

SURVEYS OF BREEDING WADERS IN THE SOUTHERN ISLES OF THE OUTER HEBRIDES - A PROGRESS REPORT

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In recent years it has become known that some of the Scottish Outer Hebridean islands carry large breeding populations of waders (Wilson 1978, Fuller, Wilson & Coxon 1979, Fuller 1981). The most important islands for waders are in the "Southern Isles" which include the islands in and south of the Sound of Harris. The birds are concentrated into a narrow belt of land (up to 2-3 km wide) along the western seaboard of the islands. The habitats in this coastal strip were described in a previous issue of *WSG Bulletin* by Fuller and Buxton (1983). The dominating feature of this Hebridean environment is the "machair" - a plain of sandy grassland and cultivated land which extends the length of the Southern Isles. By far the largest part of the islands is moorland and blanket bog. Between the moorland and the machair there is a belt of rough grazing land termed "blackland".

In 1982 a five-year EEC Integrated Development Programme (IDP) commenced in the Outer Hebrides. The IDP aims to achieve economic and social objectives through substantial grant-aid and advice. The aims of the IDP are to develop agriculture, fisheries, communications, energy sources and local industries (e.g. tourism, knitwear, seaweed). If conducted on a sufficiently large scale, some of the proposed agricultural changes, such as land drainage, could have serious implications for the wader populations. To provide basic information on population sizes, regional variations in density and habitat distribution of the waders, the Wader Study Group and the Nature Conservancy Council jointly organised a survey of the breeding waders throughout the entire machair of the Southern Isles in 1983. The preliminary results of this survey have already been reported in *WSG Bulletin* (Green 1983a,b). In 1984, a small team returned to the islands in order to re-survey several areas of machair and to extend knowledge of wader distribution and abundance on moorland edge and re-seeded moorland habitats. The purpose of this short article is to summarise the main findings of both the 1983 and 1984 surveys.

A total area of 131km² was covered in 1983. This included virtually all the machair on the Sound of Harris islands, North Uist, Benbecula, South Uist, Barra and Vatersay. The work was carried out by seven teams of workers, each consisting of two people (see Green 1983a for list of fieldworkers). The methods used were described in Reed and Fuller (1983).

In 1983, the following approximate totals of waders were estimated: 2000 pairs each of Oystercatchers *Haematopus ostralegus*, Ringed Plovers *Charadrius hiaticula*, Dunlins *Calidris alpina* and Redshanks *Tringa totanus*, 3500 pairs of Lapwings *Vanellus vanellus* and 500 pairs of Snipe *Gallinago gallinago*. The estimate for Snipe was certainly far too low because the transect methods used were not very suitable for this species. Furthermore, the Dunlin estimate was probably an under-estimate because comparison of transect counts with intensive nest searches suggested that transects under-estimated Dunlin by a factor of

approximately 1.5 (Jackson & Percival 1983). The above population estimates must also be regarded as absolute minima because large areas of blackland were not covered in 1983. More realistic population estimates are being calculated taking into account the differences in census efficiency between species and the gaps in the coverage.

The results of the 1983 survey are being used to assess the detailed habitat distribution of each species. A summary of the broad habitat preferences follows. Ringed Plovers attained greatest densities on the cultivated machair although there was much variation in numbers from one area of cultivation to another. These densities of Ringed Plovers are by far the highest recorded in Britain. Dunlins were generally most numerous in grazed damp machair, dune slacks and fens. One South Uist site carried a remarkable population of Dunlins, possibly exceeding 300 pairs in one square kilometre of machair marsh (Etheridge 1982). There is no other comparable population of Dunlins nesting at sea-level in Britain. Dunlins and Ringed Plovers mainly avoided the blackland, but there were large populations of the other four species in this habitat. Redshank and Snipe were typical of both damp blackland and the wetter machair and their range extended onto the edge of the moorland. Oystercatcher and Lapwing were widespread with Oystercatcher showing the least evidence of any marked habitat preferences.

