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To sustain and restore wetlands, their resources and biodiversity for future generations

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WETLANDS INTERNATIONAL

waterbirds AROUND THE WORLD

A global review of the conservation, management and research of the world's major flyways

3–8 April 2004
Edinburgh, UK

Summary Booklet

Editors: G.C.Boere, C.A. Galbraith and D.A. Stroud

A Wetlands International Conference

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Conference Summary

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The Nature Conservancy

The opening of the Edinburgh Conference. Participants of the First European Wildfowl Meeting in St Andrews 1963.

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Foreword

It is with great pleasure that we present this summary report, the first major output, of the international conference 'Waterbirds Around the World', held in April 2004 in Edinburgh.

Attended by nearly 500 participants from 90 countries, this was the largest international conference ever in this field and was a milestone within the sequence of international conferences on waterbird conservation starting with the first European meeting held 40 years ago in St Andrews, Scotland.

We know from considerable feedback after the conference that the event inspired participants and others to continue and increase their efforts to further the conservation of waterbirds, their global flyways, and their habitats in all parts of the world.

The presentation by His Royal Highness the Prince of Wales on the critical conservation needs of migratory birds, in particular albatrosses and other seabirds, reinforced many of the themes agreed in the conference statement – the Edinburgh Declaration.

The Edinburgh Declaration provides a summary of the conclusions of the conference. It not only outlines the achievements of the last 40 years, but contains a clear outline of the future conservation policies and actions needed to conserve waterbirds. It is now important for all participants to implement the Edinburgh Declaration at national and international level. We strongly urge that these actions are taken forward as opportunities permit.

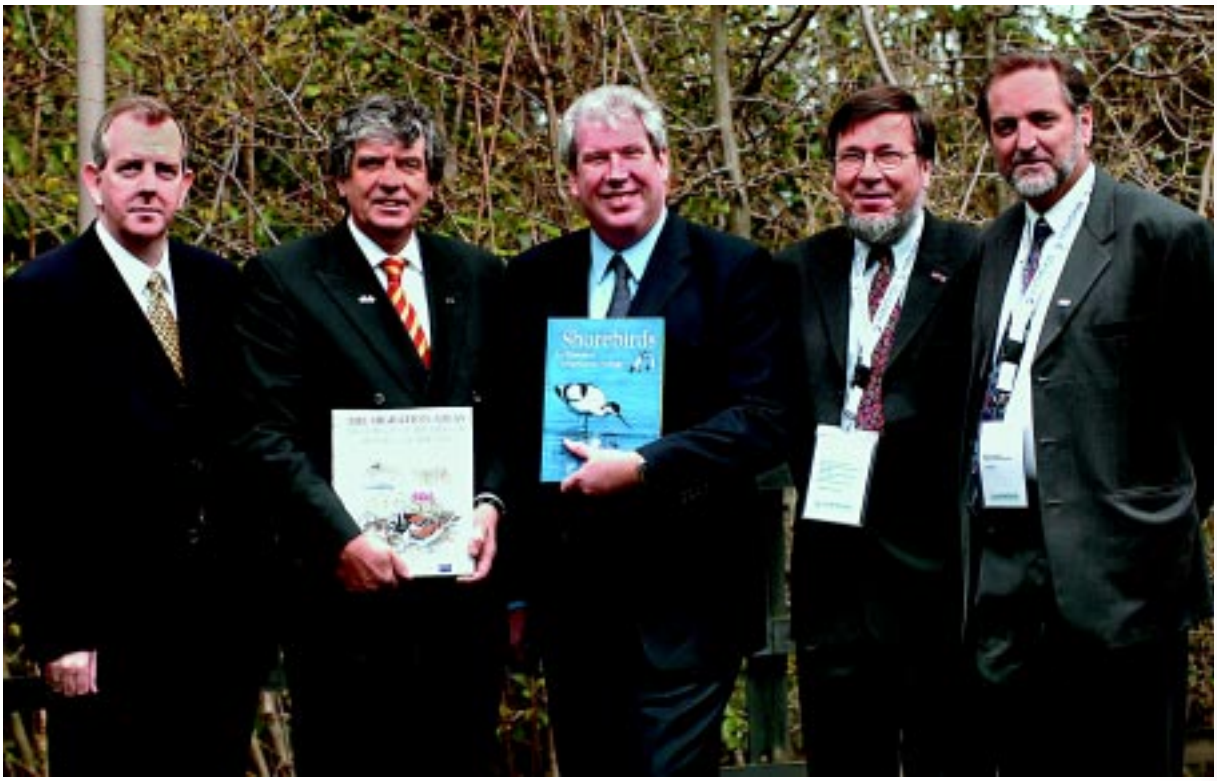
The full Proceedings of the conference, containing the papers and short notes on the poster presentations, will be available in 2006.

Thank you all for coming to Edinburgh and working together on these important issues of mutual interest in an excellent informal atmosphere. We are looking forward to seeing you again.

Prof. Colin A. Galbraith
Chairman
'Waterbirds Around the World'

Dr Gerard C. Boere
Secretary General
'Waterbirds Around the World'

From left to right: Colin Galbraith, Chair of the Conference; Cees Veerman, Dutch Minister for Agriculture, Nature and Food Quality; Elliot Morley, Minister of State for Environment and Agri-Environment, Defra, UK; Gerard Boere, Secretary General of the Conference; Max Finlayson, President Wetlands International.



waterbirds AROUND THE WORLD

The Edinburgh Declaration

An international conference on waterbirds, their conservation and sustainable use was held in Edinburgh, Scotland, from 3–8 April 2004, and was attended by 456 participants from 90 countries.

Conscious that waterbird flyways are biological systems of migration paths that directly link sites and ecosystems in different countries and continents;

Recalling that the conservation and wise-use of waterbirds is a shared responsibility of nations and peoples and a common concern of humankind;

Recalling also the long history of international co-operation for waterbird conservation developed over a hundred years with treaties such as that concerned with migratory birds in 1916 between USA and UK (on behalf of Canada), and that over 40 years ago, the first European Meeting on Wildfowl Conservation held in St Andrews, Scotland in 1963, started a process leading to the establishment of the Convention on wetlands especially as waterfowl habitat in Ramsar, Iran, in 1971;

Noting that major international conferences in Noordwijk aan Zee, The Netherlands (1966), Leningrad, USSR (1968), Ramsar, Iran (1971), Astrakhan, USSR (1989), St Petersburg Beach, Florida, USA (1992), Kushiro, Japan and Strasbourg, France (1994), have further developed international technical exchanges on waterbird conservation;

Aware of the development of further inter-governmental co-operation through the establishment and implementation of further treaties, agreements, strategies and programmes; and of the development of considerable non-governmental national and international co-operation in waterbird conservation and monitoring;

Conscious that at the World Summit on Sustainable Development, Johannesburg, South Africa, in 2002, world leaders expressed their desire to achieve “a significant reduction in the current rate of loss of biological diversity” by 2010, and that in February 2004 this target was further developed by the Seventh Conference of the Parties to the Biodiversity Convention, and **aware that** achieving this target will require significant investments and highly focused and co-ordinated conservation activity on all continents, and **recognising that** communication, education and public awareness, and capacity building will play a key role in achieving this target;

Further conscious of the urgent need to strengthen international co-operation and partnerships between governments, inter-governmental and non-government organisations, local communities and the private sector;

Alarmed at the perilous state of many populations of waterbirds, in both terrestrial and marine ecosystems, and at the continued decline in quality and extent of the world's wetlands;

Noting the conclusions and priorities for further action identified by the many technical workshops and presentations made at this conference, and recorded subsequently in this Declaration.

Welcoming the joint initiative of Wetlands International, and government authorities in the United Kingdom and The Netherlands, with the support also of Australia, Denmark, USA, Japan, Germany, Sweden, Ireland, Belgium, Switzerland, UNEP/CMS, UNEP/AEWA, FACE, and CIC and with the input of many other organisations and individuals, in convening the conference Waterbirds Around the World in Edinburgh so as to review the current status of the world's waterbirds;

The Conference Participants, assembled together in Edinburgh –

Consider that although significant progress has been made to conserve waterbirds and their wetland habitats leading to some major successes, overall there remain important challenges, which, together with uncertainties about implications of future changes, requires further efforts and focused actions;

Reaffirm that, in the words of the Ramsar Convention, "*waterbirds, in their seasonal migrations may transcend frontiers and so should be regarded as an international resource*" and "*that the conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action*" and accordingly **urge that** efforts between countries to conserve waterbird populations and their wetland habitats are extended, not only for the values that waterbirds have in sustaining human populations, but also for their own sakes;

Consider that flyway conservation should combine species- and ecosystem-based approaches, internationally co-ordinated throughout migratory ranges;

Acknowledge that the conservation and sustainable use of waterbirds and wetland resources requires co-ordinated action by public and private sectors, dependent local communities and other stakeholders;

Call in particular for urgent action to:

- Halt and reverse wetland loss and degradation;
- Complete national and international wetland inventories, and promote the conservation of wetlands of importance to waterbirds in the context of surrounding areas, especially through the participation of local communities;
- Extend and strengthen international networks of key sites for waterbirds along all flyways;

Board of Patrons (Harvey Nelson, Hugh Boyd, Geoffrey Matthews, Eckhart Kuijken, not on the picture Luc Hoffmann); the Opening Ceremony and the Conference venue.

Photos: Dougie Barnett

- Establish and extend formal agreements and other co-operation arrangements between countries to conserve species, where possible within the frameworks provided by the Conventions on Migratory Species, Biological Diversity and Wetlands;
- Fund and implement recovery plans for all globally threatened waterbird species;
- Halt and reverse recently revealed declines of long-distance migrant shorebirds through sustainable management by governments and others of human activities at sites of unique importance to them;
- Restore albatross and petrel populations to favourable conservation status through urgent and internationally co-ordinated conservation actions, especially through the framework provided by the Agreement on the Conservation of Albatrosses and Petrels;
- Substantially reduce pollution in the marine environment and establish sustainable harvesting of marine resources;
- Underpin future conservation decisions with high-quality scientific advice drawn from co-ordinated, and adequately funded, research and monitoring programmes notably the International Waterbird Census, and to this end, urge governments and other partners to work together collaboratively and supportively;
- Develop policy-relevant indicators of the status of the world's wetlands, especially in the context of the 2010 target, using waterbird and other data generated from robust and sustainable monitoring schemes;
- Invest in communication, education and public awareness activities as a key element of waterbird and wetlands conservation;
- Assess disease risk, and establish monitoring programmes in relation to migratory waterbird movements, the trade of wild birds, and implications for human health.

