WHY CATCH WADERS IN COLD WEATHER?

by P.R. Evans

During the very cold weather of January to Marsh 1979, several organizations concerned with the conservation of waterfowl called for bans on wildfowling during severe weather. By February 1980, agreement had been reached between representatives of the Wildfowlers' Association of Great Britain and Ireland, the Royal Society for the Protection of Birds, the Wildfowl Trust, the British Trust for Ornithology, the Game Conservancy, the Department of the Environment and the Nature Conservancy Council on the criteria to be met before a ban on wildfowling would be imposed. These criteria are based on meteorological conditions - more specifically, the state of the ground - at 13 stations around the British Isles, distributed as follows: Manston (Kent), Bournemouth, Plymouth, Cardiff, Aberporth, Blackpool, Carlisle, Glasgow, Aberdeen, Leuchars (Fife), Tynemouth, Binbrook (Lincs) and Gorleston (Norfolk). The following statement was issued by the Nature Conservancy Council in February 1980.

"Restraint (in wildfowling) would be called for after seven days of frosty weather, or after ten days when frosty weather occurred interspersed with one or two days thaw. Frosty weather is defined as when more than half the meteorological stations record "state of ground" 3 (frozen) to 9 (loose dry snow covering ground completely). The thaws are defined as when less than half the meteorological stations record "state of ground" 3 to 9, and they do not contribute to the total of ten days mentioned above. Should the conditions which necessitated a call for restraint be recorded on fourteen days, then a statutory ban would be invoked (country-wide). If a thaw of three or more days occurred, then the earlier period of freezing would be disregarded". I have added the words in parentheses to clarify the statement.

It was also agreed that it was necessary to ensure that the bird-watching public, as well as wildfowlers, were requested to avoid disturbance of waterfowl during severe weather, and the BTO agreed that routine cannon-netting operations would be suspended under such conditions, although exceptions would be made for scientific studies of the effects of cold weather on birds. What 'scientific studies' are required? This note attempts to suggest a few, as far as waders are concerned.

Most waders lay down fat reserves in autumn and draw upon them in late winter and spring. Peak fat levels (and therefore weights) of most species are found in December and January (Evans & Smith 1975, Davidson 1979). This means that if birds are unable to feed, their potential survival time under a fixed set of weather conditions falls between December and March. We have very little information at present on the rates of weight loss, and the potential survival times of different species under different weather conditions. In particular, comparisons of weight losses under similar low temperature conditions, but a variety of wind conditions, would be valuable. At present the criteria for the shooting ban are based only on temperature data; perhaps wind speeds and hence the extent of wind chill are more important than temperature in affecting survival times? We do not know how the potential survival times in different months relate to the durations of cold weather chosen at present before bans on shooting and disturbance are implemented, voluntarily or statutorily. Perhaps a statutory ban imposed after 14 consecutive days of frosty weather would be too late to save many waders from death by starvation, even if they had been subject to no disturbance at all, in February, though it might be adequate in December? We just do not know.

In many instances, although the ground may be frozen immediately outside the meteorological stations, British estuarine mudflats may remain ice-free, so that waders are not prevented totally from feeding, though feeding conditions may become more difficult. This happens because many mudflat invertebrates become less active and burrow deeper in colder weather. The effects of these behavioural changes on the shorebirds differ between species, because invertebrate activity is affected by falling temperatures sooner than their depth distribution. As a result those waders, particularly the plovers, that feed by sight and depend on prey animals active on the mud surface, encounter feeding difficulties at higher "low" temperatures than do the other species that can feed by probing into the mud. This means that, under the same weather conditions, different species are likely to lose weight at different rates. Davidson (1981) has shown that Golden Plovers Pluvialis apricaria lost weight rapidly at Lindisfarne, Northumberland, during a period of cold weather in which the weights of Bar-tailed Godwits Limosa lapponica scarcely changed. To obtain such information, the "normal" weights, before the onset of severe weather, are needed as well as a sample of weights during the cold spell. Such data are scarce at present, so the vulnerability of different species to particular weather conditions cannot be assessed with confidence.

Cold conditions are not the only situations in which waders lose weight. On the Tees estuary, where Grey Plovers Pluvialis squatarola feed on ragworms Nereis spp., winds of more than about 25 mph (40 km/h) prevent them from feeding profitably and the birds cease to try. It seems that they lose the ability to localise the signs on the mudflats, given by the ragworms when they come to the top of their burrows, presumably because the birds are buffetted by the wind as they move to try to catch the worms. Grey Plover weights fell dramatically after several days of gales in only moderately cold conditions in January 1979, whereas in colder but calmer periods in February 1979, they did not lose weight (Dugan, Evans, Goodyer & Davidson 1981). Other waders that hunt visually for inconspicuous and brief clues to the presence of suitable prey, eg. Redshank Tringa totanus, may also suffer weight losses during periods of strong winds, except if they can change to feeding in more sheltered areas (Davidson 1981) or by touch (Goss-Custard 1976). For most species, quantitative information on the effects of wind speed on feeding ability, and hence on weights, has not yet been obtained.

Because a particular species of wader may take different foods in different estuaries, the effects of similar weather conditions on the same bird species may vary from place to place. At Lindisfarne, Northumberland, Grey Plovers take lugworms Arenicola marina as an important component of their diet (Pienkowski 1980), as well as smaller polychaetes, but not Nereis spp which are absent from the intertidal sandflats. Although the plovers' feeding rate does drop as the wind speed rises, they do not abandon attempts to feed in winds of more than 25 mph., as they do at Teesmouth, perhaps because the cue given by lugworms at the surface (the 'wormcast') is more obvious and permanent, so that the birds can reach the cue before it disappears, even though buffetted by the wind en route. The possibility of similar weather conditions having different effects on a single wader species in different estuaries, because of differences in diet, demands much further study.

