BREEDING DUNLINS ON A SOUTH UIST MACHAIR MEADOW IN 1982

by Brian Etheridge and Bill Taylor

Introduction

The machair lands of North Uist, South Uist and Benbecula support an exceptionally high density of breeding waders. The large population of Dunlins Calidris alpina breeding at sea level is unique in Britain. A study carried out in June 1981 on the damp grassland along the west shore of Loch Bee, South Uist, revealed a density of 315 pairs/sq.km. (Etheridge 1982). This result suggested that the earlier estimates of the size of machair breeding populations of Dunlin (Fuller 1978) were much too low. A repeat visit to Loch Bee was made in May 1982. This paper gives details of some of the results we obtained and compares these with the findings from the previous year.

Study area and Methods

The study area (Figure 1),on Ministry of Defence Land, is described by Etheridge (1982). We camped on the site during the period 27-31 May 1982, and two separate study plots, "A" and "C" were searched for Dunlin nests. The same methods as were used in 1981 (Etheridge 1982) were employed, but the reduced man-power and the often inclement weather meant that the size of the study plots searched were much smaller in area than those of the previous year. Plot A was part of the 1981 study plot A, but plot C had not been covered previously and lay between the 1981 plots A and B.

Nest trapping and ringing of Dunlins were carried out at the majority of nests found; the biometrics of the birds handled, along with those from 1981, are reported elsewhere in this Bulletin (Etheridge and Taylor 1982).

Results

The results of the nest searches in 1981 and 1982 are summarised in Table 1. The figures show that a large and very dense population of Dunlin occurs at Loch Bee. We consider that the 1982 data are more accurate: in 1981 some of the helpers were inexperienced and may have missed some occupied nests.

As in 1981, nest clumping was a characteristic of Dunlin nest distribution in 1982, especially in plot C (Figure 2). In this example, there were six occupied nests in an area of about 0.5 ha. In the remaining 1.0 ha searched there were only a single nest and two territory holding pairs. Nearest neighbour distances between nests in a clumped situation varied between 20 and 67m (mean 40.0$\pm$ 14.2 S.D., n=14). Data from adults trapped at the nest, supplemented with observations, indicated that at all the nests found, including those in close proximity, a monogamous mating strategy with an incubation cycle shared by both sexes occurred.

Discussion

It is now well known that the Western Isles of Scotland are to receive a £20 million grant for agriculture and fisheries improvement over the next five years. Several papers have recently commented on the threats that the agricultural programme might pose to the large and varied wader population which breed in the machair lands of North Uist, South Uist and Benbecula (e.g. Cadbury and Housden 1982, Housden 1982).

With the acquisition of this EEC grant, wet machair and damp pasture become prime targets for grazing improvements through drainage and reseeding (Housden 1982). Dunlins occur in their greatest densities on damp unimproved grassland (Fuller 1981), and are therefore especially vulnerable to this form of habitat destruction. On other machair types, numbers of Dunlins are very small, and only on saltmarsh, a habitat restricted in both size and distribution in the Uists, do Dunlin densities even approach those on damp grassland (Fuller 1981). The plain of damp machair grassland, on which the study plots were situated covers an area of about 98 ha along the loch side, and probably constitutes the largest tract of unbroken permanent damp pasture in the Hebrides. Extensive,drier, grassland of about 450 ha, which includes damp dune slacks, occurs on the remaining ground between Loch Bee and the sea coast. Dunlins are common along all of the loch side, and are widespread throughout the drier areas of grassland as well. An extrapolation of the densities that we found indicates a Dunlin population in excess of 300 pairs along the loch side alone. Moreover, the Loch Bee machair also supports large populations of Lapwings Vanellus vanellus, Oystercatchers Haematopus ostralegus, Ringed Plovers Charadrius hiaticula, Redshanks Tringa totanus and Snipes Gallinago gallinago (pers. obs.). Thus with probably one of the densest total breeding wader populations in Europe, the Loch Bee machair is of high international importance. On a global scale, the density of Dunlins is, as yet, unsurpassed (c.f. Holmes 1970, Soikelli 1967). The fact that the land is Ministry of Defence property will not necessarily ensure its protection. The machair could be developed further for Army training purposes, or a reversal in government defence policy may result in a withdrawal of H.M. Forces and the area reverting back to crofting lands.

The reasons why most Dunlin nests are clumped close together is not known. During 1981 the close proximity of nests could not be explained by vegetational differences alone, nor did it appear to serve as an anti-predator device (Etheridge 1982). Although polygamy was suggested as a cause in that paper, nest trapping during 1982 has discounted this possibility, and Dunlins appear to be monogamous at Loch Bee. This is consistent with previous Dunlin studies (Holmes 1970, Soikelli 1967).

Both the 1981 and the 1982 studies were based on intensive nest searches. This wader census technique has raised a number of interesting questions:

(a) do Dunlins occur at similar densities at other damp machair grassland sites?

(b) why do most nests tend to be clumped together in an otherwise uniform habitat, and what is the effect of this on the normal territoriality of the pairs involved?