Urge that particular priority be given to capacity building for flyway conservation in countries and territories with limited institutions and resources, given that the wise-use of waterbirds and wetlands is important for sustainable development and poverty alleviation;

Strongly encourage countries to ratify and implement relevant conventions, agreements and treaties so as to encourage further international co-operation, and to make use of available resources including the Global Environment Facility in order to finance action required under this Declaration;

Consider that, with the long history of co-operative international assessments, waterbirds provide excellent indicators by which to evaluate progress towards achievement of the 2010 target established by world leaders in 2002, and to this end Call on the Conventions on Migratory Species, Biological Diversity and Wetlands, and other international agreements to work together and with other partners on such assessments, and in particular with Wetlands International to further develop the analytical content,

Dougie Barnett

Colin Galbraith presenting the Edinburgh Declaration.

of the triennial publication Waterbird Population Estimates and its use;

Stress the need for wide international dissemination of this Declaration and the technical outcomes of this Conference; and

Agree to meet again as a conference in ten years time to review progress.

Edinburgh, 7 April 2004

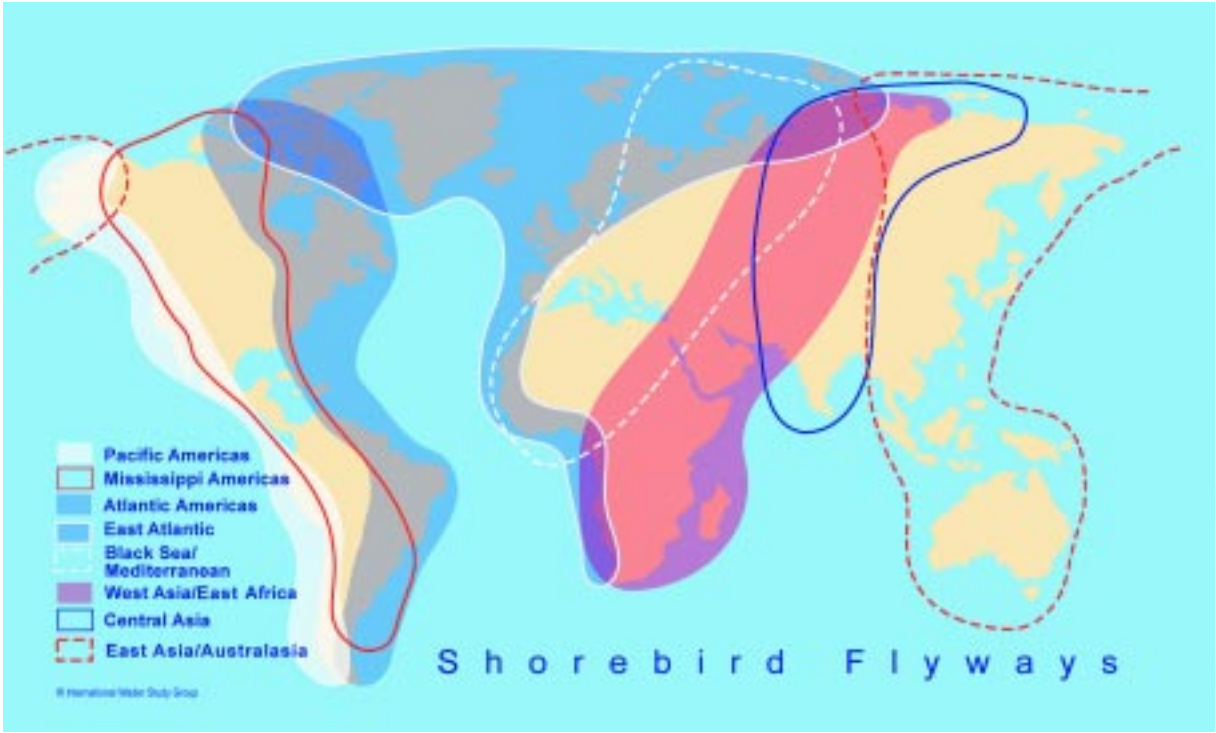
In support of the recommendations above, the Conference concluded the following:

- For the Flyways of the Americas, collaboration between North, Central and South America and Caribbean nations is developing, based on conclusions of the conference of nations to consider the status of migratory birds held during the VIIIth Neotropical Congress in Chile, and in the recent completion of a Waterbird Conservation Plan for the Americas. Despite more than a century of conservation efforts in North America and emergence of a shared vision for biologically-based, landscape orientated partnerships, it is clear that international co-operation amongst Pan-American countries sharing migratory birds should increase.
- In African-Eurasian Flyways, the generally good knowledge of waterbirds is not being effectively transferred into necessary national and local actions. Nor have conservation efforts led to maintaining or restoring the health of many waterbird populations, including globally threatened species. There are urgent needs to integrate waterbird conservation as part of sustainable development, to the greater benefit of local communities and other stakeholders dependent on wetlands as well as benefiting biodiversity. The African-Eurasian Waterbird Agreement (UNEP/AEWA) provides a good basis to achieve this.
- Intra-African Flyways are extremely poorly known and would benefit from greater attention.
- Many of the waterbirds of the Central Asian Flyway appear to be declining, although information on status and trends is generally poor. In most countries there has been little previous investment in conservation and low involvement of local stakeholders in the sustainable management of wetlands. An international framework for the development of conservation initiatives for migratory waterbirds in Central Asia is urgently required to promote co-operative action. Better information is needed to identify priority conservation issues and responses.
- The waterbirds of Asian-Australasian Flyways are the most poorly known, and the greatest number of globally threatened waterbirds occur here. This

flyway extends across the most densely populated part of the world, where there are extreme pressures not only on unprotected wetlands but also on protected sites. Effective protection of wetlands of major importance is a critical need, as in other regions of the world. There are huge, and crucial, challenges in ensuring effective wise-use of key sites, as well as ensuring that consumptive uses of waterbirds are sustainable.

- Conservation of pelagic waterbirds in the open oceans gives a range of unique challenges. The entry into force of the Agreement on the Conservation of Albatrosses and Petrels is a most welcome development, and its full implementation is an urgent need. Addressing issues of seabird by-catch, especially by illegal and unregulated fisheries remains a critical need to reverse the poor conservation status of many species, as is the general need to achieve sustainable marine fisheries.
- Most of the world's known flyways originate in the Arctic. The recent development of international co-operation between arctic countries is welcome, as is the recognition of the crucial need to involve local communities and their traditional local knowledge in waterbird management. Austro-tropical Flyways also require research.
- Climate changes are already affecting waterbirds. The consequences of climate change for waterbirds will be multiple, and will greatly exacerbate current negative impacts such as habitat loss and degradation. There is a need for wide-scale planning, at landscape and flyway scales, to reduce or mitigate the impacts on waterbird populations and their habitats. Research that explores a range of potential future scenarios will be required to underpin this planning and will need data from long-term monitoring and surveillance.
- The conservation status of non-migrant waterbird populations around the world in many cases is poorer than that of migrants, and these waterbirds generally have less focused international attention than migrants. Addressing conservation requirements of non-migrant waterbirds should also be given national and international priority.
- On a densely populated planet it is crucial that waterbird conservationists focus on their relationships with communities and governments as the means both of reversing the causes of poor conservation status, and of resolving conflicts with protected species. Adequately funded programmes of communication, education and public awareness need to be the core of all waterbird conservation initiatives.
- Science has identified the critical importance of a small number of key sites to long-distance migrant shorebirds and that human activities at some of these are responsible for recent dramatic declines in certain shorebird populations.
- Recent research has highlighted the genetic and demographic risks incurred by species that have small populations. These have implications for the design of species recovery programmes.
- The frequency and magnitude of disease losses among waterbirds (from emerging or re-emerging disease agents) have increased to the extent that they demand attention. These diseases not only affect waterbirds but have impacts on humans. Solutions require a multi-disciplinary approach.
- An integrated approach to the monitoring of waterbirds gives cost-effective identification of the reasons for waterbird population changes. There are good examples of the collection of demographic information and its integration with census data. Further such national and especially

General flyways of the world based on the migration of shorebirds/waders. (Courtesy International Wader Study Group/Rodney West).



WSG/Rodney West

international schemes should be strongly encouraged and funded.
- Systematic analyses for atlases confirm the value of ringing studies in assessing the conservation status of breeding, wintering and stop-over sites within flyways. To this end, there should be integration of data from conventional ringing and colour-marking, telemetry, stable isotope analyses and genetic markers.

Closing address made by HRH The Prince of Wales – Wednesday 7 April 2004


Dougie Barnett

Ladies and Gentlemen, I am conscious that I am appearing very much at the tail end of your conference and, by the look of the programme, you have clearly had a full and varied few days. So you are probably beginning to calculate how quickly you can join your own personal 'flyway' back home. But I am delighted that so many of you are still here and that, by all accounts, you have had such a successful conference. I am just relieved that I arrived in time to hear Dr John Cooper's riveting presentation.

Now, ladies and gentlemen, I am very far from being an expert on either albatrosses or petrels but, like many other one-time mariners, I have a very special affection for these remarkable birds. I remember so well standing on the deck of a fast-moving warship in one of the Southern oceans, watching an albatross maintaining perfect position alongside for hour after hour, and apparently day after day. It is a sight I will never forget, and I find it hard (no, I find it impossible) to accept that it might one day be lost for ever. Yet that does now seem to be a real possibility – unless we, and others around the world, can make a sufficient fuss to prevent it. In 1996, three of the 21 species of albatross were officially listed as threatened. Four years later, when I sat down to write an article expressing my concerns about the decline of these magnificent birds, the total of threatened species had risen to 16. Another four years on, and all 21 species are threatened. The albatross family is now the biggest single bird family with every one of its members under threat.

I don't need to tell this audience that the most potent force driving the members of the albatross family to extinction is indiscriminate long-line fishing, which is estimated to kill 100,000 albatrosses every year. One fishing boat reported more than 300 killed in a single day. But before I talk a bit more about that problem, I just want to say some thoroughly positive things.

First, this seems an entirely appropriate time and place to draw attention to the years of dedicated work by research scientists and their support crews, without whom we would know next to nothing about these most nomadic and elusive of birds. It must be hard and lonely work, carried out in cold, wet and thoroughly difficult conditions, and a very long way from home. But without the knowledge and data you take such pains to obtain there can be no coherent evaluation of either the scale of the problem, or the potential for solutions.

This scientific effort has been matched by BirdLife International and other non-governmental organisations, bringing these issues to the attention of a wider public. That is certainly how I first learnt of the scale of the problem and I suspect the same is true for many other people. There is, of course, a huge amount more to be done in terms of awareness-raising and advocacy.

Gaining awareness of the plight of a group of birds most people have never seen, and probably never will see, is a huge challenge. So I also want to mention the efforts of one remarkable man, who has – in his own inimitable fashion – taken up that challenge and is drawing attention to the issue of albatrosses and long-line fishing. John Ridgway, who may or may not like me to tell you that he is now 65, has sailed with his wife, Marie Christine, and a small crew from their home in northern Scotland to the Southern Ocean, following the circumpolar track of the Wandering Albatross. John and Marie Christine and their crew are having great success in engaging with all sorts of different audiences at each landfall, and generating remarkable publicity, most recently in New Zealand and the Falkland Islands. Their yacht, English Rose VI, is now headed for home. They expect to berth in London in June, where there will be further opportunities to raise the profile of this issue.

