

Extract only - complete publication at 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)

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

A short history of waterbird conservation

Eckhart Kuijken

Institute of Nature Conservation¹, Kliniekstraat 25, B-1070 Brussels, Belgium. (email: eckhart.kuijken@inbo.be)
University of Ghent, Biology Department, K.L. Ledeganckstraat 35, B-9000 Ghent, Belgium.

Kuijken, E. 2006. A short history of waterbird conservation. *Waterbirds around the world*. Eds. G.C. Boere, C.A. Galbraith & D.A. Stroud. The Stationery Office, Edinburgh, UK. pp. 52-59.

ABSTRACT

For over a century, pioneering naturalists have determined the way in which waterbird conservation has evolved around the world and have been instrumental in the establishment of international organizations such as IUCN. Following declines in North American waterfowl in the 1930s, ICBP launched an International Wildfowl Inquiry and created IWRB, later to become a founding organization of Wetlands International. The inspiring MAR Conference, organized by IUCN, ICBP and IWRB in 1962, was a turning point in the development of conservation strategies. A series of “waterfowl conferences” followed during the 1960s and culminated in the adoption of the Convention on the Conservation of Wetlands of International Importance especially as Waterfowl Habitat in Ramsar, Iran, in 1971. This Convention launched the concept of “wise use”. At the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, this concept was translated as “sustainable use”. The Convention on Biological Diversity (CBD) was adopted during this world summit and gave wide recognition to the intrinsic value of biodiversity. The recent “Countdown 2010” initiative gives a strong signal to intensify efforts if the CBD conservation goals are to be achieved. Monitoring is a fundamental conservation tool and has remained a central focus of IWRB and subsequently Wetlands International since the 1960s. The International Waterbird Census represents one of the most valuable global data sets. International conservation strategies based on waterbirds as bio-indicators are being developed (e.g. AEWA), but global threats such as climate change are ever-increasing. We should therefore strive to improve land-use policies, increase public awareness and achieve common acceptance of the principles of conservation. Based on an understanding of ecological, economic and social mechanisms including culture, we must now communicate with decision makers and local people about the essentials of “wise use”.

INTRODUCTION

This presentation on the history of waterbird conservation is not a thorough analysis of all existing information, but rather a brief review of some of the relevant initiatives that have served as “stepping stones” in the past. It reflects a mainly personal approach, and has been prepared from a biased point of view, as my own experience is mostly limited to activities in the field of goose research in the Western Palearctic region, inspired to a large extent by the papers of Hugh Boyd at Slimbridge in the early 1950s (e.g. Boyd 1959). Initially based on ornithology, my conservation actions and expertise were subsequently developed within a broader ecological landscape dimension. Active participation at a number of conferences enabled me to have discussions with many of the early pioneers and to witness the changes in views and methods, priorities and actions of research and

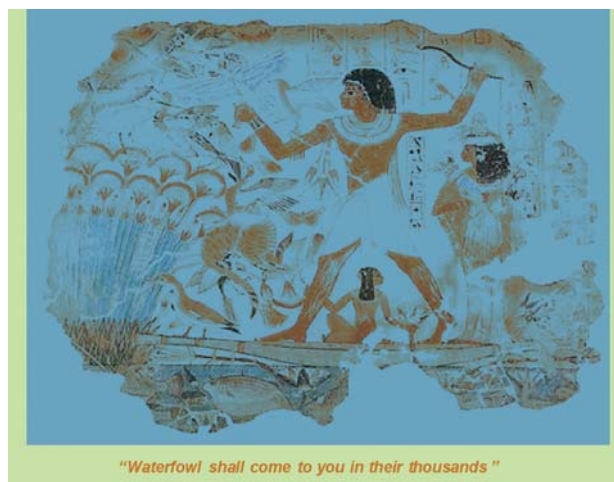


Fig. 1. “Waterfowl shall come to you in their thousands” (from a tomb at Thebes, XVIII Dynasty, about BC 1580-1350; now in the British Museum).

conservation. The many meetings also offered me an opportunity to visit some famous wetland habitats in the hosting countries. Finally, my position for the past two decades has trained me to function mainly as an interface between science and policy planning, while at the same time stimulating my growing awareness from local to international level.

The history of waterbird conservation has always been strongly linked with catching and hunting for food or sport, as already illustrated in early Egyptian periods with drawings of wildfowl netting, paintings of goose catching, and many written sources, some of which mention that “Waterfowl shall come to you in their thousands” (Fig. 1). This could be our *leitmotiv* of today, when we consider the Red-breasted Geese *Branta ruficollis* in ancient Egypt and the most recent meeting of Wetlands International’s Goose Specialist Group in Odessa in March 2004, which admired the same species along the Black Sea coast.

Throughout history, philosophers, scientists and artists have paid attention to nature, often as a background rather than a subject on its own. Colonialism, following the famous travels of Baerents, Cook, Columbus, Marco Polo and many others, began the exploration – and later exploitation – of the fast shrinking wildernesses, and caused growing interest in exotic species as collectable items or objects for study (from botanical gardens and zoos to Darwin’s theory). Natural history books with highly valuable illustrations (Dodonaeus, Buffon and so many others) were well known sources for an increasing scientific approach for half a millennium.

