

Extract only - complete publication at [www.jncc.gov.uk/worldwaterbirds](http://www.jncc.gov.uk/worldwaterbirds)

# Waterbirds around the world

A global overview of the conservation,  
management and research of the  
world's waterbird flyways

*Edited by G.C. Boere, C.A. Galbraith and D.A. Stroud*

*Assisted by L.K. Bridge, I. Colquhoun, D.A. Scott,  
D.B.A. Thompson and L.G. Underhill*



landbouw, natuur en  
voedselkwaliteit



SCOTTISH EXECUTIVE



EDINBURGH, UK: THE STATIONERY OFFICE

© Scottish Natural Heritage 2006

First published in 2006 by The Stationery Office Limited  
71 Lothian Road, Edinburgh EH3 9AZ, UK.

Applications for reproduction should be made to Scottish Natural Heritage,  
Great Glen House, Leachkin Road, Inverness IV3 8NW, UK.

British Library Cataloguing in Publication Data  
A catalogue record for this book is available from the British Library

ISBN 0 11 497333 4

Recommended citation:

Boere, G.C., Galbraith, C.A. & Stroud, D.A. (eds). 2006.  
*Waterbirds around the world*. The Stationery Office, Edinburgh, UK. 960 pp.

Names used for geographical entities do not imply recognition, by the organisers of the *Waterbirds around the world* conference or other supporting organisations or governments, of the political status or boundaries of any particular territory. Names of territories used (and any alternatives) are included solely to help users of this publication apply information contained within this volume for waterbird conservation purposes. The views expressed in papers included within this volume do not necessarily represent views of the editors or the organisations and governments that supported the conference and this publication.

*Cover photography:* Whooper Swans *Cygnus cygnus* arriving at Martin Mere, England. Photo: Paul Marshall.  
([www.paulmarshallphotography.com](http://www.paulmarshallphotography.com))

Copyright of all photographs used in this publication resides with the named photographers.

## 4.5 Migration and flyway atlases. Workshop Introduction

*Jacque Clark*

*British Trust for Ornithology, The Nunnery, Thetford, Norfolk, IP24 2PU, UK.*

Clark, J. 2006. Migration and flyway atlases. Workshop Introduction. *Waterbirds around the world*. Eds. G.C. Boere, C.A. Galbraith & D.A. Stroud. The Stationery Office, Edinburgh, UK. p. 568.

Over one hundred years of bird ringing have provided a wealth of ringing recoveries. Much of this information has only incidentally been used in studies of single species or in depth population studies. Recently a few countries have produced bird migration atlases in which the results of bird ringing play a major rôle.

This workshop provided an overview of the present atlases; the various methods used to present the available ringing data integrated with information from other sources to give international overviews of the distribution and movements of waterbirds.

### INTERNATIONAL COLLABORATION

Whilst a number of migration atlases have been published, most only cover a subset of bird species, and almost all produced to date are based on ringing and recovery data from single countries (as for example, described by Dobrynina & Kharitonov for Russian waterbirds). There is a strong need for atlases using data from all countries, within a continent or sub-continent (for example, as noted by Oschadleus for southern Africa), in a flyway, or best of all, based on the biology of the birds.

Spina & Clark of EURING demonstrate how ringing schemes from different countries can collaborate productively, but there is still a long way to go.

### BROADENING THE TECHNOLOGICAL BASE OF INFORMATION

Most analyses for the atlases published so far are based on recoveries of metal rings. We need better integration with such data, of other data from colour-ringing and similar individual marking, telemetry, stable isotope analyses and genetic markers.

### COMBINING RINGING AND COUNT DATA

Systematic analyses for atlases confirm the value of ringing studies in assessing the conservation status of breeding, wintering and stop-over sites within the context of whole flyways.

Systematic analysis of data on waterbird ringing recoveries should continue to be a priority so as to give a better assessment of distributional limits of biogeographical populations. This work should be encouraged on a co-operative, international basis, and integrated with reviews of waterbird survey and census information. Such integration of count data with ringing data will allow the assessment of the conservation status of such sites even more clearly, and to better understand how each species uses the parts of its entire range.

### FLYWAY SCALE ATLASES

The mapped depiction of the geographic limits of the different biogeographical populations of waterbirds has long been seen as a conservation priority. Indeed, IWRB organised a whole international symposium in 1976 on the subject of mapping waterbird distributions, at which was discussed a proposal for an atlas of wetlands and waterfowl so as to map flyways and key sites for ducks, geese and swans. As discussed by Delany & Scott, this



George Atkinson-Willes pioneered IWRB's initial mapping of European waterbird distributions. Modern technology has vastly enhanced the capability to organise spatial information and modern bird atlases are using increasing sophisticated analytical methods. Photo: Wildfowl & Wetlands Trust.

project was eventually realised fifteen years later by Scott & Rose with their 1996 *Atlas of the distribution of African and West Eurasian Anatidae* — a land-mark publication by Wetlands International summarising existing knowledge. However, since then there has been slow progress in developing population atlases for other waterbird taxa, although a major publication on waders is currently in preparation.

### DEVELOPING ANALYTICAL TECHNIQUES

Systematic analyses of ringing data are needed for five reasons:-

1. Describe the distributional patterns of birds in space, how these vary seasonally, and long-term changes in distribution and movements.
2. Reliably distinguish the patterns of different populations, ages and sexes.
3. When ringing data are computerised, modern computing technology provides immense analytical power. Techniques such as geographical information systems expand this beyond the more obviously statistical methods.
4. Various analytical methods have been developed for ringing data and there is active progress in developing further methods; this must continue.
5. The major need is to overcome biases associated with geographical variation in reporting rates and with method of recovery. We need to overcome the impacts of these biases on the apparent differences in migration of different populations, ages and sexes.