In view of all the scientific and voluntary efforts I have just mentioned, I am pleased to be able to say that at least some Governments are also alive to the situation and willing to commit to taking effective action.

An international agreement on the conservation of albatrosses and petrels (known as ACAP) came into force just two months ago. This was a huge achievement – especially as it has taken a very long time to materialise … ACAP is particularly important because it is legally binding on the countries that ratify it, and its emphasis on international co-operation is an essential first step to tackling the multiple threats to such a wide-ranging group of birds. The UK played a leading role in drawing up this key international treaty and was among the first to sign it. But ratification is the essential step. So I couldn't have been more pleased to hear that Mr Elliot Morley, who has been a passionate fighter for the albatross, had announced, earlier in this conference, that the Government has now ratified the agreement, without reservations and to a tight timescale. And I also want to draw attention to Elliot Morley's personal leadership on this topic, as someone with a deep understanding and concern for the issues.

Well, that was the good news. The bad news is that many countries with fishing interests in the Southern

Tony Palliser/BirdLife International

Sub-adult Black-browed Albatross.

Ocean still need to ratify the ACAP, and some of the most important appear unlikely to do so – for reasons which can only be guessed at. At the same time, the problem of illegal, unregulated and unreported fishing appears to be getting worse. There are believed to be more than a thousand of these substantial pirate vessels, operating under 'flags of convenience', recognising no rules and – with few exceptions – evading every sort of sanction and penalty available under international law.

Fishermen operating in responsible and well-regulated fisheries have adopted measures that almost entirely eliminate the deaths of albatrosses from longlining. Setting lines under water, or only at night, trailing a bird-scaring line and prohibiting offal discharge while fishing have all proved effective. Many fisheries also insist on the presence of observers on board to monitor results. The pirate vessels in the illegal fisheries, of course, take none of these measures. No-one knows how many albatrosses and petrels they kill every year, but the best estimate is that they are responsible for about one third of the total of around 100,000 deaths. But that is not the total of the environmental havoc they are causing.

One of the principal targets of the pirate ships is the Patagonian Toothfish. Sold under many 'consumer-friendly' aliases, such as Chilean Sea Bass in the USA and Mero in Japan, this valuable species is also very much under threat from over-fishing. Indeed, the Australian government has said that if fishing continues at current levels, the species faces commercial extinction. Living up to 50 years, and taking ten years to reach breeding age, it is a slow-growing creature which is being killed faster than it can reproduce. Just like the albatross, in fact, though even less visible.

Of course, it is much easier to be angry about the awful dual threat posed by the pirate fishing boats than to take effective action against them. I rather think that the Greenpeace report on this subject, which is based on intense investigation, is right when it concludes that the only way to prevent continued pirate fishing is to close ports to these ships, close markets to the fish they catch and penalise the companies that are their true owners and operators. I know that Elliot Morley now leads an OECD Task Force on Pirate Fishing and I wish him every possible success in finding ways to do all those things. I certainly don't think that any single measure is going to succeed when the economic incentives for illegal action are so high and the chances of being detected and prosecuted are so low. It also has to be said that political willingness to act is notably absent in some countries.

Agreements on vessel monitoring and catch documentation do exist for Patagonian Toothfish, and appear to be having some positive effects. But there always seems to be a hard core of countries that want to do as little as possible and as late as possible – and preferably nothing at all. When an International Plan of Action to tackle the problem of pirate fishing was being negotiated under the auspices of the United Nations, several countries made strenuous efforts to water down the draft provisions. In particular, the opportunity to take effective measures against the use of chartered vessels in illegal, unreported and unregulated fisheries was missed. I just wonder how many of those countries claim to be committed to 'sustainable development' at the same time?

Ladies and gentlemen, it would be hard to find a more direct impact of fisheries, whether legal or illegal, on seabirds than the losses the albatross family suffers at the hands of indiscriminate long-lining. But there are many examples of less direct effects all round the world.

Not far from here, in the North Sea, there is a sandeel fishery. It is now by far the largest single-species fishery in the North Sea, though not for human consumption – the sandeels are processed into fishmeal and oil, to feed livestock and farmed fish. Whether this so-called industrial fishing, targeting the bottom of the food chain, represents a sensible use of natural resources or not is a subject for another day. The point for now is that the Total Allowable Catch for sandeels for 2004 is 826,000 tonnes, despite the fact that last year the fleet was only able to catch around 300,000 tonnes (one third of its target). The fishing boat skippers simply couldn't find the fish to catch.

The seabirds evidently had the same problem. Kittiwakes are especially dependent on sandeels and last year the massive colony at the RSPB reserve at Bempton in Lincolnshire had the worst breeding season in 18 years of records. Many birds failed to nest at all and adults and chicks were clearly suffering from food shortage. Similar effects have, I know, been seen in the Shetland Isles. Here, seabirds had their worst breeding season for 25 years, with some

kittiwake colonies disappearing entirely and puffins and razorbills also seriously affected.

It is well known that the sandeel population has good and bad years, but there seem to be many more bad years than good. And there is growing evidence that the ecology of the North Sea is changing dramatically. The Sir Alister Hardy Foundation for Ocean Science, which has been monitoring plankton in the North Sea for more than seventy years, has established that higher sea temperatures have driven cold-water species of plankton much further North. They are being replaced by smaller, warm-water species that are less nutritious. Whether or not this is the cause of the dramatic fall in sandeel populations is not certain, but most recent studies show that rising sea temperatures, as a result of the changing global climate, will directly affect marine productivity – with as yet unknown impacts on fisheries and seabirds.

In the case of the sandeel fishery, there is little evidence of direct competition with seabirds. Indeed, one area where competition might have been a particular problem, known as the Wee Bankie and actually just offshore from here, has been closed to fishing for the last three years, to protect nesting seabirds – and this will clearly have to continue. In general, the fishermen and the birds seem to be suffering equally from the absence of their prey. But the sandeel is part of the food chain for other species too, including cod. I am told that at present cod stocks are so low that they are probably making little impact on the sandeels. But drastic measures are being taken to get cod stocks back to the levels of 20 or 30 years ago, and those measures should surely include ensuring that there will be enough sandeels in the North Sea for a recovered cod stock to eat.

There are plenty of complicating factors, but I find it difficult to believe that the sandeel populations of the North Sea will be able to support recovered stocks of cod and mackerel, a major industrial fishery and thriving seabird populations. In those circumstances it would be hard to argue that the industrial fishery should take precedence over human consumption fisheries and the needs of marine wildlife. Surely an 'ecosystem approach' to fisheries management requires fisheries to adapt to the marine environment, not the other way round?

Leif Nilsson (Sweden) receives the Conference Award for Waterbird Conservation from HRH Prince Charles.

Dougie Barnett

I think the lesson to be drawn from all of this is that we live in an increasingly interconnected world, in which actions have consequences – and huge actions have huge consequences. Before you point out that this has always been the case, let me explain what I mean – and I have tried to say this on various occasions in the past. It is simply that we now have unprecedented technological capacity to change ecosystems, very directly and very quickly, but also to monitor many of the detailed consequences of our actions. Man has always been able to change his environment, but has only comparatively recently gained the capacity to do so with such speed and finality. I would argue that this means that the need for wisdom and restraint in our actions has never been greater. I would also argue that the need has never been clearer for all the talk (dare I say "hot air"?!) about sustainability to be translated into action and not just the repetition of "business as usual with little, brass, sustainable knobs on".

Our ancestors were able to hunt many species of whales to the edge of extinction and they did make the great auk extinct. But they did so over hundreds of years and without a fraction of our capacity to know – simultaneously – precisely what was happening. To give just one example, nylon longlines 80 miles long, containing thousands of baited hooks, are doing unprecedented damage, at unprecedented speed, to albatross populations. And, as Dr Cooper pointed out just now, satellite monitors enable us to know a great deal about what is happening.

In many ways the albatross may be the ultimate test of whether or not, as a species ourselves, we are serious about conservation: capable of co-existing on this planet with other species. Or are we going to sacrifice what's left of wisdom on the altar of short-term gain? None of the short cuts and quick fixes that might help some other species will help the albatross. No nature reserve will ever be big enough to encompass more than a fraction of such a nomadic bird's total requirements. Captive breeding and stock enhancement have no conceivable part to play. No corporate sponsor or private philanthropist can do any more than raise awareness of the problems. And no single nation state can take any effective unilateral action. Nor is there much time left – the clock is ticking very, very fast. Even if mortality from long-lining were, somehow, to be stopped overnight, the rate of decline in the populations and the exceptionally slow rate at which albatross species breed are such that recovery would take many decades.

To me, the plight of the albatross is a symbol of the emptiness of the rhetoric surrounding so-called 'sustainable development'. Will it take the complete Dodo-like disappearance of this noble winged creature to bring us to our senses? Or are we to remain blind and deaf to the appalling tragedy unfolding, out of sight and out of mind, in the vast foam-flecked spaces of the Southern Ocean?

Whatever the case, it would be a shameful travesty of our duty as stewards of this increasingly fragile globe if we couldn't find a way of living our lives in such a manner that these magnificent birds can continue to share the same planet with us. Ratification of ACAP is an important step in that process, but the reality is that in the current dangerously critical situation the only effective actions will be those that are implemented immediately, and continued indefinitely.

Ladies and gentlemen, I am sorry to have dwelt so much on a single group of birds, and on just one issue. I know that you have covered a huge range of subjects relating to waterbirds during this week, and that some of you will be experts in species that are just as desperately threatened as the albatross.

If there had been time, I would have welcomed the opportunity to talk about subjects such as the importance of wetland habitats and the many adverse consequences of intensive agriculture around the world. Indeed, some people who have heard me speak before may be surprised at my ability to resist that particular temptation!

Forty years after one of the very first gatherings of waterbird specialists took place at St Andrews, here in Scotland, your work remains hugely important. Reviewing past efforts, considering key questions for future research and co-ordinating future conservation actions are all essential tasks. I hope you feel this particular conference has been worthwhile, I applaud your efforts and I look forward to seeing the implementation of your thinking in years to come.

Opening address by Elliot Morley MP, UK Minister for Environment and Agri-Environment – Sunday 4 April 2004

Dougie Barnett

Ladies and Gentlemen, it is an enormous pleasure to be here. Thank you to John Markland, Chairman of Scottish Natural Heritage, for extending such a warm welcome to Scotland. On behalf of the UK Government, I'd like to say that we have been delighted to play our part in the organisation of this conference and to welcome you to our shores. I'd like to extend a particular welcome to the Dutch Minister, Professor Cees Veerman.

