

ABSTRACTS OF TALKS GIVEN AT THE WADER STUDY GROUP ANNUAL MEETING, WORCESTER, U.K., 1-2 SEPTEMBER 1984

Wintering Black-tailed Godwits in ricefields in Guinea-Bissau and Senegal

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Article to appear shortly in WSG Bulletin.

Wader Studies in the Gulf of Gabes, Tunisia, January to March 1984

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Article appeared in WSG Bulletin 41: 16-17.

Population Origins of Purple Sandpipers wintering in NE England and Scotland

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Data was collected by Tay and Grampian Ringing Groups, with additional data from Durham University, A.R. Mainwood, and Dr. M. Marquiss.

Catching techniques were dazzling, using a small hand net and a Quartz Halogen hand-held spotlight powered by a 12 volt motor-cycle battery; and cannon-netting using mini-nets of 3 x 7 m, 4 x 8 m etc. with 2 to 4 jump ropes. These enabled roosting birds to be caught on small rocky spits and skerries where full-sized cannon-nets were impossible to use. Freshwater springs and streams used for bathing were also good sites for cannon-netting.

Only bill lengths were used for analysis due to problems of taking other measurements on cabinet skins. First-year birds were excluded from the analysis. All birds caught in autumn (July to early October) had bills shorter than 32mm and belonged to the southern Norwegian population. Birds with bills larger than 32mm arrived during late October and November. During winter (November to March) the populations in Yorkshire, Northumberland and Fife were composed of 80 - 85% southern Norwegian birds and 15 to 20% large birds (up to 37mm). These large birds are believed to be Icelandic, but may be also Canadian. Going northwards from Fife to Grampian there is a cline of increasing numbers of wintering large birds, reaching as high as 80% of the population in NE Grampian. Birds wintering in E Sutherland, Orkney, the Outer Hebrides and Dumfries were composed of 90 - 99% large birds, with very few small birds present.

The extent to which Greenlandic and N Scandinavian birds are present is unknown due to their intermediate measurements.

Studies of Green Sandpipers wintering in southern England

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Since February 1983 Green Sandpipers *Tringa ochropus* wintering at a small nature reserve in Hertfordshire, southern England have been studied by means of observations of individually colour-ringed birds. The study site consists of disused watercress beds of 1.1 ha area, maintained as shallow lagoons and fed by fresh-water springs. Throughout the winter of 1983/84 there was a regular population of 5 or 6 Green Sandpipers on the reserve. These birds maintained exclusive feeding territories by means of elaborate displays. During periods

of cold weather additional birds arrived, and for a short period in January 1984 a total of 16 birds were present on the reserve. The newly-arrived birds attempted to establish their own territories and devoted up to 30% of their time to boundary disputes, far in excess of that of the residents. When the weather conditions improved the additional birds left the reserve.

The Green Sandpipers produced large numbers of pellets which we collected regularly through the winter. An initial analysis showed that their diet was dominated by the freshwater shrimp *Gammarus pulex*, which is abundant in the lagoons, but they have also been seen to take small worms and, on three occasions, small fish. Invertebrate samples indicate that the resident birds maintained territories in areas holding high biomass of shrimps whilst the cold weather visitors were forced into less favourable areas.

Why do Redshank stop foraging when it is windy?

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In winter, estuarine foraging Redshanks *Tringa totanus* are often observed to stop foraging in high winds. An attempt was made to assess if the observed behaviour was consistent with a foraging strategy which aimed to maximise net energy gain. By comparing the relationships of both energy gain and energy cost with windspeed, a prediction was generated of the windspeed at which it would be expected that 50% of Redshanks should stop foraging, if the behaviour was consistent with maximization of net energy gain.

The predicted windspeed (25 m.s⁻¹) was much greater than the windspeed at which 50% of Redshanks were observed to stop foraging (11-12 m.s⁻¹) in the field. It was concluded that Redshanks do not stop foraging in high winds to maximize the net rate of energy gain. Possibly there are other risks associated with foraging in high winds.