Another important area of study is that of recovery from semi-starvation by different species. Important questions here include: how quickly can different species recover weight? does this rate of recovery vary with the time of year, even though the weather conditions are similar? from what loss of weight below "normal" is recovery possible? are weights achieved after recovery from a severe winter less than those reached after a mild winter? Possibly waders find it easier to restore fat reserves than to build up muscle if this has also been used, during times of protein shortage. This may have implications for the success of breeding or migration. Further points, and a review of the sparse information on these questions, are provided by Davidson (1981).

A further area of study concerning waders in severe weather conditions relates to movements in response to, or in anticipation of, low temperatures. In spite of the large numbers of waders that have been ringed in Britain in the last twenty years, the number of controls of birds indicating movement within the same winter is small, often because most catching effort has been concentrated in early autumn, with less effort made to catch regularly during the winter months. This could usefully be remedied! It is already known that not all waders go straight to the estuary or estuaries where they winter; some moult elsewhere, eg. on the Wash. Yet in the case of Dunlin, the peak winter weight achieved in an estuary is related to the average (expected) temperature there in mid-winter (Pienkowski, Lloyd & Minton 1979). This suggests that the peak weights are pre-programmed, rather than changing in response to the actual temperatures experienced in a given winter. If so, are there any differences in seasonal patterns of weight change between those individuals that move direct to an estuary and those that arrive later in the autumn or winter? and any differences in the ability to withstand severe conditions in these two groups of birds?

From this short discussion, it will be clear that there are problems of both scientific and conservation importance to be studied (the two areas overlap considerably!) in relation to the behaviour and survival of waders in severe weather. Many of these questions will be answered only by comparative studies in several estuaries around the British Isles, preferably undertaken in the same year(s). The importance of determining the "normal", mild winter, patterns of movements and weight changes will be obvious as will the need to make catches just before as well as during and just after spells of severe weather in as many areas as possible. Whilst there are considerable reasons for attempting studies on the responses of waders to cold and windy conditions, it needs stressing that no catching procedures should interfere with the chances of survival of the birds. This means that catches should be restricted in size and be processed quickly, so that as little potential feeding time as possible is lost to the birds by captivity or disturbance.

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PRELIMINARY SURVEY OF THE ARCHIPEL DES BIJAGOS, GUINEA-BISSAU

by Olivier Fournier and William Dick

Introduction

The enormous gap in our knowledge of the distribution of coastal waders in West Africa has been commented on frequently in this Bulletin and elsewhere. Between Senegal and South Africa lie some 5,000 km of coastline where practically no systematic survey of waders has yet been made. To the north, the outstanding importance of the Banc d'Arguin in Mauritania as a wintering area for waders is well established, with some 2,000,000 there. To the south, the coasts of South Africa have been well censused by the Cape Wader Group. Between these areas, estuaries are generally fringed or covered by mangroves, with consequent effect on the number and species of waders wintering on them.

The Archipel des Bijagos in Guinea-Bissau (Fig.1) is an exception in that it contains vast intertidal flats not covered by mangrove, the largest such area south of Mauritania. The breeding birds of the Archipel have been studied in detail by de Naurois (1969), but the waders have not been investigated. Prior to Independence, access to Guinea-Bissau was not possible on account of the political situation. However, more recently access to the country has become practicable and we decided to attempt an exploratory survey of the Archipel in early February this year. Our intention was to carry out as comprehensive a survey as was possible, to make contact with the relevant authorities in the country, and to assess the feasibility of future research. This report is written within two weeks of the survey and is therefore only preliminary.

Description of area and Results

The Archipel consists of some 40 islands contained in an area of approximately 80km north-south and 100km east-west (Fig.2). In order to census such an extensive area of islands and mudflats, we had hoped to carry out an aerial survey to be followed up by a visit by boat. As funds were not forthcoming, our survey was carried out by boat only, and took place between 5 and 8 February 1981. On arrival in the town of Bissau, we found that there were considerable problems in arranging the hire of a boat and in obtaining sufficient food and petrol for the survey. However, we managed to hire a pirogue (a traditional type of open boat) equipped with an outboard motor and a crew of three. We travelled amongst the islands and mudflats for four days covering approximately 200km. On account of the shallow water (the tidal range is a maximum of 3 to 4 m), the inexperience of our guides, the problems of navigation in the channels, and the rather deep draught of the pirogue, most of our travel was at high tides. We spent many hours bogged on mudflats awaiting high tide, the pirogue tilted at an uncomfortable and alarming angle of 70 degrees! The results of our survey are therefore not complete, both in terms of the percentage of the overall areas covered, but also in the completeness of the areas which we did visit. Nevertheless, it was sufficient to show the immense importance of the Bijagos for waders.

The islands themselves are of low rocky or sandy base, mostly densely wooded. The shorelines vary from rock to open sand beach to muddy with a margin of mangrove. There are some more extensive mangrove areas on the lower islands and in the bays. The islands are of extreme natural beauty, with many palm-fringed white beaches which must come close to many people's idea of paradise! Some islands are inhabited. The intertidal areas vary considerably in substrate: