design of wetland wildlife preserves;

ch. 14) management of wetlands specifically for wildlife;

ch. 15) management of coastal marshes, a wetland type that has been severely impacted and continues to be threatened perhaps more than any other wetland type;

ch. 16) wetlands education; this chapter emphasizes that effective management and regulation of wetlands depends ultimately on educating the general populace on the value of wetland functions.

This last chapter includes five useful appendices on governative and non-governmental organizations inthe US and materials and documents produced by them.

The authors are a team of 19 practising wetland professionals including consultants, academicians and regulators, all from United States of America. The result of their work is an authoritative and at the same time approachable publication which is essential reading for both professionals and non-professionals working on wetland management and restoration, conservation and policy.

Whilst information on species, habitats and resource contacts are restricted to a North American context, this book is a recommended purchase for non-American readers given the effective coverage and for the complete synthesis of many topics concerning applied wetlands science and technlogy.

Roberto Tinarelli

Are migratory waders tropical or arctic birds?

Attendees at the Busüm WSG meeting in 1994 will recall Hans Meltofte's provocative and stimulating talk on the evolution of migratory patterns of African-wintering/arctic-breeding waders. The substance of his hypothesis has recently been published in *Ardea*, and we reprint below the abstract with acknowledgement. Although *WSG Bulletin* has only infrequently carried correspondence, we would welcome debate on this important paper. Notes, observations or short papers should be sent to the Editor.

Meltofte H. 1996. Are African wintering waders really forced south by competition from northerly wintering conspecifics? Benefits and constraints of northern versus southern wintering and breeding in waders. *Ardea* 84: 31-44.

During recent decades it has been widely accepted that waders wintering on the coast of West Africa experience less favourable conditions than those wintering on European tidal flats and estuaries. The driving force behind their long migrations is considered to be heavy competition on the northern wintering grounds. A comparative study of the annual cycles of all wader populations migrating through Denmark demonstrates a moult and migratory pattern of African winterers which is inconsistent with this view.

In late summer these birds overfly large intertidal areas in West Europe a long time before these areas are occupied by northern winterers. In addition, adults pass at a time when large numbers of juveniles have not yet arrived on the European staging and moulting areas. If strong competition for moulting and wintering grounds take place in western Europe, then adults from all populations should occupy these areas, forcing the less competitive and later arriving juveniles to continue their migration further south, *e.g.* to West Africa. Differences in body size between populations, inferring differences in competitive force, can neither explain the observed distributions, since in a number of species the smaller males winter north of the larger females. Furthermore, if conditions on the West African coast were poor, one may ask why many more of the African migrants would not stay in Europe during at least part of the primary moult? One may also ask why more of then do not return to north-west Europe in March, like temperate (early) breeding Black-tailed Godwits *Limosa limosa*, Oystercatchers *Haematopus ostralegus*, Curlews *Numenius arquata* and some of the Redshanks *Tringa totanus*.

Intertidal food resources in Africa do not seem to be a limiting factor during 'winter', and many species are able to increase their food intake there considerably during the pre-migratory spring fattening. The apparent difficulties that some wader populations have in building up sufficient body reserves on West African intertidal flats for spring migration could be a result of competition for wintering in West Africa and do not necessarily indicate that these areas are less favourable than tidal flats in north-west Europe. It is argued that in most wader populations heavy competition is more likely to take place in connection with the breeding season than during non-breeding. Especially the pre-laying period seems critical, but competition is likely to take place in most segments of the annual cycle.

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