It is quite extraordinary that this conference has attracted almost 500 people from about 90 different countries round the world – as such it is certainly the largest assemblage of waterbird experts ever seen in the UK. When the first European Meeting on Wildfowl Conservation took place just up the coast from here, in St Andrews in 1963, there were just 81 participants from 17 countries. The increase in numbers, and the representation here from right around the world, is a real measure of how our international concern for waterbirds and their wetland habitats has grown over the last 40 years.

I must also say how especially honoured we are by the presence of some of the participants of that meeting in St Andrews, here today, continuing to give their support and expertise.

The UK is critically important for migratory waterbirds in the overall pattern of flyways. This is why we believe that it's vital to participate fully in the Bonn Convention and its African-Eurasian Waterbird Agreement. The potential strength of that Agreement is manifested in the fact that it has no fewer than 117 Range States and is growing fast with already 46 Contracting Parties.

We were honoured to host a meeting of the Technical Committee of the African-Eurasian Waterbirds Agreement in North Berwick last week and are committed to the implementation and review of international action plans for species that are specially important to us in the UK, such as the Bittern, the Corncrake, the Roseate Tern and, – for rather different reasons, – the globally-threatened White-headed Duck which is threatened in Europe by the invasive Ruddy Duck, introduced by accident in the UK many years ago. We are implementing a strategy to deal with the Ruddy Duck, which could be seen as the opposite of conservation!

I am especially pleased that UK expertise is helping to assess the habitat priorities for waterbirds in Africa and South-East Asia, including the identification of sites of international importance, and applying restoration and rehabilitation techniques for waterbird habitats – especially those affected by invasive aquatic weeds, a big problem internationally and in the UK. In addition, funding from the UK's Darwin Initiative has been able to help develop waterbird monitoring in eastern Africa. This project stands to make major contributions to wetland and waterbird conservation in that part of the AEWA region.

The Ramsar Convention is also very dear to our hearts in the UK. We have 243 Ramsar sites covering 6% of the land surface. These sites, and others of European importance, are home to 85% of our breeding seabirds, and about half of all the waterbirds over-wintering in the UK. As you will no doubt hear in some of the presentations to come, the UK has many different types of wetlands, from peatlands to estuaries, and from rivers to artificial reservoirs, and each of these habitats is important for different assemblages of waterbirds. We have examples of most of these wetland types within our national Ramsar network, and the UK is currently undertaking a strategic review to identify gaps in network coverage through a detailed audit of all the wetlands in the UK.

The designation of such sites is, of course, just the first step in ensuring their long-term wise-use. In a densely populated and highly developed country such as ours,

protected areas face many habitat management challenges. In common with the Netherlands we find that our wetlands are under a whole range of threats. The precise issues may be slightly different from those in other parts of the world, but they are no less acute. The value of international conferences such as this one is the opportunity to share experiences and solutions, and so to learn from each other. I do urge you all to make the most of the opportunities presented in the next few days for such exchanges. This will undoubtedly help us all to deliver better, and more focused conservation.

Throughout your conference, over the next few days you will hear a great deal about the problems faced by migratory waterbirds and the serious conflicts arising from human activities in many parts of the world. Amongst the most serious are of course the threats to some of our especially extraordinary and spectacular migratory seabirds – the albatrosses and petrels of the southern oceans. Only international action can help to address the issues of long-line and illegal fishing, which are the principal threats to them.

So I am delighted to be able to announce today that the UK Government has just become the 6th state to ratify the Bonn Convention's Agreement on the Conservation of Albatrosses and Petrels. Our instrument of ratification was deposited with the Australian Government on Friday 2 April. By happy coincidence the Secretary of State for the Environment, Food and Rural Affairs, Margaret Beckett, was on a visit to Australia at the time and was able, during her visit, to reinforce our commitment to this treaty – the UK having played a key role in drafting the Agreement and was amongst the first to sign it. Our ratification covers the UK and three Overseas Territories – the Falkland Islands, South Georgia and the South Sandwich Islands, and the British Antarctic Territory. We will be working hard to extend the ratification to a fourth Overseas Territory, Tristan da Cunha as soon as possible. We also look forward to participating in the first Conference of the Parties when it is convened in the coming year. Our aim, together, must be to make real changes to the fortunes of these amazing birds.

Gannets at Bass Rock.

Ward Hagemeijer

We must bring more and more people to an understanding of the challenges for biodiversity that we face. The plight of the mythical albatross connects peoples across oceans and between continents and captures the poetic imagination. But it can also generate more down-to-earth instincts! I was very interested to discover that the Conservation Foundation is working with Ladbrokes the bookmakers to help raise money for albatross research through what is called 'The Big Bird Race'. This is a serious scientific satellite tracking project based in Tasmania to find out where the Tasmanian Shy Albatrosses migrate. But it's combined with an innovative approach to betting, in which on-line clients back an albatross to win the migration race. This gives a whole new meaning to 'having a flutter'.

This idea could bring a whole new section of society to an interest in biodiversity and to research and data collection. We have come to call the mass involvement of people in research as 'citizen-science' – and the more of this we can encourage the better! Only by engaging the understanding and involvement of people at large can we hope to make the large-scale changes needed to slow the progressive loss of biodiversity worldwide. There are now many tools that we can use – with the Internet, web cams and satellite tracking – to bring these issues to a wider public.

Many of you will know what a strong tradition we have in the UK of using volunteer effort to collect biodiversity information. I'm pleased to say that I myself am a volunteer and have been involved in making low-tide counts on a monthly basis. This helps me to get out on the first Sunday in the month and talk to other enthusiasts and landowners and makes a contribution to the database. Time series data is essential to monitor population trends and to try and establish what the influences are – and here we have had volunteers collecting data for over 50 years and there are between three and four thousand of them now who collect regularly. For example, we have discovered through our Wetland Bird Survey (or WeBS) monitoring data an early real manifestation of climate change. With increasingly mild winters, it seems that many waders and other waterbirds are not having to fly so far west to find mild winter feeding conditions. Our volunteers are discovering declines in the numbers of waterbirds on estuaries on the west coast of the UK, and commensurate increases on the east. Perhaps in the future – with climate change – these migrants will increasingly over-winter in Denmark and the Baltic. We can see these changes going on, and must consider their implications for conservation management.

I am sure that every one of you is aware of the immediacy of the challenge we face on global biodiversity loss – potentially as a result of long-term

climate change – but also of course from the direct and pervasive influences that are apparent here and now. The global community has set itself the target of substantially reducing the rate of biodiversity loss by 2010. Conferences like this one are vital in exchanging ideas, understanding the problems and galvanising initiatives as we strive to achieve that objective. But we must not deceive ourselves into thinking that conferences themselves are a substitute for real action on the ground. I urge you, as you listen to the speakers this week, to consider how their messages can be translated into new, concerted activity that makes a real difference. It is the task of all of us, politicians, scientists and the research community and NGOs to make sure that our work engenders real conservation activity.

I hope that, – just as we look back on the first European wildfowl conference, 40 years ago, as a key point when Governments and NGOs began to work seriously together in partnership internationally to address the conservation problems of waterbirds and wetlands – so we will reflect on this truly 'Global' Flyway Conference as a defining moment when the 2010 target came clearly into sight and became realisable.

The role of migratory waterbirds as indicators of wider ecological change is clear and important. They can be signals of broader environmental threats. Let us make sure that our data is robust and our actions are effective to serve the wider biodiversity community and, most importantly, the people we represent.

Whilst it is absolutely essential for national governments to make decisions in their own national contexts, they must not forget that action in one country impacts on conservation in another. It is wonderful to see so many countries gathered here, so I wish you a very successful conference – one that will help and guide our decision-making.

Opening address by Cees Veerman, the Netherlands' Minister for Agriculture, Nature and Food Quality – Sunday 4 April 2004

Dougie Barnett

Ladies and Gentlemen, recently, on a farm in Southwestern France, I heard the high-pitched wail of dozens of Common Cranes as they made their way, far up in the early spring sky, from their wintering sites in North Africa to their Siberian breeding grounds.

As I watched the birds fly steadily North, I stood once again in awe about the unfathomable phenomenon of bird migration. What makes these birds fly thousands of miles along well-defined routes,

Gerard Boere

Dutch floodplains with geese.

using the same wetlands as stop-over points for many decades? What moves the Arctic Tern each year to make the 35,000-kilometre round trip from the Arctic to the South Pole and back?

As we gaze deeper and deeper into the Universe, observing galaxies and stars billions of miles away, we haven't even begun to understand the mechanisms that cause bird migration. That is a humbling thought, teaching us profound respect not only for the tiny Arctic Tern on its epic annual journey, but for nature as a whole.

Over the past decades, we have witnessed a remarkable shift in the relationship between nature and man. Even 40 years ago, mankind was ruling the roost, viewing nature as an inexhaustible wellspring of resources that man could mine as he saw fit.

At the dawn of the 21st century, much of man's self-instilled authority over all things living has evaporated. Mankind has learned to see itself not as nature's supreme ruler, but as part of it. A vulnerable part, for there are limits to the extent that we can exploit our natural resources. If we exceed those limits, we now understand, our very existence on this planet may well be in jeopardy. We have discovered the principle of sustainability.

So we have a duty to take care of nature in all its richness and variety. For in my view, taking care of nature equals taking care of mankind itself. If you think this sounds as if I'm talking about nature conservation as an act of self-interest, you are partly right. But taking care of our natural environment is also an intrinsic duty. We are, after all, responsible for husbanding the resources that have been entrusted to us.

This is where biodiversity kicks in. Preserving and protecting it is of the utmost importance, because it is the measure of the richness and variety I was talking about only a minute ago. And it is well understood these days that the richness and variety of nature is the very cornerstone of it. Without biodiversity, our natural environment would not be functioning, or at least not be functioning that well.

Preserving and protecting biodiversity is the common responsibility of mankind.

National governments play an important role, to be sure. They may reflect, in the words of Jean-Jacques Rousseau, the volonté générale, or popular will. But governments also have an important trailblazing role. They must stir up popular support for policies that may seem tough or far-fetched at first sight. This is why governments around the globe have a direct responsibility in the quest to save biodiversity.

However, governments cannot go it alone. We need the co-operation of international bodies, regional and local authorities, non-governmental organisations, the business world and individual citizens. Only then will we succeed in tackling the global problem of the loss of biodiversity.

The growing effort to protect migratory birds is part of the worldwide struggle to halt the loss of biodiversity. It perfectly illustrates the necessity of co-operation: it makes no sense for one single nation to protect and preserve wetlands and other staging posts if the same is not done in other countries further up and down the line.

Co-operation, I am pleased to say, has become the norm in migratory bird conservation. It is one of the pillars of the 1971 Ramsar Convention. The Bonn Convention, whose 25th anniversary we celebrate this year, is exclusively dedicated to migratory species, birds figuring prominently among them. And then there are the broader frameworks such as the Convention on Biological Diversity and the Millennium Goals we all agreed upon during the 2002 World Summit on Sustainable Development in Johannesburg.

