to arrange either bed-and-breakfast accommodation, or floor-space with local WSG members, for those who wish to stay on Sunday night: please indicate your requirements on the booking form.

Costs will be as follows:

Whole conference:	
Friday dinner to Sunday lunch including all meals and accommodation	£28.50
Part Attendence:	
Saturday morning coffee to Sunday lunch including all meals and accommodation	£20.50
Saturday coffee, lunch and tea	£ 7.50
Sunday coffee and lunch	£ 6.00

When registering, each participant will be required to pay a refundable deposit of £5.00 for their room key.

The excursion on Sunday afternoon will be in private cars: those going on the excursion may be asked for a small contribution towards the costs of petrol. If you have a car available for use on the excursion, please indicate on the booking form.

TRAVEL

Broxburn is well served by both road and rail. Edinburgh is about 5 hours from London (King's Cross) by rail. There is easy access to both the M8 and M9 motorways, and there is a local rail link from Edinburgh. Both Edinburgh and Glasgow have international airports. Further information about travel will be sent to those booking.

BOOKSHOP

The Scottish Ornithologists' Club Bird Bookshop, which specialises in ornithological and natural history books, will bring a wide selection of books for sale. If any participant would like to see a catalogue in advance, or would like to order a particular book, please contact the SOC, 21 Regent Terrace, Edinburgh EH7 5JT, U.K. (tel. 031 556 6042).

BOOKINGS

Booking forms are enclosed with this *Bulletin* and should be returned by 25 August 1986 to N.A. & J.A. Clark, Department of Zoology, University of Edinburgh, West Mains Road, Edinburgh EH9 3JT, U.K., to whom general enquiries about the meeting should be addressed.

Payment should be made in advance with the completed booking form. Payment should be by cheque made payable to "Wader Study Group". Alternatively send payment at the same time as booking, by British Post Office Giro to account number 471204404, marking the details "Conference 86".

Any enquiries specificially concerning the Workshop on Flyway Conservation should be addressed directly to the Workshop Conveners, Dr. N.C. Davidson & Dr. M.W. Pienkowski, c/o Nature Conservancy Council, Northminster House, Peterborough PE1 1UA, U.K.

WSG SURVEYS OF BREEDING WADERS IN THE OUTER HEBRIDES IN 1985 - A PROGRESS REPORT

by R.J. Fuller

In 1983 the Wader Study Group and the Nature Conservancy Council organised a survey of breeding waders along virtually the entire western seaboard of the Southern Isles of the Outer Hebrides. This survey established the importance of this region of Scotland for breeding waders (Fuller, Green and Pienkowski 1985). Between 1984 and 1987 wader populations are being monitored on nine areas of machair and blackland on South Uist and North Uist. The total area being covered is 33 sq. km.

In June 1985 numbers of estimated pairs of breeding waders on the nine study areas combined, with percentage changes from 1984 in parentheses, were: Oystercatcher *Haematopus ostralegus* 701 (-8%), Ringed Plover *Charadrius hiaticula* 783 (-4%), Lapwing *Vanellus vanellus* 1073 (-17%), Dunlin *Calidris alpina* 802 (-13%), and Redshank *Tringa totanus* 604 (-13%). Breeding Snipe *Gallinago gallinago* were also present but the transect method used, described by Reed and Fuller (1983), was not appropriate for counting this species.

Breeding wader numbers were studied at two study areas where substantial drainage had occurred since 1983. There was no evidence of any clear trends in numbers associated with the drainage.

Preliminary observations were made on the role of cultivation as a factor influencing the distribution of waders on dry machair. Densities of waders on extensive dry fallow machair were lower than on nearby machairs with both cultivation and fallow. Examination of specific patches of machair suggested that conversion to fallow *may* be associated with decreases in Lapwings, Oystercatchers and Ringed Plovers while ploughing of fallow *may* result in decreases of Dunlin. More information on the changes in wader communities associated with changes in agriculture will be collected in future years.

In addition to the surveys on the machair and blackland, waders were resurveyed on an area of moorland on South Uist that had been partially reseeded since 1984. There was no evidence that the reseeding had influenced the numbers of birds. The broad distribution of waders at this site was the same as in 1984, with the birds showing a strong preference for the edge of a large loch.

In 1983 several checks were made on the accuracy of the transect method of counting waders by comparing the results with independent assessments of population sizes based on colour-marking of adults and nest finding (Jackson & Percival 1983). In 1985 further tests of this type were made at three locations in South Uist. In 1985, these tests showed that, in general, transects tended to over-estimate numbers of nesting waders

relative to the intensive study, but the discrepancy was never greater than 18% for any species.

