### Acknowledgements

I am pleased to acknowledge the helpful comments and constructive criticism of Dr D.M. Bryant, and the editorial effort of Dr N.C. Davidson. The work was supported by a S.E.R.C. Studentship.

## References

Bryant,D.M. 1979. Effects of prey density and site character on estuarine usage by overwintering waders (Charadrii). Est. Coast. Mar. Sci. 9: 369-384.

Evans, P.R. 1976. Energy balance and optimal foraging strategies in shorebirds: some implications for their distribution in the non-breeding season. Ardea 64: 117-139.

Fedak,M.A., Pinshow,B. & Schmidt-Nielson,K. 1974. Energetic cost of bi-pedal running. Am. J. Physiol. 227: 1038-1044. Goss Custard,J.D. & Rothery,P. 1976. A method for measuring some components of foraging of certain birds in the field. Anim. Behav. 24: 545-550.

Krebs, J.R. 1978. In Behavioural ecology - an evolutionary approach. Krebs, J.R. & Davies, N.B. (Eds.) Oxford, Blackwell Scientific Publications.

Norberg,R.A. 1977. An ecological theory on foraging time and energetics and choice of the optimal food searching method. J. Anim. Ecol. 46: 511-529.

Sutherland,W.J. 1982b. Spatial variation in the predation of cockles by Oystercatchers at Traeth Melynog, Anglesey. II. The pattern of mortality. J. Anim. Ecol. 51: 491-501. Warnes,J.M. 1981. The impact of overwintering birds on the production ecology of estuarine benthic invertebrates.

Warnes,J.M. 1981. The impact of overwintering birds on the production ecology of estuarine benthic invertebrates. Ph.D.Thesis, University of Stirling.

John Speakman, Department of Biological Science, University of Stirling, Stirling FK9 4LA, U.K.

# WADER STUDIES IN THE USSR

# by Rob Fuller

The choice of Moscow State University as the venue for the XVIII International Ornithological Congress provided a rare chance to learn something about current research on waders in the Soviet Union. The University occupies an imposing position on the Lenin Hills overlooking the city. For six days in August last year, the Congress took over a large part of the ground floor of this massive, spectacular, building.

Surprisingly few papers in the formal sessions focussed on waders. However, vast amounts of free time between these sessions, and an impromptu Round-Table-Discussion on waders gave plenty of opportunities to hear at first hand from Soviet workers. Despite its immensity, the Soviet Union holds very few wintering populations of significance, so breeding studies, with a smattering of work on migrating waders, are prevalent. There is no large-scale programme of co-ordinated research on waders; the most interesting work is being carried out by a handful of predominantly professional wader specialists. Increasing interest in wader studies is reflected in the organization of special symposia in 1973 and 1979. The proceedings of the last meeting were published in 1980 (see Recent Publications on Waders in WSG Bulletin No.30) and the titles give an insight into the range of contemporary work on waders in the Soviet Union.

Regular trapping of migrant waders is carried out at several localities in Kazakhstan under the direction of Dr. E. Gavrilov. The emphasis seems to be on ringing (metal rings) and collection of biometric and moult data. Breeding studies on a variety of species are employing other marking methods, ranging from leg flags to the rather more unconventional use of neck bands and triangular breast plates.

Particularly interesting is the research of P. S. Tomkovich who has worked on several arctic study sites including the extreme north-eastern point of USSR (Chukotski peninsula), and the Taimyr peninsula. He presented a poster paper on "Territoriality of some monogamous species of Calidridinae Sandpipers" based on work carried out at Chukotski between 1978 and 1980. In this region, four monogamous <u>Calidris</u> species are common breeders on the tundra: Rock Sandpiper <u>Calidris ptilocnemis</u>, Dunlin <u>C.alpina</u>, Red-necked Stint <u>C.ruficollis</u> and Western Sandpiper <u>C.mauri</u>. By observing both colour-ringed and unmarked individuals, and by mapping territory boundaries, Tomkovich discerned two distinct types of territorial systems amongst these waders. The main features of the two systems are summarised below, and are taken directly from the paper, with the permission of the author.

### Type 1

- 1. Displayed by C.ptilocnemis and C.alpina.
- 2. Strong site tenacity with many pairs reuniting.
- 3. Usually only small changes in territory occurred during the breeding season. But <u>ptilocnemis</u> sometimes established a temporary territory before appearance of snow-free patches at its former territory site.
- 4. In the event of adverse weather before egg-laying, there was a temporary breakdown of the territorial dispersion and a re-appearance of small flocks. When the weather improved, birds re-established their territories.

## Type 2

- 1. Displayed by <u>C.ruficollis</u> and <u>C.mauri</u>.
- 2. Weak site tenacity; reuniting not recorded.
- 3. Territories of unmated males were temporary and existed for a few days only. Pairs settled at (or close to) the male's territory and at this time the male defended only some space around the female.
- 4. In the event of adverse weather before egglaying, the unmated males could be forced to leave the unfavourable region. When the weather improved, males (probably new birds) appeared in different places.

For several of us, the Congress was rounded off quite splendidly by an (unofficial) visit to an enormous sewage works in the south of the city. This was an experience long to be cherished. At least 15 species of waders were seen on the endless rows of settling beds. Ruff <u>Philomachus pugnax</u> predominated but Marsh Sandpiper <u>Tringa</u> <u>stagnatilis</u> and Wood Sandpiper <u>Tringa glareola</u> were also amongst the commoner species. It seemed that this place was seldom visited by Russian ornithologists, yet in Britain it would have rated as an inland wetland of very major importance.