I referred earlier to the mysterious and fascinating forces that trigger bird migration. But all this mystery and fascination should not cause a kind of awestruck paralysis. For despite our lack of understanding, there is a lot we can do to let the Common Crane, the Atlantic Tern and many hundreds of other species to travel the skies unhindered.

Lesser White-fronted Goose, Valdak marshes, north Norway.

Ingar Jostein Oien

We know, for instance, that strings of connected sanctuaries, such as wetlands, are of the utmost importance to migratory birds. In the Netherlands, creation of a National Ecological Network is one of our priorities – a long slog indeed, for work on it began in the early 1990s and is due for completion in 2018.

Work on an analogous Global Ecological Network – presumably an even longer slog – is underway. International flyways, the routes that migratory birds follow, are an important part of this network. The Dutch government strongly supports the creation of this global network and its concomitant flyways.

One Dutch initiative has ensured the protection of the East Atlantic Flyway from the vast tundra in northern Siberia to the wetlands in the Netherlands and from there on to Africa. This flyway has official status since the African-Eurasian Waterbird Agreement came into force in November 1999.

But we also support flyways that are far from our doorstep: we are participating in the development of the Central Asian Flyway and the Flyways of the Americas. We do this inspired by the spirit of co-operation and by a strong conviction that we carry a global, if shared, responsibility.

So far, I have been stressing preservation and protection, conspicuously avoiding the words ‘sustainable use’. But since one of the objectives of this conference is the presentation of an ‘update on the harvest and sustainable use of migratory waterbirds’, I feel must briefly address the issue.

Words like ‘harvest’ would make any true-blue environmentalist shudder. And indeed, the hunt on most migratory waterbirds is forever closed in the Netherlands. But I stress that we understand and respect the needs of other peoples, whose livelihoods depend, for instance, on duck and goose hunting. As I said before, man is part of nature and that implies us making use of its ‘products’. The vital point is to emphasise the sustainability of such harvesting activities.

At the outset of this talk, I spoke about the past, when man was lording it over nature. I discussed the relatively recent shift in mankind’s attitude towards its fellow creatures. In conclusion, let me give one example of that changed relationship.

As you may know, my country has been seriously hit by Avian Influenza last year. There are strong suspicions of a link between bird migration and outbreaks of the disease. In the past, we might have opened the hunt on migrating birds in order to curb Avian Influenza. Nowadays, we employ monitoring and early warning systems. Simultaneously, we are studying ways to adapt the management of our chicken and duck farms. The simile is probably inappropriate here, but this way we are killing two birds with one stone: the migratory birds fly on, while our farms are protected from Avian Influenza.

It had been a pleasure speaking to you in Edinburgh, a city 'Crowded with Genius', to quote the title of a recent book on the Scottish Enlightenment of the 18th century. It has also been a pleasure for my Ministry to be involved in the preparation of this important conference, in close co-operation with Her Majesty's Government, the Scottish Executive and Wetlands International, where the idea of this conference was originally conceived.

I particularly want to thank Professor Colin Galbraith, the chair of the Conference Steering Committee, for his unstinting efforts to make this conference a success. I wish Professor Galbraith and all other participants a fruitful conference, whose outcomes will help migratory birds, after all our fellow creatures, to continue their age-old journeys along the flyways of the world.

Thank you.

Closing address by Allan Wilson MSP, Deputy Minister for Environment and Rural Affairs – Wednesday 7 April 2004

Dougie Barnett

Your Royal Highness, Conference Chairman, Delegates. I must open my short address by expressing our gratitude and appreciation to His Royal Highness. Not only for being here today but for sharing with us his expectations as to what this Conference might deliver. In closing this Conference, I offer delegates my two challenges for them to take home, to all parts of the globe.

Everyone here today has been charged with the common duty to care for the natural world. We will do that, not for our benefit but for the generations who will follow us.

We leave here today with the Edinburgh Declaration and the clearest of messages that we all have a common responsibility to protect and conserve our waterbirds. To do that, we must be open with our technical knowledge and expertise. The sharing of knowledge is not an optional extra: information and expertise must be exchanged to help preserve the world's waterbirds.

Over 80 countries are represented here today – what of the other countries elsewhere in the world who either couldn't be here or who may not have the resources to take forward the achievements of this Conference? Will you give them the support they need? That is a further challenge laid down by this Conference.

The first challenge I offer is one that only those here can achieve. I ask you to create the opportunity when you go home, and are speaking with your colleagues about your week in Scotland, to consider how YOU are going to make the Declaration work. The Edinburgh Declaration is an important step but at the end of the day, it is only a bit of paper or the text on the screen of a computer monitor. Your task is to turn the words of the Declaration into action.

Conservation is about engaging with others. And not just those who share your views on what nature conservation is and why it is important. Some outside this Conference may see your discussions this week as a threat to them. Don't ignore them. Engage them. Your Conference has focused on the links between people and nature, and has looked at issues such as over-crowding and development and how they can affect both man and species.

We cannot ignore the inter-relationship between man and the other species which inhabit the planet. We need to work with others, many of whom do not share our nature conservation objectives, if we are to ensure that biodiversity is maintained throughout the world. That is the second challenge I set before you and I recognise that it will not be easy to achieve. It is one which we in Scotland have to tackle and we still have much to do to demonstrate the benefits which nature conservation brings, in ecological and in economic terms. That effort must be made and I know that Scotland is not alone in facing that issue.

There has been some very positive press coverage of this Conference. The Scottish Executive too has a positive message to convey in relation to Scotland's contribution to conservation at a national, European and international level, not least through our achievements in the Nature Conservation (Scotland) Bill. This Bill is making good progress through our Scottish Parliament and I expect the measures will be law later this year.

The Bill introduces a wide range of initiatives which are good for the natural environment and for waterbirds. New protective measures for both species and protected habitats are core elements of the Bill. Above all, the Bill recognises the significance of conserving the biodiversity of our planet.

In drawing to a close, I'd like to repeat the pleasure I had to meet you all on Sunday and welcome you to Scotland. I know for many of you it was your first visit to the United Kingdom and I thank you for your contribution to the Conference.

Like the migratory birds you have come to Scotland to discuss, I hope that your flyway route home is safe and secure, and that the habitat to which you are returning is warm and welcoming!

The Conference is now over. Let its ideas, its creativity, its links continue. I wish you all the very best for the future and wish you a safe journey home.

Thank you.

Summaries of plenary presentations to Waterbirds Around the World

Dougie Barnett

A short history of waterbird conservation

Professor Eckhart Kuijken, Institute of Nature Conservation, Belgium

For over a century, the vision and creativity of dedicated naturalists has been inspirational and crucial in the evolution of waterbird conservation around the world. Many decades ago the spiritual and social value of conservation was recognised. Friendships between early pioneers developed into more structured active collaboration and led to the realisation that scientifically based international action was essential. In addition to the traditional ornithological or other 'biological' conferences, specific meetings on nature protection were organised and presented valued opportunities to develop broader partnerships and to develop international organisations, such as IUCN.

Network concepts and the identification of key factors affecting waterbird populations and wetland condition emerged in the 1940s (e.g. the International Wildfowl Research Institute, later called Bureau). The collection of regular monitoring data such as midwinter counts remained a central focus of the former IWRB, now Wetlands International.

After an inspiring MAR-Conference in the Camargue in 1962, the meeting of a small number of highly dedicated conservationists in Ramsar, Iran, in 1971 was pivotal and led to the establishment and global acceptance of the Convention on Wetlands. Although its accent was the safeguarding of wetland habitats, the Convention pioneered the concept of 'wise use'. This has been hugely influential in most conservation activity that has followed. Indeed, 'wise use' was also included in the Bern Convention (1979) and was translated at the United Nations Conference on Environment and Development (UNCED 1992) in Rio de Janeiro as 'sustainable use' or 'sustainable development'.

"We recognise the intrinsic value of biodiversity, but this concept remains difficult to explain and even more difficult to bring into practice"

The Convention on Biological Diversity (CBD), was accepted during this world summit, although

pessimism exists about achieving CBD conservation goals before it is too late (see 'Countdown 2010' initiative). Fortunately, there are close links between CBD and the Convention on Wetlands, reinforcing the common aims in favour of waterbirds and wetlands.

Monitoring is a fundamental conservation tool and we now have very impressive coverage around the world, with the International Waterfowl Counts representing one of the most valuable global datasets. Well planned research of a high standard is also an essential basis for good decision making. New conservation techniques are emerging and we need to debate the ethics of several actions, for example the introduction of plants and animals into areas beyond their natural range, and the consequences of invasive non-native species.

"Let us truly integrate economy and ecology, science and policy, nature and culture"

International links related to waterbird research and management continue to be strengthened; those with Africa and Russia, through the African-Eurasian migratory Waterbird Agreement, are more recent and we need to cultivate these networks and join forces in using the excellent data and knowledge available from these and other countries. There are exciting developing conservation strategies within several regions of the world, but global threats such as climate change and sea level rise are increasing. We should especially strive to influence land-use policies because of their impacts on the environment, using waterbirds as relevant bio-indicators. It is our duty to develop a new language with the aim of truly achieving common acceptance of conservation in everyday life. We are learning to understand both ecological and social mechanisms and we must now communicate values in order to introduce effective inclusive management approaches with local people: wise use.

Snapshots from fifty years of IWRB/Wetlands International history.

North American Flyway Management – a century of experience

Paul R. Schmidt, US Fish and Wildlife Service, USA

There is a long history of waterbird conservation in the USA, with a century of co-operation and legislation. The awakening of the conservation movement dates back to 1900 and the first international agreements for migratory waterbirds were established in 1916. Through the 1920s and 1930s legal measures for hunting and then habitat protection were introduced, the latter focused on land acquisition and was especially important for wetland conservation.

In the 1940s the first flyway level co-operation began, incorporating administrative divisions to ensure clarity in approaches. Then in the 1950s surveys became the focus, enhanced by technological advances and aerial surveys became central to understanding waterbird populations in North America. Surveys were conducted on bird populations, habitats and harvesting. Each year, tens of thousands of miles of aerial surveys are done. In the 1960s the roles of management and research came to prominence, and in the 1970s science was clearly driving management decisions.

In the 1980s the forging of partnerships led to establishment of wider agreements, such as the North American Waterfowl Management Plan, which has also been influential for other species. The 1990s saw the development of other continental partnership efforts to conserve other species groups such as Partners in Flight (land birds), Waterbirds for the Americas, and the National Shorebird Plan. Additionally, an effort to integrated population monitoring began to take root.

