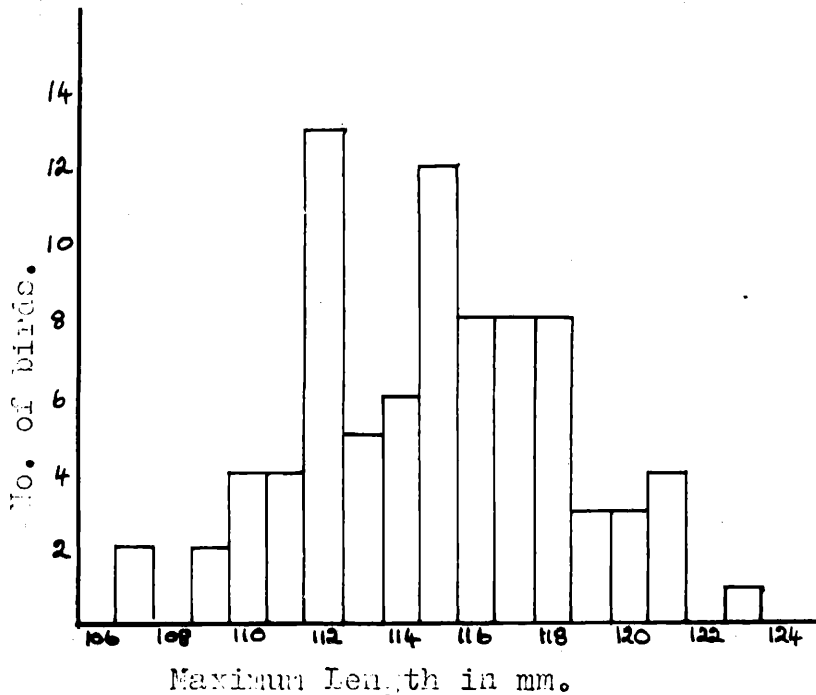


Figure 1. Frequency distribution of wing lengths of juvenile Dunlins.

Table 2. Bill lengths of C. a. alpina (Steventon 1972) compared with those of 'Garmouth' Dunlins.

	Mean Bill Length in mm.	Standard Deviation	Sample Size	Range in mm.
Nominate race	32.7	2.6mm	234	27--39
'Garmouth' Dunlins	30.1	2.3mm	33	26--34.5

Fig.1 shows the frequency distribution of wing length for juvenile Dunlins caught at Garmouth. The sample of 36 adults was too small to permit the construction of a similar graph. The juvenile sample of 83 is also rather small as shown by the lack of smoothness in the graph, particularly at the extremities. However, the distribution is bimodal and the significance of this will be discussed later.

Bill length. Student's t-test showed no significant difference in the mean bill length between the 1976 and 1977 samples ($t=0.949$, $p>0.1$), so all bill measurements were used to compile Table 2 which compares bill measurements of 'Garmouth' Dunlins (all ages) with those of alpina given by Steventon (1972). On average, Dunlins caught at Garmouth were thus shorter billed than alpina, at least during the years 1976 and 1977.

Table 3 shows bill lengths of adult C.a. schinzii and C. a. arctica according to Salomonsen (1950). The 'Garmouth' birds were similar in bill length to those of schinzii given by Salomonsen, and to schinzii breeding in S.W. Finland. The mean for 111 males and 113 females from Finland was around 29.8mm. (Soikkeli 1974).

Table 3. Dunlin bill lengths according to Salomonsen (1950).

	<u>C. a. arctica</u>			<u>C. a. schinzii</u>		
	Sample Size	Range in mm.	Average in mm.	Sample Size	Range in mm.	Average in mm.
Males	18	25-27.5	26	38	26-31.5	29
Females	16	27-31	28.3	18	30.5-35	33
Both sexes		25-31			26-35	

Table 4. Weights of adult and juvenile Dunlins.

	Mean Weight in g.	Standard Deviation	Sample Size	Range in g.
Adults	45.2	4.5g.	36	39-56
Juveniles	41.9	5.2g.	82	33-56

Weight. Weights of adult and juvenile 'Garmouth' Dunlins are given in Table 4. The difference between the two means is statistically significant ($d=3.52$, $p<0.001$) In general, therefore, the adults were heavier than the juveniles.

Discussion

Wing and bill lengths. 'Garmouth' Dunlins were clearly not alpina because of their relatively short wings and bills. The bill lengths suggest they were schinzii. Not all 'Garmouth' Dunlins' bills were measured, but it seems highly likely that the majority of Dunlins caught at Garmouth were schinzii. Pienkowski and Dick (1975) also suggest that juvenile Dunlins passing through Britain in July and August are probably schinzii from Iceland, Britain or mainland Europe.

None of the adult Dunlins caught at Garmouth showed any sign of moult; schinzii would have been unlikely to. Wilson (1973) found that passage schinzii at Morecambe Bay did not moult there (alpina did), but widespread moult occurs in schinzii in their winter quarters in north-west Africa (Pienkowski and Dick 1975).

Soikkeli (1976) showed that adult female Dunlins have longer wings and bills than males, and suggested that similar sexual dimorphism occurs amongst juveniles. He showed fairly distinct divergence in bill length between the sexes by the age of 35-45 days. In Fig.1 the frequency distribution of wing lengths for juvenile Dunlins seems to be bimodal, thus suggesting sexual dimorphism amongst these juveniles. The graphical method of analysis described by Griffiths (1968) applied to these juvenile wing lengths gives means of around 111.5mm. for males and 115.5mm. for females. If these juveniles were British bred, they hatched in the first half of June (Sharrock 1976) and were about 42-56 days old when caught at Garmouth. It is interesting to note that sexual differences in wing length were already apparent.

Weight. The fact that 'Garmouth' adult Dunlins were heavier than juveniles fits the trend outlined by Minton (1975) which shows adults are heavier than juveniles throughout the year. The mean weight of adults is very close to that recorded by Soikkeli (1974) for Finnish adults rearing young in the second half of June (males 41g, females 48g, overall mean of around 44.5g).

If the 'Garmouth' Dunlins were about to migrate a long distance they would probably have been heavier. Minton (1974) points out that migrant non-moulting adults at the Wash in July and August put on considerable quantities of fat before departing, and he records a mean weight of around 53g for these birds in mid-August. The Dunlins occurring at the Spey in late July and early August must, therefore, pause further south to gain weight before migrating to their winter quarters, north-west Africa (Pienkowski and Dick 1975). The three controls mentioned in the introduction support this idea.

Summary

119 Dunlins were mist-netted at Garmouth on the Spey in late July and early August over the years 1972 to 1977. Wing and bill lengths suggest they were C. a. schinzii. Their low weights show that they were not preparing for immediate long non-stop migration. Ringing controls suggest they pause further south in Britain before migrating to winter quarters in north west Africa.

Wing length measurements suggest that sexual dimorphism has already developed in juveniles 6-8 weeks old.

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Hugh Clark, 51 Napier Avenue, Bathgate, West Lothian.