On the problems of being a Turnstone

Bob Furness and Neil Metcalfe, Department of Zoology, University of Glasgow, Glasgow G12 8QQ, U.K.

Shorebirds are preyed upon by raptors, and so must constantly interrupt their foraging to look out for a predator's approach. This vigilance may take up a considerable proportion of a solitary bird's time but this investment can be reduced when in a group, as the vigilance can be 'shared'. Studies of the time-budgeting of Turnstones *Arenaria interpres* and Purple Sandpipers *Calidris maritima* feeding in mixed-species flocks showed that individual birds did reduce their vigilance when surrounded by other birds. However, the species-composition of the flock affected the extent of this reduction; both Turnstones and Purple Sandpipers did not 'trust' birds of certain other species to be vigilant on their behalf as much as conspecifics. Indeed, some species were not trusted at all (i.e. their presence had no effect on the vigilance of Turnstones or Purple Sandpipers). These differences could be related to the similarity and familiarity of the other species. A further finding was that birds only trusted those neighbours that they could see at the time, and that their vigilance increased when their

vision was obstructed (e.g. by rocks or boulders), independently of the 'visible' flock density.

One further factor found to affect vigilance was the food intake requirement. This is increased in the spring, when the birds fatten up prior to migration. During the period of fattening, adult Turnstones were found to reduce their vigilance (so increasing the risk that they would be depredated), whereas non-migrating birds (i.e. juveniles) did not.

References

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Raptor predation on wintering waders in south-eastern Scotland

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Predation on overwintering waders was investigated during the winters of 1982-83 and 1983-84 at a rocky shore and a small estuary in S.E. Scotland. Probably all the waders which were found after being eaten were killed by raptors; mammalian predation and death due to severe weather were of minimal importance in comparison to the effects of raptor predation. Sparrowhawks *Accipiter nisus* were probably the major predators of waders at both sites. Owls, probably Tawny Owls *Strix aluco*, also took some waders at both sites. Differences were found between the rocky shore and the estuary in the species of raptors which were seen (more Peregrines *Falco peregrinus* and Merlins *Falco columbarius* seen on the estuary) and in the numbers of wader kills which had been plucked and eaten on open ground (more open ground pluckings, indicative of Peregrines and Merlins, found on the estuary). It was suggested that Peregrines and Merlins took more waders at the estuary due to their preference for hunting over large open expanses. Mortality rates of waders in the 1982-83 winter could be calculated only for rocky shore waders and were as follows: Redshank *Tringa totanus* 20%, Turnstone *Arenaria interpres* 4% and Knot *Calidris canutus* 1.5%. In 1983-84, winter mortality rates were: rocky shore - Redshank 16%, Turnstone 5%, Purple Sandpiper *Calidris maritima* 1.5%; estuary - Redshank 15%, Knot 0.5%, Dunlin *Calidris alpina* 4%, Ringed Plover *Charadrius hiaticula* 19% and Grey Plover *Pluvialis squatarola* 2%. At both sites, probably no Curlews *Numenius arquata* or Oystercatchers *Haematopus ostralegus* died as a result of predators, and on the estuary Bar-tailed Godwits *Limosa lapponica* also appeared to suffer no losses through predation. Age-related mortality occurred in all species where analysis was possible (Redshank, Turnstone, Dunlin, Ringed Plover): significantly more juveniles were found eaten than would have been expected from the age-composition of the populations. For the Redshank and Turnstone, several differences in the behaviour of juveniles and adults may have made juveniles more vulnerable to predation: juveniles tended to be positioned on the edges of flocks and further away from adults; juveniles were slower to respond to the appearance of a Sparrowhawk; and juveniles spent more time feeding on the high-tide line where flocks appeared to be particularly prone to being attacked by Sparrowhawks.