Since the Romanticism at the end of the eighteenth century (J.J. Rousseau: “retour à la nature”), the first concern for nature arose with the industrial revolution, and gradually some real conservation thinking was developed from the mid-1800s

¹ Renamed the Research Institute for Nature and Forest in 2006.

onwards (e.g. the creation of the first National Park at Yellowstone in 1872). This was still a rather elitist movement based on mainly sentimental and aesthetic feelings towards specific plants and animals or scenic landscapes, often combined with hunting activities. When Lenin awarded the status of National Park to the Volga Delta in the early 1900s, this was still an exceptional event, but this prophetic action revealed the Soviet interest in conserving nature.

FIRST INTERNATIONAL ACTIONS AND ORGANIZATIONS

Stimulated by such isolated initiatives, international dimensions and joint actions for nature protection became organized from the beginning of the last century, with institutions such as the International Council for Bird Preservation (ICBP), International Union for the Conservation of Nature (IUCN), International Wildfowl Research Bureau (IWRB), World Wildlife Fund (WWF) and others eventually taking the lead. The spiritual and social values of conservation were also gradually recognized and received broader public support, especially after World War II.

Ornithological interests have frequently stimulated the first nature protection initiatives, and in this context waterbirds often received special attention. This was a result of the growing concern amongst both wildfowlers and naturalists about the rapid decline in waterfowl populations in the first decades of the twentieth century. Restrictions on hunting seasons, the commercial harvesting of eggs and the use of duck decoys became the subject of much debate. In the USA, the severe drought in the 1930s combined with land reclamation caused a sharp decline in waterfowl populations, and various actions were taken (Linduska 1964, Hawkins *et al.* 1984). This cry of alarm reached Europe, and the Royal Society for the Protection of Birds (RSPB) in the UK and similar bodies in several other countries obtained increasing support to press for the adoption of legal instruments preventing excessive harvesting of waterfowl (Lowe 1941). As in the USA, this was a joint effort of ornithologists and traditional wildfowlers, both with an interest in abundant duck and goose populations and in protecting suitable habitat for breeding and wintering birds.

Gradually, the basic concerns of conservation became separated from hunting considerations. Illustrative of this are the consecutive changes in name and aims of the former IWRB reflecting the newly developing aspirations, needs and opportunities (see Box 1). Concepts and terminology changed from “protection” to “conservation”. The International Union for the Conservation of Nature (founded in 1946) was first called the

International Union for the Protection of Nature (IUPN); nowadays it is known as the World Conservation Union, although it has retained the acronym IUCN. The word “wildfowl” became “waterfowl” in the 1980s, and has more recently been replaced by “waterbirds”; in addition, the term “wetlands” appeared in the name of some organizations. These changes were inspired by an increasing ecological awareness that an integrated and scientifically based approach was needed, not only to accommodate hunting interests (“wildfowl” is very much the language of sportsmen), but also to maintain viable populations of endangered species and their often threatened habitats.

In a similar way, the Severn Wildfowl Trust, established in the UK by Sir Peter Scott in 1946, was later (1989) renamed the Wildfowl and Wetlands Trust (WWT). In Belgium, Les Réserves Ornithologiques de Belgique (co-founder Count Léon Lippens, 1951) became Les Réserves Naturelles et Ornithologiques de Belgique and later simply Reserves Naturelles. WWF also changed its name from World Wildlife Fund to Worldwide Fund for Nature, indicating a broader range of interests.

VISIONARY PIONEERS

The names of some of the pioneers in waterbird conservation have already been mentioned; many more should be added, but this goes beyond the aim of this contribution. Still it is important to remember the efforts of these pioneers, some of whom are still alive today and, in their youth, were active in the period between the two World Wars. Many are remembered from their publications or activities that often represent the very basis of our common conservation goals today. The ornithologists P. Lowe, A. Landsborough Thomson, R. Coombes and C.T. Dalgety were some of the members of the ICBP Wildfowl Inquiry Sub-Committee, while Miss Phyllis Barclay Smith acted as its secretary. She still participated at Executive Board Meetings of IWRB until the early 1970s, ensuring the bridge with the generations to come.

The International Wildfowl Inquiry was organized by ICBP after a meeting in 1937. The results were reported under the title “Factors affecting the general status of wild geese and wild duck” (ICBP 1941). The introductory chapter, “The history of events leading to the formation of the Wildfowl Inquiry sub-committee” by Percy R. Lowe, is worth mentioning as it illustrates how visionary these pioneers were. It also illustrates how conservationists and hunters worked closely together for their common interest. Lowe referred to a report from Sweden presented at the International Ornithological Congress in Copenhagen in 1926, as a result of which “the diminution in the numerical status of wildfowl was brought to the notice of ornithologists and preservationists, followed by official proposals to European Governments which had for their object the establishment of international regulations aimed at a more effective protection of wildfowl on migration”. In 1934-36, ICBP received “profoundly shocking news” from the USA (Audubon Society) about the decline of duck and goose populations. This was the combined result of extreme drought in 1930, shrinking wetland habitats due to land claim and large-scale drainage, and excessive shooting. After some political interventions, a temporary shooting ban was declared.