Conservation agreements are living, evolving and dynamic measures and in 2000 the North American Bird Conservation Initiative was developed between USA, Canada and Mexico with the aim of integrating science and partnerships in management to deliver bird conservation for the benefit of society. The National Wildlife Refuge System was begun in 1903 and birds have been a primary influence on its development. International agreements like the Western Hemisphere Shorebird Reserve Network (WHSRN) have drawn upon this network. WHSRN is an enormous partnership combining science and voluntary participation in site based protection.

"Successful wildlife conservation demands federal leadership"

Current initiatives like IBA North America are raising awareness further and identifying critically important sites. Successful conservation demands federal leadership in any country – this has been achieved through the United States Fish and Wildlife Service in the USA. Challenges facing conservation are more complex today than a century ago; there are many continued pressures, of which habitat loss remains the most significant, but there are new pressures such as disease, for example West Nile Virus in North America.

The USFWS vision is to combine science and landscape-scale partnerships to deliver the full spectrum of bird conservation and in doing so lift human spirit and enrich human lives for generations to come.

African-Eurasian flyways: current knowledge, status and future challenges

Dr Nick Davidson, Ramsar Convention, Switzerland and David Stroud, Joint Nature Conservation Committee, UK

In the African-Eurasian region the international conservation framework includes Ramsar with 92

Geese on Owens Bay.

J. Jave

Alyn Walsh

Releasing individually marked Greenland White-fronted Geese Anser albifrons flavirostris *at Hvanneyri, west Iceland as part of the long-term international study of this population.*

Parties in the region; Convention on Migratory Species with 69 Parties; and the African-Eurasian Migratory Waterbird Agreement signed in 1999 and with 46 (39% of all countries) Parties in the region.

There is a vast amount of knowledge on waterbirds, but poor information on scarce species – one third of all publications from the region are on just five common species. There is good information on migratory and population status at all scales and long-term trends are available for many species, again at different scales. There is also good information on management of the flyway. There are 307 waterbird species in the region (35% of global number), with 762 different populations. Of these populations over 50% are migratory and 20% are non-migratory populations in African islands.

AEWA covers 235 species with 497 populations. Flyways differ between taxa and different populations of the same species do overlap – these overlaps are poorly understood. There are regional differences in our understanding of population status and trends and, while we have this information for many species in some regions, the estimates are often broad ranges and the trends based on expert opinion. We are neglecting resident species, especially in Africa. Can we develop indicators to assist us in understanding trends? Two forms may be useful: a 'process' indicator – progress in Ramsar designations; and an 'outcome' indicator – status of populations.

"Overall, only one-fifth of waterbird IBAs in the African-Eurasian region are designated as Ramsar sites"

The aim for Ramsar designation is to establish a coherent and comprehensive network. In the African-Eurasian region there is good designation coverage, representing 73% of the world's Ramsar sites. However, there are gaps: just six countries have designated 50% of these Ramsar sites and 35 countries, many of which are in Africa, are yet to designate a site. An analysis of relevant Important Bird Areas (IBAs) shows that only 24% in Europe are yet Ramsar sites, 25% in the Middle East and only 14% in Africa. Within the flyways, management planning is generally poorly developed.

Outcome indicators depend on good knowledge of populations and trends – simple aggregated indices may not give a good picture and we need caution when developing and using indicators. However, we can draw some conclusions in the region – overall population status is declining, with more populations declining than increasing. Very few families are doing at all well. There is variation between families and between flyways, but in particular many cranes, rails, and ibises and spoonbills are declining.

There are few analyses of what is driving declines, but we can use ecological and geographical groupings to gain some ideas, although even within groups some species are declining and others increasing. For long-distance migrants super-site dependency may be an issue; for example, there appears to be a link between high spring staging dependency on the Wadden Sea and declines, which may be a result of habitat degradation (over-fishing of shellfishery), but we need to do more to understand these links, and why some populations are increasing.

"Our science base is good, but we may not be using it fully – we need to be more creative with our data and analyses to tell clear stories to decision-makers"

Overall, continuing habitat loss and degradation remains the primary concern, but climate change is an increasing additional pressure. Many of our globally threatened species are in decline and we have to question whether species action plans are an effective response. We also need to improve access to data.

Long-term conservation is still not achieving its goals. Maintaining and improving the health of wetland ecosystems is essential, in the context of sustainable development being the key global aim. However, within the region there are considerable contrasts and in Africa human well-being and poverty reduction are priorities – waterbird research and conservation needs to be seen as relevant to these overwhelming needs, but will only be achieved in the context of maintaining the services provided by ecosystems to people.

Successes and challenges of promoting conservation of migratory waterbirds and wetlands in the Asia-Pacific region: nine years of a regional strategy

Dr Taej Mundkur, Dr Lew Young and Dr Doug Watkins, Wetlands International

The Asia-Pacific flyway is just one of our ten global flyways, but the region is home to 30% of the global human population. Many countries in the region are enjoying economic growth, but this brings added pressures to habitats and birds.

Hunting is crucially important in the region, but is unsustainable. There are many bilateral agreements in the region but they are not meeting their aims. A meeting in Japan in 1994, at which 18 countries were represented, was pivotal and led to the establishment of the Asia-Pacific Migratory Waterbird Conservation Strategy (MWCC), which was ratified by 19 countries at Ramsar CoP in 1996.

"When sites are added to the network there is a nomination ceremony, aimed at raising awareness and instilling pride"

Coastal USA salt marsh, Spartina Grass.

George Gentry

MWCC has three strands; shorebirds, cranes and Anatidae, with three specialist groups taking forward implementation of the plan. The strategy led to development of the Central Asian Flyway Action Plan, with actions plans for both single species and for species groups. The plan is synergistic with other international mechanisms and strategies. A task force for globally threatened species has been formed. MWCC and its underpinning approaches is a site based approach with the expectation that a country will benefit from site designation.

"The ability to increase capacity for site management is crucial"

There has been much voluntary input from other countries – this is highly valued. Information exchange has been a high priority with publications produced in many different languages.

The harmonisation of the MWCC with other mechanisms has been essential and we regularly consult with Ramsar Bureau, BirdLife International and others on our work – international expertise is highly regarded. Funding in the region remains a major challenge as conservation is not a high priority. MWCC is a WSSD Type II partnership initiative which allows countries to sign-up and provide local input to achieve sustainable use of wetlands. The future aims of MWCC include signing of more governments, adding more protected sites to the network, increasing support to local managers, improving benefits to species groups and also to local communities, and to encourage international networking at varied scales. We acknowledge the support of the governments and people of Japan, Australia and the USA, and Wetlands International.

Migration in balance: tight ecological margins and the changing fortunes of waterbird populations

Professor Theunis Piersma, Netherlands Institute for Sea Research/University of Groningen, The Netherlands

The status of over 50% of all shorebirds is unknown, but from known trends three times more species are declining than are increasing. Research on the Red Knot has demonstrated the importance of understanding pressures within an entire flyway.

Red Knot are obligate shellfish eaters, migrating from tundra breeding grounds to intertidal areas rich in food. Significant declines were detected in the *rufa* population in wintering grounds in southern South America. Evidence led to the staging grounds in Delaware Bay where the eggs of the Horseshoe Crab are important food for migrating birds. Birds departing from Delaware have declined in condition (mass) in recent years and this is linked to over-fishing of the crabs. This decline in condition has caused higher annual mortality rates and survival has almost halved since 1999. Life expectancy has dropped from 7.7 to 2.2 years. The observed declines are as those predicted by modelling.

"Research on Red Knot demonstrates the importance of understanding pressures within an entire flyway. These projects provide a stark demonstration of the importance of staging areas to migratory birds and super-networks must be coherently managed"

The gizzard of the Red Knot is relatively large compared with other shorebirds as they eat shellfish whole. Gizzard size reflects prey quality (meat to shell ratio) and changes in relation to types of prey taken. Research on *islandica* Red Knot in the Wadden Sea has shown that there is a seasonal change in gizzard size; it is small during summer as they feed on soft-bodied invertebrates so on arrival at staging grounds it is small. Its size increases over the autumn to peak in mid winter while birds are feeding solely on shellfish. Wadden Sea prey quality has declined since the early 1990s due to cockle dredging – areas repeatedly dredged have poorest quality cockles. Using ultrasound techniques we have studied gizzard size in Wadden Sea Red Knot – arriving birds now develop larger gizzards, but this response has been limited and many birds have gizzards that are too small to handle the poor quality prey. Annual survival has declined in response.

The implications of climate change for waterbirds

Dr Max Finlayson, Wetlands International, Australia; Habiba Gitay, Australian National University; Maria Bello, International Water Management Institute, Sri Lanka; Rick van Dam, Environmental Research Institute of the Supervising Scientist, Darwin, Australia; and Iain Taylor, Charles Stuart University, Albury, Australia.

"Climate change is happening. Weather patterns are becoming more variable. Wetland habitats and waterbirds are already under pressure – climate change will significantly increase this pressure"

Our data are inadequate. Risk assessment is a powerful tool for assessing our priorities. Land and oceans have warmed, rainfall patterns have changed and sea levels have risen.

The Inter-government Panel on Climate Change (IPCC) published statistics in 2001 – these climate changes are primarily due to human activity over the last 50 years. We are beginning to detect the effects of climate change on biodiversity, some of these are visually dramatic such as coral bleaching. Land areas are warming faster than oceans, but the degree of warming is high in northern latitudes. Extreme weather events will become more frequent and this will have major impacts on wetlands and waterbirds.

"By 2080 we may have lost 20% of our coastal wetlands to sea-level rise"

Both direct and indirect effects, the latter through hydrological changes, will be evident. The role of wetlands in water cycling and management will change. Some systems will cope, some expand, but others will be lost. Traditional indigenous human communities will be vulnerable and species dependent on coastal wetlands will be affected. Wetland condition and hydrology is currently poorly understood – we urgently need to gather data and model the function of these systems.

We also need to develop indicators to assess adaptation and mitigation. Our challenge will be to distinguish between the effects of climate change and other factors. We need to make better use of the data we already have, including data collected by other sectors such as meteorological data. We should develop risk assessments, looking at effects and exposure. The Ramsar Convention has a formal risk assessment approach and we should use and build on this, especially in terms of risk assessment at appropriate scales – interconnecting wetlands. We have a bleak outlook – we will lose wetlands over the next 30 years, there will be many changes including salinity, and these losses will heavily impact on people and biodiversity.

The Arctic – origin of flyways

Dr Kent Wohl, US Fish and Wildlife Service, USA

The Arctic is the origin of many of our waterbirds and flyways. Work in the Arctic has focused on breeding ecology and somewhat neglected flyway issues. There are many common species, many shared and common conservation issues. The most effective way to tackle these issues is at the flyway scale. Over half the birds breeding in the Arctic are waterbirds. Alaska supports a huge number of seabirds, shorebirds, waterfowl and divers/grebes. Many of these are long-distance migrants and the Arctic is a source of birds to the 10/11 major flyways. Alaska is a breeding area for birds in eight of the major flyways, but many of the seabirds are pelagic migrants and we have done little to manage the oceans as part of the flyway for these species.