The effects of severe weather on waders in eastern Scotland

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Waders were caught at two sites in eastern Scotland during and after severe weather. There were two periods of severe weather; the first from 7 - 27 December 1981 and the second from 4 - 15 January 1982. The period between the two severe spells was both colder and windier than average for that time of year. Redshanks and Dunlins caught at Musselburgh (Firth of Forth) during the first cold spell had lower weights than expected. Samples of both species were caught on 5 January, and both species had gained about 10 g since the end of the first cold spell. This meant that Dunlins had very high weights at the start of the second cold spell, but Redshank were still below normal weights for that time of year. Unfortunately licensing restrictions did not allow further catching until after the end of the second cold spell.

On 12 January reports were received that large numbers of birds were dying at the Montrose Basin (Fife). In the next ten days a total of 341 Redshank, 104 Oystercatchers, 16 Dunlin, 5 Curlew, and 3 Knot were found dead. It was considered likely that many more birds died than were collected and the Redshank mortality was about 50% or even higher. Evidence showed that juveniles died before adults, and it was probable that no juvenile Redshanks survived the winter on the Montrose Basin. 173 Redshanks were caught between 24 and 28 January. These were all adults and were at near normal weights (mean 157 g), in contrast to 75 birds that died during the severe weather at a mean weight of 108 g.

The Schleswig-Holstein Wattenmeer as a spring staging area for arctic waders

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The Schleswig-Holstein Wattenmeer, the eastern section of the Wadden Sea, functions as a major spring staging area for at least 7 different wader species. Providing 1600 km² of tidal flats as feeding space, the area has in spring maxima of 6000 Ringed Plovers *Charadrius hiaticula tundrae* (about 6% of the total flyway population), 25 000 Grey Plovers *Charadrius squatarola* (31%), 1500 Turnstone *Arenaria interpres* (3%), 100 000 Bar-tailed Godwits *Limosa lapponica* (18%), 150 000 Siberian Knots *Calidris canutus canutus* (ca. 38%), 300 000 Canadian-Greenlandic Knots *Calidris canutus islandica* (ca. 70%), 18 000 Sanderlings *Calidris alba* (36%) and 300 000 Dunlins *Calidris alpina* (15%).

Numbers of most arctic wader species peak between 15 and 20 May. The Dunlin, which is partly a subarctic species, reached its maximum numbers in April. In case of the Knot, two subspecies with different phenology are distinguishable: the short-billed nearctic Knots stay until the first decade of May. In the last days of their stay they concentrate in the north-west corner (Sylt, Fohr, Langeness) of the area. The long-billed Siberian Knots reach the area around 10 May (the mean weight of adults on 13 May was 143g) and depart in the last days of May (mean weight on 27/28 May: 207g). During the second half of May it is only south of Langeness that noticeable numbers of Knots are present in the Schleswig-Holstein Wattenmeer and also in northeast Niedersachsen.

Detailed results will be published in *Corax*.

Spring Migration 1985: WSG co-ordination of studies from Africa to the Arctic

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See announcement elsewhere in this *Bulletin*.

WSG International survey of Black-winged Stilts

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See announcement elsewhere in this *Bulletin*.

WSG/BOEE winter shorebird count in Britain 1984/85

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See announcement in *WSG Bulletin* 41:7.

The use of salinas by waders in the Algarve (Portugal)

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See elsewhere in this *Bulletin*.

Control of *Spartina* on sand and mudflat

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In 1963, the Nature Conservancy acquired the large inter-tidal area of sand, mudflats and all of the sand dunes and meadows of the Island of Lindisfarne (55°41'N 01°47'W) off the north-east coast of England. In 1964 it was established as a National Nature Reserve of 3240 ha. Later it was identified as a 'site of international importance' and a RAMSAR site. One major problem was the extensive and well-established stand of *Spartina* along the mainland edge of the mudflats.