In his personal contribution to the Wildfowl Inquiry, Lowe analysed the situation in European countries and presented the results under the heading “Some Factors Responsible for a

Box 1. Changes in the name of IWRB to Wetlands International.

International Committee of Bird Preservation (British Section)
Wildfowl Inquiry Sub-Committee (1941)
ICBP International Wildfowl Inquiry
International Wildfowl Research Institute
International Wildfowl Research Bureau
International Waterfowl Research Bureau
International Waterfowl & Wetlands Research Bureau
Wetlands International (1995)

Revolutionary Diminution in the World's Stock of Wildfowl" (Lowe 1941; see Box 2). Many of the factors listed by Lowe have now altered landscapes and nature world-wide, and thus influenced the breeding and wintering of waterbirds in most countries. Furthermore, it is really striking that some problems still need to be solved, despite all the discussions and activities over the past 80 years (e.g. spring shooting, impact of drainage, agriculture, urbanization, etc.). It is certain that ICBP members in the 1930s could not have imagined how incredibly fast "development" would occur, and how natural values in general would suffer from the resulting and ever-increasing environmental pressures at global scale.

In an excellent overview of early pioneering work in North

Box 2. "Some Factors Responsible for a Revolutionary Diminution in the World's Stock of Wildfowl" (Lowe 1941). The examples given in parenthesis are only a selection of those given by Lowe.

1. Increased facilities of travel and transport

(steam engines, railways, steamships, internal combustion engine and motor-cars, motor-boats, etc. opening up inaccessible resources, also enabling weekend trips to estuaries; driving ducks together for hunting on the Nile...)

2. Cold storage and commercialization

(commercialization of wildfowl hunting seen as the most serious factor; importation of frozen wildfowl even during the close season...)

3. Conditions in the far north

(depredations by egg collecting in Iceland, Spitsbergen, Greenland)

4. Ill-considered reclamation of unsuitable areas of land

(drainage of marsh lands, swamps and fens destroys breeding haunts and winter quarters of wildfowl and causes a disastrous chain of events, e.g. in USA)

5. Other agricultural factors

(cessation of irrigation of water meadows, new industry of potato farming; growth of villages into towns in Russian Siberia and over-hunting of ducks for commerce)

6. Siltation in estuaries, inlets and old harbours

(caused by the introduction of the exotic *Spartina townsendii* and subsequent spread by swans, and decrease of *Zostera* as a result of disease)

7. Punt-gunning and shooting from mechanically propelled boats

(there is a great need for shortening the open season for punting; ducks becoming shyer, bags becoming smaller, etc.)

8. Disturbance by aeroplanes

(sometimes needless; often deliberate and systematic driving of ducks together for shooting; forbidden from military aeroplanes)

9. Long hunting seasons

(hunting legislation needs scientific background; in most cases, the hunting season opens too early and goes on too long; proposed opening on 1 September; there is an internal dispute in sportsmen's associations on this issue)

America, Hawkins *et al.* (1984) came to the same alarming conclusions.

IWRB AND THE SERIES OF WATERFOWL CONFERENCES

The pioneering work of IWRB (in close co-operation with IUCN and ICBP) has been crucial in waterbird and wetland conservation. In western Europe, two groups of dedicated specialists were extremely active: Sir Peter Scott with G.L. Atkinson-Willes, H. Boyd, J. Harrison, J. Kear, G.V.T. Matthews and others at the Wildfowl Trust at Slimbridge (UK); and Dr Luc Hoffmann with his staff (J. Blondel, H. Hafner, A. Johnson and others) at the Station Biologique de la Tour du Valat (founded in 1954) in the Camargue (France). Many of today's leading conservationists obtained their first training and experience at one of these two centres. In addition, specialized groups and field stations were set up by a number of universities and natural history museums, and were active in waterbird research all over Europe and the former USSR. Well-known correspondents from many countries became active members of the early IWRB network of waterbird conservationists.

One particularly significant initiative was the MAR Conference, jointly organized by IUCN, ICBP and IWRB in 1962. Again, it is worthwhile to remember the basic aims and ideals of this conference, as some of the considerations are still extremely relevant today. The introduction to the proceedings of the conference stated that: "Alarmed by the progressive loss of marshes, bogs and other wetlands through drainage and 'improvement', IUCN's Executive Board and scientific advisory body, the Commission on Ecology, proposed early in 1961 that IUCN, in close co-operation with ICBP and IWRB, develop a programme on conservation and management of temperate marshes, bogs and other wetlands, to be called 'Project MAR'...". The main goals of this project are summarized in Box 3.

The MAR Conference was a real turning point in the development of strategies and practices for the conservation of waterbirds and wetlands. Many of the participants in that meeting

Box 3. The main goals of Project MAR, as given in the Introductory Statement in the Proceedings of the MAR Conference, 1964.

The final goals of the MAR programme are:

- 1 to prepare a broad statement on the importance of marshes and wetlands to modern mankind and to give the widest publicity to this statement;
- 2 to assemble all important data on means of conserving wetlands, to keep or improve them for wildlife through proper management, to restore them when debilitated and to make man-made aquatic habitats useful for wildlife: to make this information known and available to all those in a position to take action to advance the conservation of wetlands;
- 3 to make an inventory and classification of all European and north-west African marshes, bogs and other wetlands of international importance; and
- 4 to offer technical assistance for establishment of reserves in marshes, bogs and other wetlands classified as of international importance.