In 1985 the surveys were carried out by Dave Chandler, Rob Fuller, Steve Percival, Mike Pienkowski and Andy Walker. Digger Jackson made the validation tests of the method possible by finding the nests. The Wader Study Group is grateful to the Nature Conservancy Council for funding the wader surveys in 1985.

REFERENCES

Fuller,R.J., Green,G.H. & Pienkowski,M.W. 1985. Surveys of breeding waders in the Southern Isles of the Outer Hebrides - a progress report. *Wader Study Group Bulletin* 43: 14-15.

Jackson,D.B. & Percival,S.M. 1983. The breeding waders of the Hebridean machair: a validation check of the census method. *Wader Study Group Bulletin* 39: 20-24.

Reed,T.M. & Fuller,R.J. 1983. Methods used to assess populations of breeding waders on machair in the Outer Hebrides. *Wader Study Group Bulletin* 39: 14-16.

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WSG PROJECT ON THE EFFECTS OF SEVERE WEATHER ON WADERS: SIXTH PROGRESS REPORT

by N.A. Clark and N.C. Davidson

The 1985/86 winter was the second severe winter in succession in Britain. At the time of writing we have not yet received all the information from observers, so this report can only be a preliminary view. Could all observers with outstanding record forms please return them to us as soon as possible, so that we can can complete a full assessment of the effects of last winter's weather on waders.

The 1985/86 winter was similar to the 1984/85 winter, in that it was much more severe in the south of Britain than in the north. A prolonged period of severe weather lasted from mid-January until the beginning of March, during which time the ground remained continuously frozen although temperatures seldom dropped much below 0 °C. Most winds were easterly although light, but at the end of February there were several days of both sub-zero temperatures and strong winds. In Scotland, although there was a long period of snow cover inland, coastal areas were snow-covered only for short periods, with very few days when intertidal areas froze. Although the weather was severe, no statutory wildfowling ban was introduced in Britain, since the severe weather began too late in the winter: there was thus insufficient time for the ban to come into effect before the end of the coastal wildfowling season in late February.

So far we know of 2 estuaries where large scale mortality occurred: on the Wash and the Stour in eastern England. On these 2 sites at least 558 waders were found dead. These comprised 55% Redshanks *Tringa totanus*, 36% Grey Plovers *Pluvialis squatarola* and 3% each of Knots *Calidris canutus*, Dunlins *C. alpina* and Curlews *Numenius arquata*. The high proportion of Grey Plovers amongst the waders found dead is in marked contrast to other recent severe winters in Britain (Davidson and Clark 1985). Only one Oystercatcher *Haematopus ostralegus* was found at these sites. This too contrasts with previous severe winters, when the Oystercatcher was amongst the species found dead most frequently during severe weather in eastern England (Davidson and Clark 1985).

Few waders were found dead during the first part of the severe weather, and it was not until late February, when it became windy as well as cold that most birds died. Examination of the body condition of waders that died in early 1986 (for methods see Davidson and Clark 1985) found that, as in previous severe winters, most birds died after extensively depleting their fat and protein reserves. Their breast muscles, which form a substantial part of the protein store, were very emaciated at death. There were no significant differences between the breast muscle indices of juveniles and adults of the same species, or between different species (X^2, $P<0.05$). Although there was no reported evidence of increased mortality through starvation in Scotland, there was an increase in the mortality of waders attributable to predation by raptors during the periods of snow cover at Schoughall, in south-east Scotland (N. P. Ashmole pers. comm.).

Almost half of the Grey Plovers found dead on the Wash were juveniles, although cannon-net catches of Grey Plovers there usually contain very few juveniles (P.L. Ireland, pers. comm.). This suggests that mortality was especially severe amongst juveniles. Table 1 shows that

Table 1. Sex-ratios (number of males to each female) in samples of Grey Plover found dead during severe weather in the winters of 1984/85 and 1985/86. Sample sizes are given in brackets.

Origin	Juveniles	Adults
N. shore of the Wash 1984/85	(1)	* (6)
N. shore of the Wash 1985/86	2.93 (55)	1.81 (59)
S.shore of the Wash 1985/86	12.00 (13)	- (3)
Stour 1985/86	2.00 (6)	4.00 (5)

* all were males
\- could not be sexed