The *Spartina* was introduced in 1929, as a method of erosion control, when 180 kg of material were planted by a local farmer. Aerial photographs taken in 1946 show that the *Spartina* was then spreading slowly along the margins of the mudflats. However, there is evidence to suggest that the construction of a causeway linking the Island to the mainland interfered with the tidal flow. The absence of the regular tidal flush appears to have increased siltation and encouraged the more rapid spread of *Spartina* across invertebrate-rich sands, mudflats and extensive *Zostera* beds.

In 1975 c.170 ha of *Spartina* were recorded at Lindisfarne. Between 1970 and 1975 efforts were made to control the emerging *Spartina* by digging and hand-pulling. Whilst this was successful, there remained a very large area producing viable seed. In 1977 permission was obtained to undertake chemical control trials. Plots were marked out and these were treated with two herbicides during the August neap tide period, using a hand held ultra-low volume sprayer. Adjacent plots were sprayed with Dalapon at 62.5 kg·ha⁻¹ (diluted in 1125 l of fresh water) and Roundup (Glyphosate) 5 l·ha⁻¹. Dalapon was more effective, producing a kill of 90-100%, whilst the best result from Roundup was 50% control. The trials continued in 1978, and produced similar results. In 1979 permission was obtained to treat 8 ha. Because of the difficult terrain, a helicopter was contracted to carry out the spraying operation. The result was unsuccessful. It was then decided that all future operations should be controlled by NCC staff rather than using commercial spraying companies.

In 1980 further extended trials were carried out using a low ground pressure 8 wheel drive vehicle (Agrocat) with a sprayer mounted in the payload area. The Agrocat was able to treat 0.2 ha per load. During the neap tide period in August 1980, 6 ha were sprayed.

Where the surface was soft and there was a danger of loosing the machine, light weight tracks were fitted over its wheels. This enabled the vehicle to operate in all areas with success. The control success rate, when using 'commercial' methods of application dropped from 90% to 75-80% kill.

The aerial parts of the plants can show browning after 7 days, but where the *Spartina* is bruised by the wheels or body of the Agrocat, browning occurs after only 3 days.

The sprayed and unsprayed areas are being monitored; and recent work by Durham University suggests that the invertebrate numbers in the areas cleared of *Spartina* are greater than in the untreated areas. Observations also indicated that more waders forage in these cleared areas.

Population sizes of wader species breeding in Europe: a WSG enquiry

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Published and unpublished material on breeding waders in northern Europe has been collected together on behalf of the WSG, and a summary of current knowledge of the breeding numbers of each species has been prepared. WSG intends to publish this extensive bibliography and summary in the near future.

REQUEST FOR INFORMATION

Colour-ringed Barnacle Geese and Pink-footed Geese

As part of a long term study of the population dynamics of Greenland Barnacle Geese, 644 moulting and non-breeding geese were ringed in July 1984 at Orsted Dal, Jameson Land, East Greenland (71°50'N 23°30'W). In addition, 8 Pink-footed Geese were ringed. Each bird was ringed on the left tarsus with a tall plastic (darvic) ring carrying a three letter code in black to be read from the base upwards, e.g. ABA, ABB, ABC, etc. A metal ring was put on the right tarsus. Adults were given a single plain-coloured ring above the lettered one. Thirty-five yearling Barnacle Geese (hatched 1983) have a thin verticle stripe on their lettered rings and colour-rings above the metal

ring on the right tarsus. In addition to the above birds, a further 469 Barnacle Geese have been individually marked with lettered and plain colour-rings on the Inishkea Islands, County Mayo (54°08'N 10°11'W) in the period 1968-1984.

Any observations of these ringed geese, with details of date, location, flock size, number of geese critically examined, rings observed with data on distance from geese, visibility and estimated accuracy of ring reading (1-100%) and size of any accompanying broods should be sent to:

Dr. David Cabot, An Foras Farbartha, St Martin's House, Waterloo Road, Dublin 4, Eire.