Box 4. The series of IWRB conferences on waterbirds and wetlands from St Andrews in 1963 to the first Conference of the Parties to the Ramsar Convention in 1974. The editor and year of publication of the proceedings are given in brackets.

- 1st European Meeting on the Conservation of Wildfowl, St. Andrews, UK, 1963. (J.J. Swift, 1964)
- 2nd European Meeting on the Conservation of Wildfowl, Noordwijk-aan-Zee, The Netherlands, 1966. (Z. Salverda, 1967)
- 3rd International Regional Meeting on Conservation of Wildfowl Resources, Leningrad, USSR, 1968. (Yu.A. Isakov, 1970)
- International Conference on the Conservation of Wetlands and Waterfowl, Ramsar, Iran, 1971. (E. Carp, 1972)
- International Conference on the Conservation of Wetlands and Waterfowl, Heiligenhafen, Germany, 1974. (M. Smart, 1976)

remained active until the 1980s or 1990s and supported the fast growing impact of IWRB which became the real engine of waterbird research and conservation. Initially based at the Museum of Natural History in London, IWRB moved its headquarters to the Tour du Valat in the Camargue where it remained until 1968, and then to the Wildfowl Trust in Slimbridge (UK) where it remained until 1995. Since then, its work has been continued by Wetlands International.

From the very beginning, IWRB was responsible for a number of scientific publications as well as booklets on the threatened status of waterbirds and wetlands. One of the first booklets, "Liquid assets", appeared in 1964 with the support of UNESCO (Atkinson-Willes 1964) and was reprinted in 1979. This stressed that wetlands are not wastelands, and drew attention to their importance for recreation, science and education, the costs and dangers of drainage, the problems of pollution, and the desirability of restoring wetlands and managing them wisely.

An impressive amount of knowledge became available thanks to a series of international conferences convened by IWRB and the resulting Proceedings which were published in a similar and recognizable layout (Box 4). In addition to these conferences, IWRB organized most of its Annual Executive Board Meetings in combination with scientific symposia in various parts of the world. This brought national delegates and other active people together on a regular, structured basis, thanks especially to highly professional pioneers working for IWRB, such as E. Carp, G.L. Atkinson-Willes, G.V.T. Matthews, D.A. Scott, M. Smart, M. Moser and many others. The dedicated IWRB secretariat, with M. Moser (successor to G.V.T. Matthews) as Director, moved from Slimbridge to Wageningen (The Netherlands) in 1995. Here, the new headquarters could build up a growing staff with several departments, especially after the XXXVth Executive Board Meeting in Kuala Lumpur, Malaysia, in 1995 when IWRB merged with Wetlands for the Americas and the Asian Wetland Bureau and became Wetlands International (with Chris Kalden as President).

The first Meeting of the Board of Members of Wetlands International was held during the famous Second Conference on Wetlands and Development in Dakar, Senegal, in 1998, replacing the traditional Executive Board Meetings of IWRB after 36 sessions: quite a change for those of us who had participated in so many earlier meetings.

THE MASTERPIECE: THE RAMSAR CONVENTION

The above-mentioned meetings during the 1960s were focussed on the development of an international convention specifically related to the conservation of wetlands. This process culminated in a conference held in the Caspian coastal town of Ramsar, Iran, in early 1971. Delegates of 18 countries signed the final text of the Convention on the Conservation of Wetlands of International Importance especially as Waterfowl Habitat on 2 February 1971 (Fig. 2). This date is now known as "World Wetlands Day". The Ramsar Convention is considered to be the first of the modern global environment treaties and is well structured, thanks to a strong secretariat based at IUCN Headquarters in Gland (Switzerland). As part of the evolution of concepts mentioned above, the working title of the Convention (Ramsar Convention on Wetlands) no longer recalls its relationship with waterfowl habitat. There is no need to present the full history of this convention here, as Geoffrey Matthews, former Director of IWRB, has published an excellent overview: "The Ramsar Convention on Wetlands: its History and Development" (Matthews 1993).



Fig. 2. Signing ceremony of the Ramsar Convention, 2 February 1971. From left to right: USSR delegate; E. Firouz (Conference Chair); South African delegate; M.F. Mörzer-Bruijns (The Netherlands, Vice-Chair), G.V.T. Matthews (IWRB Director); and E. Carp (IWRB Secretariat, Conference Rapporteur). Photo: E. Kuijken.

One of the most original and handsome contributions of the Ramsar Convention has been the introduction of the 1% criterion (of waterbird populations at flyway level) for designating internationally important wetland sites. Linked with the waterbird databases of IWRB and its successor Wetlands International, a regular update of 1% thresholds at flyway level has offered an objective and attractive tool. Several sessions at IWRB meetings before 1971 gave considerable attention to the required level of waterbird numbers before a site could be considered as being of "international importance" (Sziij 1972). After studying models with 5% and 2% levels, it was concluded that at these levels the number of outstanding sites would be too low to establish a dense enough network to create a functional series of stepping stones or "fuelling stations" for long-distance migrants. The 1% criterion was therefore adopted and has since become a widely used tool in ecological evaluations, not only in waterbird conservation. Later Conferences of the Parties to the Ramsar Convention have gradually added more criteria for assessing the international importance of wetlands, based on functions, habitats, educational values, importance for fish, etc. In 2005, the ninth Conference of the Parties, formally adopted a

1% criterion for non-avian taxa. This further developed the concept by seeking its application to aquatic fauna for which good population data exist (such as river dolphins, hippos, turtles, crocodiles etc.; Stroud unpublished).