"Conservation issues in the Arctic are the same as those elsewhere, but of all these climate change will become the overwhelming issue … We are quite simply not prepared"

Chukotka coastal Tundra.

Christoph Zöckler

Species will be displaced, driven to extinction, wetland and terrestrial habitats will change, migration patterns will change, functioning of protected areas will shift, and the opportunities for spread of invasive organisms and disease will increase.

A climate impact assessment is being prepared and will be published later in 2004 – affectionately known as 'the brick' – its results will hit us right between the eyes. The Arctic is a shared and equal responsibility and a flyway approach to conservation is essential. The Arctic is covered by the major international conservation frameworks and by regional initiatives. Bilateral agreements have not been effective. Informal agreements may be beneficial and there are many good examples to draw on.

Both formal and informal approaches have their good and bad points, formal are more administratively costly and achievement frequently takes a long time, whereas informal approaches can be more immediate and cost effective.

The Arctic Council's Conservation of Arctic Flora and Fauna (CAFF) initiative provides a global overview with 15 recommendations. At a key workshop in 2000 six of these recommendations were prioritised and are now being developed. One of these is the development of an Arctic Birds of Conservation Concern. CAFF identifies information resources, partners, and instruments from a country and Arctic perspective. Our needs are co-ordinating flyway monitoring, filling the geographical gaps in our international conservation frameworks and building common databases.

Sustainable harvest of waterbirds: a global review

Dr Niels Kanstrup, Danish Hunters' Association, Denmark and CIC Migratory Birds Commission

Sustainability means meeting the needs of the present without compromising the future. Sustainable harvesting of waterbirds is poorly understood, but this is a shared responsibility. Harvest management can be complex and relates basically to periods of harvest (season, etc.), spatial considerations (areas, sanctuaries, etch) and methods (trapping, shooting, etc.). These are influenced by political (cultural) and ecological needs. The primary ecological need is that harvesting does not harm the population in the long-term and there are mathematical ways of assessing this, with maximum sustainable yield being a key measure.

Political needs relate to cultural requirements, including control of populations for agricultural reasons. The appropriate balance between political and ecological needs is wise use. Reversibility is an important factor to understand – many populations can recover rapidly, but ecosystems are slow to recover and frequently do not fully recover. Harvest itself covers many natural products from, for example, eider down (three tonnes collected in Iceland annually) to eggs, to whole birds. Trapping is a significant method of take in some countries, e.g. >1 million waterbird are trapped for food in Lake Chilwa, Malawi. Hunting is of prominence in other countries, e.g. USA and Russia (>300,000 geese shot in Siberia each spring).

"Understanding motivation for harvesting is crucial … Control of harvesting techniques does not always meet with the motivational needs of those making the harvest, but there are many options for achieving shared goals and sustainable management"

Motivation for harvesting varies from food provision to recreation to land management depending on the social circumstances of the country. However, many hunters have multiple motives. Impacts of harvesting vary from no impact to disturbance to driving population change, depending on methods and intensity; these effects having been demonstrated by a number of studies. Impacts can operate on non-target species also.

Monitoring of harvests is important and, for hunting, the collection of bag statistics is a valuable tool. Many countries have very poor bag monitoring; the USA approach is a good model. Bag monitoring has been compulsory in Denmark since 1941, but information is grouped and so data for individual species is not available and as such knowledge of take is poor. Bag monitoring involves hunters more directly in sustainable management and is to be encouraged. Wing surveys are also a useful tool for population monitoring and also gains involvement of hunters, but must be well co-ordinated to achieve the best results.

"Harvest should not be a general threat to waterbirds and should be seen as a good way of involving communities in conservation. However, we need more information, especially from bag monitoring, and we need greater international co-operation"

The wider community must be involved in sustainable management and must be given responsibilities; there are good examples in practice in many countries, including Denmark, the United Kingdom and Malawi. Harvest of waterbirds is widespread and of global importance, it is also diverse.

Cross-cutting research on a flyway scale – beyond monitoring

Dr Silke Nebel and Dr David B. Lank, Simon Fraser University, Canada

"A flyway-wide research programme integrating information from the entire annual cycle and from different disciplines can provide a powerful tool for understanding the underlying causes"

Extensive population declines of shorebirds have been inferred from census data from North America. A flyway-wide research programme integrating

Daniel Blanco

Rice field Argentina

information from the entire annual cycle and from different disciplines can provide a powerful tool for understanding the underlying causes.

The Western Sandpiper is the most common shorebird on the America Pacific coast, breeding mainly in western Alaska and over-wintering between California and Peru, and in the Caribbean. Data from 12 locations show that males over-winter further north, and that juveniles are over-represented at northern and southern ends of the non-breeding range. This pattern interacts with a latitudinal life-history divide: northerly juveniles migrate and attempt to breed in their first summer, while southerly juveniles over-summer at non-breeding sites. Survivorship estimates obtained on breeding and non-breeding areas were similar, but apparent juvenile survivorship was higher in Panama than in Mexico, as predicted from their life-history differences if lifetime fitnesses are similar for birds wintering at different latitudes.

The number of Western Sandpipers counted on southward migration at Sydney Island, a small stop-over site in British Columbia, has declined dramatically over the last 10 years. Average length of stay, as well as the body mass of captured birds, also decreased significantly. During the same period, bird using larger intertidal areas in the nearby Fraser River delta maintained a consistent body mass. Western Sandpipers feed on small, soft-bodied invertebrates and plasma triglyceride levels, which correlate with fattening rates of individuals and with direct measures of food abundance, were used to assess food availability. Triglyceride levels were twice as high in birds caught at Sydney Island than those at the Fraser River delta, indicating higher food availability at Sydney Island. However, higher body mass renders individuals vulnerable to depredation, and numbers of Peregrine *Falco peregrinus* along the Pacific Flyway have increased during the past decade.

Site choice is considered a trade-off between food availability and safety, and larger, more open sites are generally considered safer. An individual leaves the more dangerous but more profitable site when reaching a certain 'departure-mass threshold'. The increased predation pressure at Sydney Island has lowered this threshold, which in turn lead to a shortening of the length of stay. As a consequence, fewer birds were counted, even though population modelling with mark-recapture techniques showed that the total number of individuals using Sydney Island had not changed significantly. Instead, the lower counts were caused by a behavioural shift in habitat use.

Raptor population recovery is taking place on a continental scale and it is thus possible that such shifts are taking place elsewhere. Protocols to monitor populations of migrants should that this possibility into account.

Migration patterns and conservation of albatrosses and petrels of the Southern Ocean

John Cooper, University of Cape Town, South Africa

Albatrosses and petrels are charismatic animals. They breed at few locations – small islands in a vast ocean – and they are supremely pelagic. Studies using geo-location loggers have shown exactly where these birds go and how they girdle the Southern Ocean. Some species also use coastal and EEZ waters of many countries in the southern hemisphere. Their conservation is the responsibility of many countries.

Albatrosses are threatened by commercial fisheries, with many caught and killed on long-lines each year. Other threats include deliberate persecution (e.g. tying of legs). There are methods for reducing incidental take of albatrosses on long-lines; tori (bird-scaring) lines, setting lines at night and underwater setting tubes. Other forms of disturbance include research, although this has a minimal impact, tourism, and introduced mammals. Non-governmental organisations have highlighted the problems – e.g. BirdLife International's Save the Albatross campaign.

"We need to urgently speed-up the process of recovery of our albatrosses. The most critical need is for more involvement of the fishing industry – real efforts need to take place on the deck and in the minds of fishermen"

Much research has been done and many conferences and workshops have been held to assess conservation problems and develop policy. There have been national efforts to change fisheries management, but international effort is required. Guidance to aid this has already been produced by the Commission on the Conservation of Antarctic Marine Living Resources. The food and agricultural sectors need to be involved at the national level and national action plans should be produced.

New initiatives have arisen, for example New Zealand has provided international exchange for training in new fishing methods. New policies have also arisen – the Agreement on the Conservation of Albatrosses and Petrels (ACAP) under the Convention on Migratory Species. The UK has just announced its signing of this agreement; the sixth party to do so. However, albatrosses are still being exposed to hooks and drowning in their thousands.

Summaries of symposia

Intra-African migration

Convenors: Issa Sylla and Tim Dodman

Many of Africa's migratory and resident waterbirds have poor conservation status and largely unknown population trends. Research and conservation of migratory birds in Africa, has focused largely on African-Eurasian migrants, and the status and needs of most intra-African migrants are much less clear.

The symposium aimed to identify actions that will promote development of research and conservation of intra-African migrants and resident waterbirds, and implementation of AEWA and reached the following recommendations:

Identifying actions needed for the conservation of intra-African migratory waterbirds

A key issue that hampers the conservation of African waterbirds is a limited knowledge of their conservation needs, particularly related to their movements, which are often unpredictable. It is also difficult to identify key site networks in some areas, due to the irregular but important role of temporary wetlands. The recommendations also appear in the paper Conservation dilemmas for intra-African migratory waterbirds (Tim Dodman and Cheikh Diagana), which provides further information about intra-African migration.

1. Improve our knowledge of the status of African waterbirds and their migratory patterns through:
    - Applied research of weather patterns, site conditions and waterbird seasonality;
    - Extending the African Waterbird Census (AfWC) to other seasons and other areas;
    - Use/analysis of existing AfWC and other data to identify site linkages and migratory patterns;
    - Increased adoption of satellite telemetry;
    - Initial conservation focus on a series of 'high-profile species';
    - Monitoring, research and conservation of threatened species;
    - Development of AFRING.
2. Identify key sites and site networks for intra-African migrants, especially threatened species.
3. Develop Species Action Plans for African waterbirds.
4. Promote increased focus on intra-African migrants in the implementation of AEWA.
5. Adopt a precautionary principle; it is often necessary to implement conservation action before knowing the full picture.
6. Enhance awareness of African waterbirds, especially their values and ecological roles.
7. Highlight the plight and lack of knowledge of threatened African waterbirds.
8. Mobilise resources for conservation and monitoring of intra-African migrants, especially through development and subsequent implementation of a Conservation Strategy for African Waterbirds.

