

NOTES ON THE BIOMETRICS AND EGG MEASUREMENTS OF BREEDING DUNLINS IN SUTHERLAND, SCOTLAND

by John Barrett and Catrina Barrett

As pointed out by Etheridge and Taylor (1982) there are rather few published biometrics of Dunlins *Calidris alpina schinzii* measured on breeding grounds in Northern Europe. Biometrics of Dunlins breeding on damp machair grassland in the Outer Hebrides have been discussed by Etheridge and Taylor (1982). This note presents data on a small sample of breeding Dunlins from Sutherland, and makes some comparisons with other studies.

STUDY AREA AND METHODS

Dunlins breeding on the blanket bogs of central Sutherland were trapped at the nest during the summers of 1983 and 1984. Birds were ringed, and in 1983 were marked with temporary colour-rings. The following measurements were recorded: wing length (maximum chord) measured to 1 mm, bill length, tarsus length and total head length measured with vernier callipers to 0.1 mm, and weights (using a Pesola balance) to 0.1 g. Birds were aged and sexed following the criteria in Ferns (1981). All eggs found were measured to 0.1 mm with vernier calipers and weighed to 0.1 g using a Pesola balance. The clutch size was recorded.

RESULTS AND DISCUSSION

17 Dunlins were captured (Table 1). Both sexes were trapped whilst incubating (trapping was

only attempted during the later stages of incubation, to avoid disturbance to females which might have been egg laying, and to minimise the risks of desertion). Seven birds were adult males, 9 were adult females and one was a first-year female. Comparison between the sexes indicates that adult males were on average smaller in all dimensions than adult females (see also Ferns 1981). The difference was statistically significant (Student's t-test, $p < 0.05$) for wing length, bill length and total head length (Table 1). Weights are not compared since they are likely to vary with stage of breeding cycle, and because the exact stage of the cycle was unknown for some birds. Unlike Hebridean Dunlins, which show complete sexual dimorphism in bill length, with females having the longer bills (Etheridge and Taylor 1982), Dunlins in Sutherland showed some overlap in bill length between the sexes, as did the bill measurements of Dunlins in Wales (Thomas *et al.* 1983, 1984). There was also a varying degree of overlap in all other measurements.

A total of 24 clutches (86 eggs) were measured. Comparisons of egg and clutch size are made with other studies (Tables 2 and 3). Three of the 24 clutches (all containing 3 eggs) were of unknown age and are therefore excluded from the analysis due to the possibility of egg loss from predation. Sutherland Dunlin eggs are of

Table 1. Biometrics of breeding Dunlins *C.a.schinzii* from Sutherland. Lengths in mm, weight in g.

| Adult males | Date of capture | Wing length | Total head length | Bill length | Tarsus length | Weight |
|--------------------------|-----------------|-------------|-------------------|-------------|---------------|--------|
| | 1983:2 June | 113 | 51.6 | 27.3 | 25.6 | 41.8 |
| | 2 June | 112 | 50.3 | 27.9 | 24.3 | 39.7 |
| | 3 June | 110 | 49.1 | 26.4 | 24.0 | 40.0 |
| | 1984:25 May | 112 | 50.6 | 26.7 | 23.4 | 43.5 |
| | 2 July | 110 | 49.9 | 27.1 | 24.1 | 41.1 |
| | 2 July | 113 | 51.7 | 29.4 | 24.6 | 42.3 |
| | 2 July | 112 | 50.2 | 28.7 | 23.2 | 44.6 |
| mean | | 111.7 | 50.5 | 27.6 | 24.2 | |
| S.D. | | 1.3 | 0.9 | 1.1 | 0.8 | |
| Adult females | | | | | | |
| | 1983:30 May | 116 | 52.9 | 29.6 | 24.8 | 47.6 |
| | 31 May | 112 | 55.3 | 32.8 | 24.2 | 46.5 |
| | 2 June | 115 | 48.3 | 26.1 | 24.1 | 39.0 |
| | 2 June | 120 | 56.5 | 32.9 | 28.1 | 53.3 |
| | 6 June | 118 | 55.2 | 31.5 | 25.3 | 48.9 |
| | 8 June | 116 | 51.3 | 28.7 | 25.6 | 47.2 |
| | 8 June | 117 | 54.2 | 29.9 | 26.4 | 49.3 |
| | 14 June | 109 | - | 27.0 | 23.0 | 45.0 |
| | 1984:28 May | 111 | 55.7 | 32.4 | 24.4 | 45.5 |
| mean | | 114.9 | 53.7 | 30.1 | 25.1 | |
| S.D. | | 3.6 | 2.7 | 2.5 | 1.5 | |
| p (sex difference) | | <0.05 | <0.01 | <0.02 | >0.05 | |
| First year female | | | | | | |
| | 1983:6 June | 114 | 53.4 | 29.1 | 24.2 | 45.5 |

Table 2. Egg measurements of Dunlins *C.a.schinzii* from Sutherland and elsewhere.

| <u>Length</u> | n | mean | S.D. | range | t | p |
|---|-----|-------|------|-----------|------|-------|
| Sutherland | 86 | 34.71 | 1.35 | 32.3-37.4 | | |
| Wales (Thomas <i>et al.</i> 1983,1984) | 39 | 34.93 | 1.09 | 33.4-37.1 | 0.97 | >0.05 |
| Germany (Heldt 1966) | 177 | 34.41 | | 31.1-37.1 | | |
| <u>Width</u> | | | | | | |
| Sutherland | 86 | 24.57 | 0.61 | 23.4-25.9 | | |
| Wales | 39 | 24.80 | 0.53 | 23.7-25.8 | 2.14 | <0.05 |
| Germany | 177 | 24.62 | | 22.9-25.4 | | |
| <u>Weight</u> | | | | | | |
| Sutherland | 86 | 9.9 | | 8.3-10.8 | | |
| Germany | 64 | 10 | | 9-11 | | |

Table 3. Clutch sizes of Dunlin *C.a.schinzii* from Sutherland and elsewhere.

| | n | % with clutches of | | | | Mean clutch size |
|---|-----|--------------------|--------|--------|--------|------------------|
| | | 1 egg | 2 eggs | 3 eggs | 4 eggs | |
| Sutherland | 21 | | 4.8 | 23.8 | 71.4 | 3.67 |
| West Germany (Heldt,1966) | 295 | 0.7 | 5.4 | 10.5 | 83.4 | 3.77 |
| Finland (Soikkeli,1970) | 203 | | 2.0 | 9.9 | 88.1 | 3.9 |
| Wales (Thomas <i>et al.</i> 1983,1984) | 10 | | | 10.0 | 90.0 | 3.9 |

similar size to those from Germany but egg width was significantly (although only slightly) narrower than the eggs of Welsh Dunlins. Egg weights were similar to those in Germany. Some of the variation shown probably reflect changes in egg weight during incubation.

Mean clutch size of Dunlins in Sutherland was similar to that from elsewhere. There appeared to be a slightly higher proportion of clutches of 3 in Sutherland but this may purely be as a result of the small sample size. In those clutches of known age we found no evidence of reduction in clutch size due to predation. There was a higher proportion of three egg clutches in 1983 (5 of 16, but 0 of 5 in 1984). The only clutch of 2 was laid by the first-year bird.

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- John and Catrina Barrett, Gunnersvale Farm Cottage, Nr. Elwick, Cleveland, TS27 3HH, U.K.