Even more significant during the Ramsar Conference in 1971 was the launch of the “wise use” concept by the pioneering architects of the Ramsar Convention. Although also adopted in the Bern Convention (1979), it was 20 years before this approach became more widespread. The Convention on Biological Diversity (CBD), adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, included “sustainable development” and “sustainable use” almost as synonyms of “wise use”. In its Preamble, the CBD also recognizes the intrinsic value of biodiversity, although this concept remains difficult to explain and even more difficult to bring into practice.

“Wise use”, as an anthropocentric approach, gradually became fully respected, especially when appropriate CEPA (communication, education and public awareness) strategies are carried out among local populations dependent on wetlands for their survival. Indeed, the possibilities for balanced use of the vital resources of wetlands are recognized by an increasing number of Ramsar Contracting Parties. This makes a major contribution not only to biodiversity conservation, but also to global strategies to combat poverty and provide security against natural disasters.

Some pessimism may exist as regards achieving the necessary nature conservation goals in the twenty-first century, even if economic development were to turn more to sustainability. Unfortunately, the Rio+10 Conference in Johannesburg in 2002 no longer included “environment” in its title, thus suggesting that qualitative and quantitative needs are considered to be an integral part of development (which, of course, is true in theory). There is a risk, however, that environmental issues may receive less attention. Fortunately, close links have been established between CBD, other environmental treaties and the Ramsar Convention, and must now reinforce the common conservation aims. The recent “Countdown 2010” initiative (“stop the loss of biodiversity by 2010”) is giving another strong message for real action before it is too late.

Nowadays, the Ramsar Convention is recognized as a most dynamic and functional treaty, having opened the way for wetland conservation, especially in many developing countries. In the early years, technical support was provided mainly by IWRB, and Wetlands International still plays an important role as one of the Convention’s five International Organisation Partners, e.g. in the management of the databases of waterbirds and wetlands, and in the preparation of recommendations in co-operation with the Scientific and Technical Review Panel (STRP).

The increasing efforts made by the growing number of Contracting Parties to designate wetlands of international importance is illustrative of the impact of the Ramsar Convention at global scale (Fig. 3). Since the Eighth Conference of the Parties in Valencia in 2002, a Strategic Work Plan has provided guidelines for the fulfilment of five general and 21 operational objectives. The status of the Convention by 5 July 2006 is impressive: 152 Contracting Parties, and 1 609 Wetlands of International Importance designated for the Ramsar List, covering a total surface area of 145.8 million ha. The triennial Meetings of the Parties are always stimulating and inspiring events, where

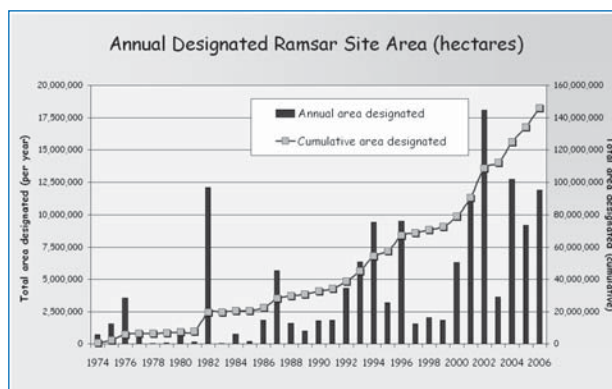


Fig. 3. The increase in the area of designated Ramsar sites (from Wetlands International Ramsar Sites Information Service web-site).

criteria are reviewed, results are discussed, and a number of recommendations for further specific actions are developed.

After ratification of the treaty, Ramsar Parties must not only designate at least one wetland, but must also agree to provide compensation when specific Ramsar sites are lost as a consequence of urgent national interest. The very first example of the strength of this Article 4 of the Convention was in relation to the Belgian Ramsar site of Galgenschoor near Antwerp, where 30 ha were lost as a result of the construction of a new container terminal. In compensation, the Flemish government designated 2 500 ha of floodplain along the River IJzer, just at the time of the Regina Conference in 1987.

The “maintenance of the ecological character” of designated wetlands is a permanent obligation. When serious threats exist and are likely to change the characteristics of a designated wetland, this site is to be put on the ‘Montreux Record’. Such sites can be the subject of a Ramsar Advisory Mission, with specialists from the Ramsar Secretariat and other Contracting Parties visiting the site and helping the local authorities to develop solutions, adequate management, etc. This controlling system reflects another (moral) impact of the Convention, as the status of sites on the Montreux Record has to be mentioned openly in the National Reports before each of the Conferences of the Parties.