(c) given that established wader census methods appear to underestimate numbers of Dunlins by unknown amounts, what is now a more realistic estimation of the size of breeding population of the machair?

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Table 1. Counts of breeding Dunlins at Loch Bee, South Uist in 1981 and 1982.

	1981		1982		
	Plot A	Plot B	Plot A	Plot C	Total
Area (ha)	6.59	7.15	3.08	1.59	18.41
Breeding pairs (nests found)	24(13)	19(12)	14(8)	9(7)	66(40)
Density (pairs/sq.km.)	364	266	455	566	359

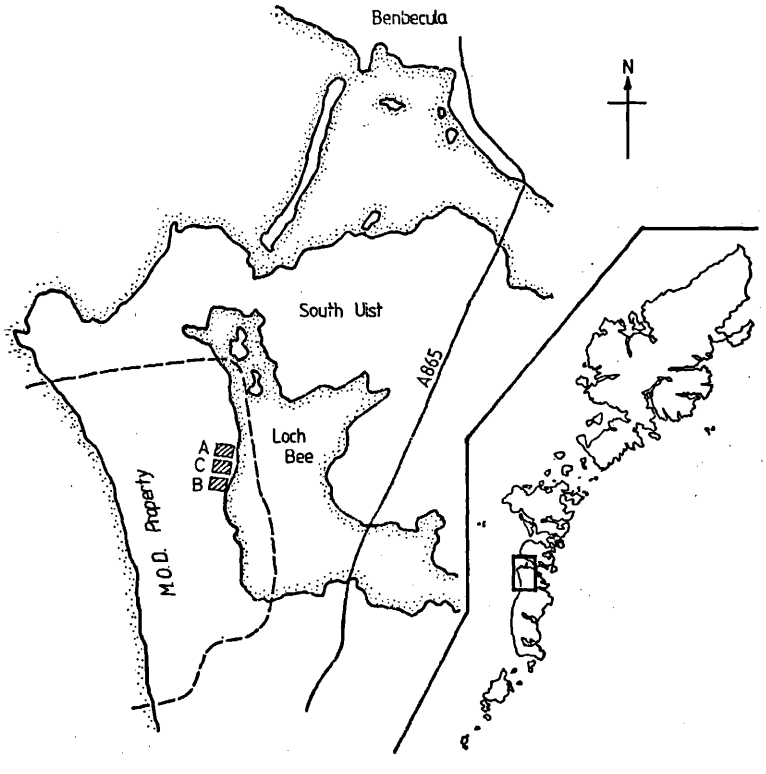

Figure 1. Location of study plots A, B and C at Loch Bee.

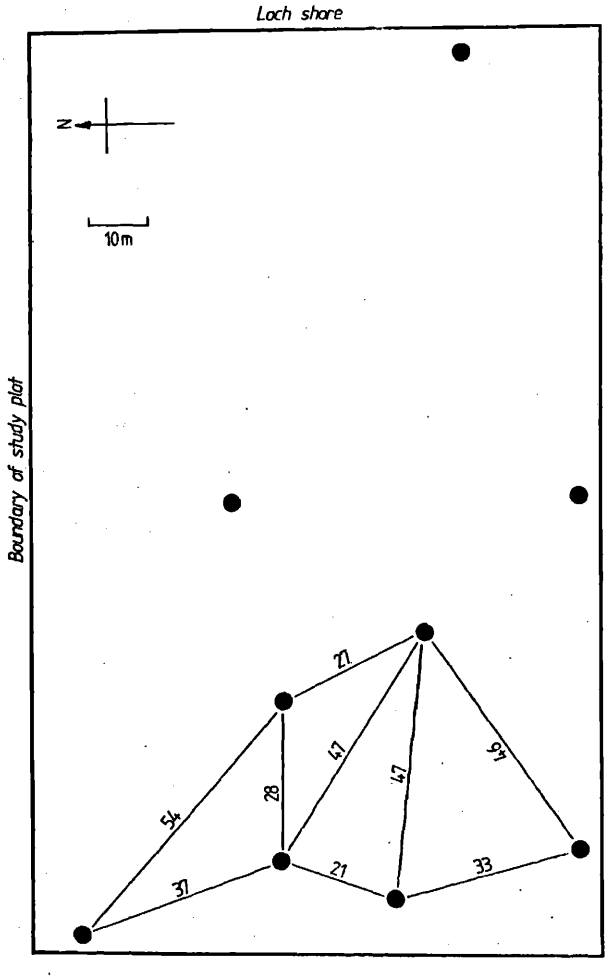

Figure 2. Spacing (in metres) of occupied Dunlin nests on study plot C (1.6 ha) at Loch Bee in May 1982.

Summary

Following a similar count the previous year, a search for Dunlin nests was carried out on a damp machair meadow beside Loch Bee, South Uist during late May 1982. The results obtained confirm the previous years findings and the conclusion is that an exceptionally dense Dunlin population of over 300 pairs occupies an area of only 98 ha. Birds were monogamous, but most nests found tended to be clumped and averaged only 40m apart.

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