In 1984 a sample of machair areas were re-surveyed. At one site, where drains had been substantially deepened, there was a decline in Redshanks that may have been associated with the drainage. However, the change at this site between 1983 and 1984 was not quite significant ($P < 0.10$) when compared with adjacent areas which had not undergone drainage. Studies will be continued to assess the longer-term population trends in relation to changing land management.

Another aspect of the 1984 work was to improve knowledge of the distribution of waders breeding on the blackland, the moorland edge and on the moorland itself. Wader distribution in these habitats was extremely patchy but generally the densities on blackland were higher than on the moorland. The moorland closest to the blackland held larger numbers than moorland further east, and most birds were confined to edges of lochs. The main species on the moorland edge were Redshank and Snipe. Densities of typical moorland waders such as Golden Plover *Pluvialis apricaria* were extremely low. The abundance of waders on seven areas of improved moorland was compared with that on adjacent unimproved moorland. In six cases densities of waders were very low on both improved and unimproved land. One improved plot, however, had a far higher density and variety of species than the surrounding moorland. The factors influencing the abundance of waders on improved land are unknown but they may include the depth of peat and the past management of the land.

Remarkably high densities of waders are present throughout the machair and associated habitats, from the southern end of South Uist to the islands in the Sound of Harris. High densities are sustained over large areas of land and this makes the Outer Hebrides unique in a British (and wider) context. The entire west coast complex of habitats must be recognised as an exceptionally important breeding ground for waders.

Further work is in progress during spring and summer 1985, and will be reported in *WSG Bulletin* in due course.

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Kersten M., Piersma T., Smit C. and P. Zegers. 1983. Wader Migration along the Atlantic Coast of Morocco, March 1981. Report of the Netherlands Morocco Expedition 1981. Report No. 83/20 of the Research Institute for Nature Management, Texel, Netherlands. Pp 220; numerous figures, tables and illustrations; text in English; summaries in Dutch, French and Arabic (only!).

Copies can be obtained by submitting Dfl 22.00 to Postal Giro Account 949402 of Research Institute for Nature Management, Kemperbergerweg 67, 6816 RM Arnhem, Netherlands.

This is a report of one of the continuing series of Dutch expeditions to study coastal wetlands in west Africa. This particular one covers a 5-week expedition to study the spring migration of waders at two sites on the Atlantic coast of Morocco - the salt pans at Sidi Moussa and the Merja Zerga. Most of the work was carried out at the former site between 28 February and 29 March 1981, although two short visits were also made to the second site, in the middle and at the end of the expedition. The waders of the salt pans around Sidi Moussa had already been the subject of earlier British expeditions, largely during the autumn migration period. However, this and a subsequent expedition in April 1982 (by the same team) have provided new information on the migration patterns of palearctic waders in spring, as well as making the first quantitative measurements of the macrobenthos in the area.

The authors are to be congratulated on writing a lively and informative report, and thanked for writing it in English! Much can be learned from this report of the hazards, costs and logistical headaches to be encountered when planning an expedition. However, the meat of

the report which will be of most interest to WSG readers, comes in two main sections covering studies of the benthic macrofauna and studies of the wader populations.

The invertebrate studies are the first to have been undertaken in this area and will provide an important baseline for future work. Complete species lists of the macrobenthos are given for both study areas - and include an isopod species new to science! The size-frequency distributions of the main species are also given, with some first estimates of densities and biomass. The information on wader migration comes from an integration of counts and ringing studies, giving some important results on population structure and turnover. A total of 652 waders of 15 species were caught. Each species is considered separately under headings of numbers and migration, biometrics, body composition, food and foraging. There is a tremendous amount of information in this section, of wide interest to wader enthusiasts. Of personal interest is the unexpectedly high number of Dunlin and Redshank retraps from the Durham University expedition to Sidi Moussa in September 1980, which clearly suggest a fairly stable overwintering population of these two species. The wader sections finish with some interesting observations of the foraging behaviour of Grey Plovers, with some findings not far removed from those of another well-known study (at Teesmouth) of this species.

This is another excellent report from this team, to be recommended to all interested in wader migration. I look forward greatly to seeing the results of their 1985 visit to Mauritania, and to the appearance of a synthesis of their studies of the spring migration of waders in west Africa.

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