FROM WATERBIRD MONITORING TO CONSERVATION OF WETLANDS

The need to identify waterfowl species and a curiosity to learn about their fascinating behaviour inspired many authors to publish valuable handbooks, contributing significantly to our knowledge of these species (e.g. Alpheraky 1905, Delacour 1954, Scott 1965). The Wildfowl Inquiry stimulated more concerted action to collect information on the numbers and distribution of ducks, geese and swans. Traditional methods, such as the collection of wings from shot birds, were applied in order to gain better insight of population dynamics. This again illustrated the close co-operation between hunters and conservationists.

The organization of regular international counts of waterbirds (the International Waterbird Census, IWC) has been a key activity of IWRB/Wetlands International for almost four decades. The first mid-winter counts, initiated in 1967, were confined to “wildfowl” (ducks, geese, swans and coots) and were co-ordinated by G.L. Atkinson-Willes at the Wildfowl

Trust in Slimbridge, with the help of dedicated national co-ordinators, specialists and volunteers in the field. Atkinson-Willes had a long history of organizing counts in the British Isles (Atkinson-Willes 1955). The results of the IWC in the period 1967-1983 were published by Rüger *et al.* 1986. The number of co-workers has grown considerably over the years, and now comprises a network of many thousands all over the world. The counts have provided an immense amount of information, not only of scientific value, but also of strategic importance for wetland conservation. These data have enabled the publication at regular intervals of estimates of waterbird populations in each of their different flyways. The first edition of this work was published in 1994 (Rose & Scott 1994). The Specialist Groups of IWRB/Wetlands International play an important role in bringing expert data together. Reports on ducks and geese were among the first to be published (e.g. Mörzer-Bruijns *et al.* 1969), with comprehensive reviews of the status of many other taxa following in the years since. Monitoring the changes in waterbird numbers at specific wetlands of critical importance can also serve as an “early warning system” that can be used to mobilize authorities to take appropriate measures before it is too late.

The development of ecological networks is a present-day priority (e.g. the Natura 2000 networks of Special Protection Areas within the framework of the European Union’s Birds and Habitats Directives of 1979 and 1992, respectively). The establishment of a network of protected wetland areas to safeguard populations of waterbirds that migrate over long distances was already a basic goal of the Ramsar Convention, and has since been recognized as an essential functional approach in waterbird conservation, promoting the concepts of corridors and stepping stones to connect larger core areas and enhance the mobility of waterbird populations and their genes.

The African-Eurasian Waterbird Agreement (AEWA) under the Bonn Convention was launched in 1995. The Agreement covers 117 Range States in Europe, western Asia and Africa, as well as parts of Canada. Initiated by Gerard Boere, this is a real IWRB spin-off. The AEWA has been ratified by 57 countries and is currently carrying out its “International Implementation Priorities Plan 2003-2007” which includes many species protection plans and other projects (Lenten, this volume).

In North America, the concept of waterfowl “flyways” was introduced much earlier than in Europe (see “Waterfowl Tomorrow” by Linduska 1964, and “Flyways. Pioneering Waterfowl Management in North America” by Hawkins *et al.* 1984). Both these publications draw attention to the large number of dedicated naturalists who, between the late 1800s and World War II, tried to counteract the negative impacts of the earliest land developments.

In Asia, attention was initially focussed mainly on shorebird (wader) flyways, under the co-ordination of the Asian Wetland Bureau (e.g. Parish & Prentice 1989). International waterbird counts and wetland inventories stimulated many Asian countries into further conservation actions, and this was also the case in Latin America. In many biogeographical regions, specific initiatives relating to wetlands developed into powerful regional organizations (cf. MedWet). Other thematic groups worked on specific wetland types and programmes (peatlands, lakes, riverine systems, dunes and estuaries, etc.). National overviews of waterbird counts and wetlands became available in many countries; in this regard, the states of the former USSR were



Fig. 4. Japanese crane symbol, where waterbirds, wetlands and culture meet. Photo: Eckhart Kuijken.

often well ahead, with famous names such as Yu. Isakov, E. Kumari, E. Rutschke, E. Nowak and many others.

Not only were waterbird population estimates becoming available in a series of publications, but so too were directories of wetlands of international importance (e.g. Olney 1965, Carp 1980, Scott 1980, World Conservation Monitoring Centre 1990 and Frazier 1999, 2002), often on the occasion of the Ramsar Conferences. Such directories are now available for most continents of the world (e.g. Scott & Carbonell 1986, Scott 1989). Again, these provide an immense source of baseline information on the state of the environment in and around wetlands. In addition, interesting discussions on conservation strategies for wetlands have been presented by Moser *et al.* (1993) and Beintema & van Vessem (1999). In general, the number of publications and proceedings has increased tremendously since the 1990s, thanks to the shift in emphasis of IWRB and Wetlands International towards broader scientific disciplines and social sciences, including economics.

Various themes that have been developed in recent years include wetland management and restoration (Erwin 1996), the economics of conservation, the functions and values of wetlands (Hails 1997), and the goods and services of ecosystems in general (Constanza *et al.* 1997). IWRB, WWF and IUCN have also published valuable contributions and handbooks in these fields. Long-lasting debates, e.g. between conservation and agriculture, hunting or other exploitation, have been the subject of inspiring specialist meetings. The increasing concern about water resources is now giving a new impulse to wetland conser-

vation (European Water Framework Directive 2000, World Commission on Dams, etc.). Illustrative of this is a WWF publication (Schuyt & Brander 2004) with a table expressing the economic values of the Dutch Wadden Sea (270 000 ha), a key wetland site in Europe that is still threatened by increasing developments such as gas exploitation, mollusc fisheries and tourism that are probably not sustainable. The economic value of this tidal wetland is estimated at about US\$ 2 330 000 000 per year! (For more interesting figures, see Constanza *et al.* 1997).

After the boom in publications, proceedings of wetland meetings, inventories, waterbird atlases, directories, etc., a great variety of web-sites is now joining – if not reducing – traditional printed matter; these web-sites are supported by government offices, international bodies, NGOs or individuals, and often offer a wealth of rapidly updated information. This enables individuals and action groups to make their own conclusions about what is going on within the entire biosphere and how they must react. How far future generations will criticize us for not always storing this short-term electronic information in a useful permanent format remains to be seen. On the other hand, a large amount of knowledge would never have been so widely accessible.

BIODIVERSITY: THREATS AND THE FUTURE

Wetlands are among the most vulnerable types of habitats. The reasons are well known and do not need to be listed here. Wetland losses have been estimated on several occasions, with alarming figures illustrating the great need to take action (Finlayson & Moser 1991, Millennium Ecosystem Assessment 2005). Hopefully, the Ramsar Convention can help to slow the rate of loss of wetlands significantly. This needs long-term strategies, including research and monitoring, site management, ecologically sound policy planning, education and communication. Without public awareness, most initiatives will fail to achieve any long-term sustainability. This is especially important if national and local authorities are to be convinced to respect wetlands in their physical planning, land-use development plans, education programmes, etc.

As to the needs of wetland and waterbird research and monitoring, the traditional bird counts by volunteers – still of crucial importance – are now increasingly being carried out with specialized equipment, additional research techniques and better financial support. The classic ringing schemes, with most recoveries coming from dead birds, have revealed the major patterns of migrations. However, the use of colour rings and satellite transmitters on individual birds has taught us much more about the various types of movements, habitat use and seasonal patterns in only a couple of decades. Earth observation programmes with satellite imagery offer ever-increasing opportunities for digital mapping and monitoring of wetland systems world-wide. More new techniques are becoming available, even allowing us to establish new migration routes by using imprinted waterbirds following light aircraft. It is up to this and the next generation to judge if such far-reaching manipulations of natural characteristics are justified. In any event, careful restoration of habitats and ecological networks, enlarging protected areas and improving habitat quality should be our first priorities and duty.

It is not surprising that our knowledge is developing very fast, but at the same time, concerns about the rapid ecological changes must serve as a warning to modern society that it is time for inte-

grated actions and ecologically based economics. Public awareness through education and training must be translated into political pressure at all decision-making levels. The mission of Wetlands International is clear enough: to sustain or restore wetlands, their resources and biodiversity for future generations through research, information exchange and conservation activities world-wide.

Wetlands play a key role in a number of global processes, from climate change to coastal protection, from eco-tourism to food and timber production, from water supply to transportation, and much more, and thus merit the full attention of all sectors in our society. Wetlands are real crossing points where nature and human culture have come together for hundreds of generations, many of whom have used and admired the wealth of waterbirds in their thousands and other living resources. A wide range of traditional skills (often practised by women) and modern techniques are now needed in joint efforts to maintain this worldly heritage, these “liquid assets” of the highest spiritual and aesthetic value.

ACKNOWLEDGEMENTS

I wish to thank the Ramsar Convention Secretariat (Delmar Blasco, Nick Davidson and Tobias Salaté) and Wetlands International (Doug Taylor) for responding to requests for information, and give special thanks to Gerard Boere for his encouragement to finalize this contribution. I wish to express my sincere appreciation to my colleagues on the “Board of Patrons” of this Conference, H. Boyd, L. Hoffmann, G.V.T. Matthews and H. Nelson, for having accepted me as a “junior” in their stimulating company as real pioneers. I am most grateful to Derek Scott for the final revision of the manuscript.

REFERENCES

- Alpheraky, S.** 1905. *The Geese of Asia and Europe*. Rowland Ward, London.
- Atkinson-Willes, G.L.** 1955. *Wildfowl counts in the British Isles*. *Wildfowl Trust Annual Report VII*: 29–46.
- Atkinson-Willes, G.L.** 1964. *Liquid assets*. *Wildfowl Trust, IUCN and IWRB*, Slimbridge, UK.
- Beintema, A. & van Vessem, J.** 1999. *Strategies for Conserving Migratory Waterbirds*. *Wetlands International Publication No. 55*. Wageningen, The Netherlands.
- Boyd, H.** 1959. *The composition of goose populations*. *Ibis* 101: 441–445.
- Carp, E.** 1980. *Directory of Wetlands of International Importance in the Western Palearctic*. IUCN, Gland, Switzerland.
- Constanza, R., d’Arge, R., de Groot, R.S. et al.** 1997. *The total value of the world’s ecosystem services and natural capital*. *Nature* 387: 253–260.
- Delacour, J.** 1954. *The Waterfowl of the World*. *Country Life Ltd.*, London.
- Erwin, K.L.** 1996. *A Bibliography of Wetland Creation and Restoration Literature*. *Wetlands International, Wageningen, The Netherlands, and the Association of State Wetland Managers, Berne, USA*.
- Finlayson, M. & Moser, M.** (eds). 1991. *Wetlands*. *IWRB, Slimbridge, UK*.
- Frazier, S.** (ed). 1999. *A Directory of Wetlands of International Importance*. *Compact Disc*. *Wetlands International, Wageningen, The Netherlands*.
- Frazier, S.** (ed). 2002. *A Directory of Wetlands of International*

- Importance. Compact Disc. Wetlands International, Wageningen, The Netherlands.
- Hails, A.J.** 1997. Wetlands, Biodiversity and the Ramsar Convention. The role of the Convention on Wetlands in the Conservation and Wise Use of Biodiversity. Ramsar Convention Bureau, Gland, Switzerland.
- Hawkins, A.S., Hanson, R.C., Nelson, H.K. & Reeves, H.M.** 1984. Flyways. Pioneering Waterfowl Management in North America. U.S. Department of the Interior, Washington, D.C.
- ICBP** 1941. Factors affecting the general status of wild geese and wild duck. Vol. I. Cambridge University Press, Cambridge.
- Lenten, B.** 2006. The Agreement on the conservation of Africa-Eurasian migratory waterbirds. Waterbirds around the world. G.C. Boere, C.A. Galbraith & D.A. Stroud (Eds.), The Stationery Office, Edinburgh, UK. 350-353.
- Linduska, J.P.** 1964. Waterfowl Tomorrow. U.S. Department of the Interior, Washington, D.C. 770 pp.
- Lowe, P.R.** 1941. The history of events leading to the formation of the Wildfowl Inquiry sub-committee. In: ICBP, Factors affecting the general status of wild geese and wild duck. Vol. I. Cambridge University Press, Cambridge.
- Matthews, G.V.T.** 1993. The Ramsar Convention on Wetlands: its history and development. Ramsar Convention Bureau, Gland, Switzerland. Available at: www.ramsar.org/lib_hist_index.htm
- Millennium Ecosystem Assessment** 2005. Ecosystems and human well-being: wetlands and water synthesis. World Resources Institute, Washington DC. 68 pp.
- Mörzer-Bruijns, M.F., Philippona, J. & Timmerman, A.** 1969. Survey of the winter distribution of Palearctic Geese in Europe, Western Asia and North Africa. IWRB Goose Working Group Interim Report. IWRB, Slimbridge, UK.
- Moser, M., Prentice, C. & van Vessem, J.** (eds). 1993. Waterfowl and Wetland Conservation in the 1990s: A Global Perspective. Proceedings of IWRB Workshop, St Petersburg, Florida, 1992. IWRB, Slimbridge, UK.
- Olney, P.J.S.** (ed). 1965. List of European and North African Wetlands of International Importance. IUCN Publication New Series 5, Morges, Switzerland.
- Parish, D. & Prentice, R.C.** (eds). 1989. Wetland and Waterfowl Conservation in Asia. Proceedings of Malacca Conference. Asian Wetland Bureau, Kuala Lumpur, Malaysia, and IWRB, Slimbridge, UK.
- Rose, P.M. & Scott, D.A.** 1994. Waterfowl Population Estimates. IWRB Publication 29, Slimbridge, UK.
- Rüger, A., Prentice, C. & Owen, M.** 1986. Results of IWRB International Waterfowl Census 1967-1983. IWRB Special Publication No. 6, Slimbridge, UK.
- Schuyt, K. & Brander, L.** 2004. Living Waters: Conserving the source of life. The Economic Values of the World's Wetlands. WWF, Zeist, The Netherlands, and Gland, Switzerland.
- Scott, D.A.** (ed). 1980. A Preliminary Inventory of Wetlands of International Importance for Waterfowl in West Europe and Northwest Africa. IWRB Special Publication No. 2, Slimbridge, UK.
- Scott, D.A.** (ed). 1989. A Directory of Asian Wetlands. IUCN, Gland, Switzerland, and Cambridge, UK.
- Scott, D.A. & Carbonell, M.** 1986. A Directory of Neotropical Wetlands. IUCN, Cambridge, & IWRB, Slimbridge, UK.
- Scott, P.** 1965. A coloured key to the wildfowl of the World. Second edition. Country Life Ltd., London.
- Stroud, D.A.** unpublished. Selecting Ramsar sites: the development of criteria from 1971 to 2005. Ramsar Technical Report.
- Sziji, J.** 1972. Some suggested criteria for determining the international importance of wetlands in the Western Palearctic. In: E. Carp (ed) Proceedings of the International Conference on Conservation of Wetlands and Waterfowl, Ramsar, Iran. IWRB, Slimbridge, UK: 101-119.
- World Conservation Monitoring Centre** 1990. Directory of Wetlands of International Importance. Sites designated for the List of Wetlands of International Importance. Ramsar Convention Bureau, Gland, Switzerland.



Part of the Ramsar site of Eqalummiut nunaat – Nassuttuup nuna, west Greenland, designated in 1987 because of its international importance for breeding waterbirds. Photo: David Stroud.