The implications of climate change for waterbirds

Convenor: Mark O'Connell

Climate determines the distribution and movements of waterbirds and the wetland habitats they use. Global climates however, are changing. Some individual waterbirds will be able to track changes in resource/habitat distribution. Species within communities will respond differently to climate change, and will alter their distribution at different speeds with the potential to form new assemblages. The research community has four key conservation challenges:

1. **To describe what will happen**
   To be able to tease out effects of climate change from long-term fluctuation and effects of a range of human activities, there will be a need for relevant information at a flyway level. A key need will be to understand impacts of climate change on wetland processes and functions, as well as some of the 'hidden' effects of climate change on waterbird populations. It will be important to understand the capacity of waterbirds to react to extreme weather events.
2. **To identify where it will happen**
   General challenges include the need to identify potential changes in the distribution of flyway resources (both abiotic and biotic) as well as to predict how waterbirds will track spatial changes in habitat/resource distribution.
3. **To develop or enhance research methods**
   There will be a need to ensure research access to relevant data and information as well as to ensure we have appropriate methods for understanding what will happen and where it will happen.
4. **To support the action agenda**
   It will be particularly important to ensure the provision of relevant information and data to support the action agenda as well as ensuring that climate change research is used as part of action within (or development of) flyway agreements

Wetlands and waterbirds will be severely affected by climate change. Climates are changing and will continue to do so. As well as undertaking the work identified above to fill gaps in current knowledge, scientists must also help to utilise the considerable amount of information that is already available for analysis. There is an urgent need to financially support the continuance of long-term, wide-scale monitoring of species and habitats. These data are the foundation on which our response and adaptation to climate change will be based.

The consequences of climate change for waterbirds will be multiple, and greatly exacerbate ongoing negative impacts such as habitat loss and degradation. Landscape scale planning will be required to reduce or mitigate the impacts of climate change on waterbird populations and their habitats. Research that explores a range of potential future scenarios will be required to underpin this landscape scale planning, and will need data from long-term monitoring and surveillance.

Building and sustaining capacity for waterbird conservation and research

Convenor: Tim Dodman

Conserving migratory waterbirds depends on commitment of and exchange between networks of people. For conservation to be effective, these networks need to possess both practical ability and scientific know-how at all stages of migratory flyways. This requires strategies and programmes that address training, institutional strengthening and network development across the whole flyway.

The symposium made the following recommendations:

1. Develop frameworks for establishing and implementing sub-regional strategies for capacity building. These should draw on the experiences of existing sub-regional initiatives in West Africa, Central Asia, East Asia-Australasia and elsewhere.
2. Within such programmes, it is important to carry out a comprehensive training needs analysis, and to incorporate in these the requests for training and other aspects of capacity building, which will ensure a bottom-up approach.
3. Training programmes for waterbird conservation and research should address the following main target groups:
   - Scientists, field workers and data managers;
   - Government and local officials, NGOs;
   - Wetland/protected area managers; and
   - Community Leaders and community groups.

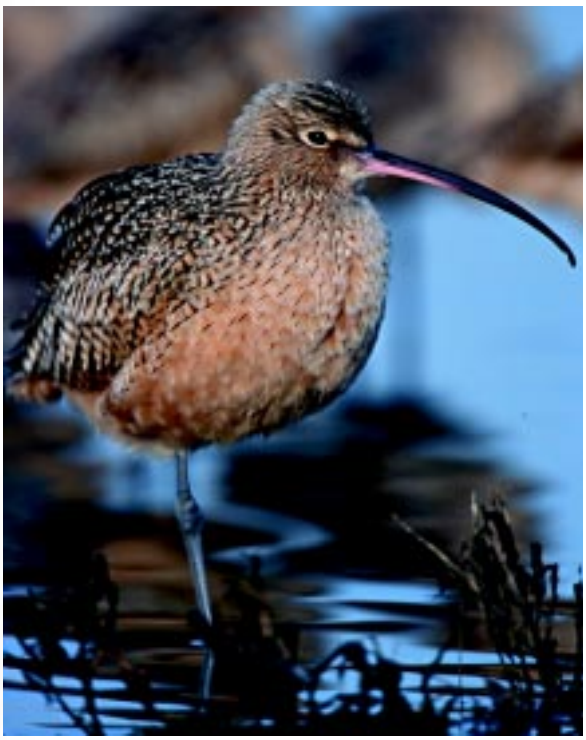
   They must in addition ensure the training of trainers, which is vital for execution of training.
4. Sub-regional training programmes, tailored to target groups, should incorporate:
   - Academic training;
   - Practical training, for delivery through both regular, established courses and ad hoc initiatives in response to need and local situation;
   - On-site field training; and
   - Transfer of know-how through exchange.
5. In order to maximise partnerships and information exchange across the globe, it will be most cost-effective to develop transferable training modules, which may then be adapted for different levels or target groups.
6. training materials in appropriate languages and formats, should be developed and disseminated.
7. Given that the need for training is widespread and long-term, exit strategies or self-supporting mechanisms need to be built into sub-regional training programmes to ensure their continuity.
8. Above all, it is vital to sell training programmes, to raise funds for the execution and to gain strong local, national and international support.

Flyway conservation in North America

Convener: Paul Schmidt

Integrated waterbird harvest management in North America

There are integrated co-operative monitoring efforts to set waterfowl harvest regulations and make management/conservation decisions in North America. Treaties have been developed to define the



Gary Kramer

Long-billed Curlew.

hunting season and the conditions necessary to implement a hunt.

The Migratory Bird Treaty Act authorised the Secretary of Interior to determine when and how to allow hunting, and to adopt regulations to govern it. Harvest must be compatible with the ability to sustain populations – for both under and overabundant species. In the case of subsistence hunting (traditional use) – treaties have been amended to provide for legal subsistence hunting of migratory birds during the closed season.

Breeding, wintering and migration surveys are conducted each year. Spring breeding surveys are done by aircraft using transect lines with ground counts at samples. Approximately 80,000 miles of survey lines are flown each year. Production surveys are conducted in the summer using the same transects but using a smaller sample.

Mid-winter surveys are conducted each year and help to determine continental populations. In Mexico, surveys are conducted co-operatively every three years, with some surveys conducted annually.

Data on productivity is accomplished through large banding programs. Each year, over 200,000 ducks and 150,000 geese/swans are banded. This allows the US Department of Interior to estimate harvest and survival rates. The quality of the data is dependent on band return rates. A sample of hunters are asked to provide information particular to their hunt each year. Wing surveys provide species age and sex data.

Understanding migration patterns of migratory waterfowl has been the cornerstone of their management. Since 1948, waterfowl species have been managed through four flyways.

The most pressing issues and challenges in waterfowl management in North America are:

- Snow Geese and resident Canada Geese – populations are growing at 14% per year in the Atlantic Flyways and rapidly in other flyways as well. This growth has resulted in overabundant populations. New methods of take have been developed and take is allowed during the "closed" migratory bird hunting season.
- Declining species include Scaup and Northern Pintail. Bag limits have been reduced in response to declining populations throughout the US.

Habitat conservation partnerships and continental planning

Habitat conservation for waterfowl populations in North America has a 75-year history. The first and most important initiative was the North American Waterfowl Management Plan, which was adopted in the early 1980s as US government policy and later by Canada and Mexico. A fund was established to provide matching grants for habitat conservation. Inspired by the approach taken in waterfowl, plans were developed for other groups of birds including land birds (Partners in Flight), shorebirds (US Shorebird Conservation Plan) and waterbirds (Waterbird Conservation for the Americas). This activity provided the impetus to develop a co-operative approach, including common approaches to setting goals and common landscape divisions, called Bird Conservation Regions that cover North America. This approach became the North American Bird Conservation Initiative, incorporating not only the taxon based initiative but also Canada and Mexico. The delivery of habitat conservation through the North American Waterfowl Conservation Act was affected through the development of Joint Ventures, which are landscape specific stakeholder partnerships. Over six million hectares have been protected, restored or enhanced through the North American Waterfowl activities between 1991 and 2004.

Long-billed Dowitcher.

Gary Kramer

Alejandro Balbiano

Ruddy-headed Goose, Southern Chile.

Issues and challenges facing Migratory Bird Conservation Programmes in North America, involve a wide range of natural and new anthropogenic challenges. There are four principal components: science, legislative policy, habitat, and international. Science issues are critical, including incomplete knowledge, monitoring failures, and communications requiring the right mix of resources and skills to understand the complexities of bird conservation. Legislation includes migratory bird laws and treaties, endangered species laws and environmental protection and assessment laws and policies. Habitat conservation needs include habitat loss, contaminants, and climate change.

An integral approach to waterbird conservation, Mexican perspective

An integral approach includes population, habitat, and socio-economic issues. About 300 species are shared between Mexico and the US but 16% of Mexican species are endemic. The specific legal framework for conservation involve treaties (such as Ramsar), international funding programs (such as the US North American Waterfowl Conservation Act), and, importantly, the General Law of Wildlife enacted in 2000. Important Bird Areas include important sites for waterbirds and these sites include some that hold a large proportion of certain waterfowl. The important NGO partners include Ducks Unlimited Mexico and PRONATURA.

Searching for equilibrium points

Migratory bird conservation must change to meet the goals of keeping common birds common and helping populations in trouble to improve. We must search for a balance between historic programming and modern conservation, between targeted conservation action and research and monitoring, and between historic partnerships and new strategic alliances. Historic programs were based on game birds, but there is a growing emphasis on an all bird, multispecies, habitat based approach. There is a need to design new programs to meet all-bird needs, not just tweak existing programs. We must articulate conservation goals in terms that make broad sense, and must participate in water conservation issues. There is a need to be action oriented and also to have a solid understanding of ecological processes. Both are required. Historic alliances, which have achieved good results, are facing new partners and include those from the resource sector. We need to strive for "working landscapes," in which land must also be used for people, which requires additional linkages to agriculture, fisheries, forestry, and other resource sectors. Continuing go on the same track will get the same result, and the results are not now sufficient, so change is needed.

The Neotropics

Conveners: Melanie Steinkamp and Roberto Schlatter (Chair: Xico Vega)

In some flyways, institutional and multilateral developments have taken place to co-ordinate and stimulate waterbird conservation and their sustainable use at a flyway scale. These examples can provide 'lessons' learnt for other regions where there are current discussions and activities to establish policies for flyway conservation.

Whilst much attention has been focused on the needs of long-distance, intercontinental migrants, there has been much less research and conservation activity on waterbirds that migrate within South America. Many of these species, and non-migratory waterbirds have poor conservation status and largely unknown populations trends. The progressive development of the Western Hemisphere Shorebird Reserve Network has been an important initiative to raise awareness of the importance of key sites whilst the recently established Hemispheric Steering Group for migratory waterbirds has considerable potential to drive forward conservation activities.

The Symposium presented an overview of existing action s for waterbird flyways in central and South America, and discussed progress to date.

Financing global flyway conservation: innovation, linkages, options

Convener: Randy Milton (Chair: Trevor Swerdfager)

Migratory bird and flyway conservation have unmet financial needs. However, budgetary pressures in many developed countries will severely limit their ability to directly target additional fiscal resources to meet this need. Moreover, the increases in funding delivered by development agencies through bilateral and multilateral agreements during the 1980s and 1990s appear to have reached a stable plateau.

Changes must occur in how we 'package and deliver' our programs to include solid biological and socioeconomic planning and measurable objectives. This may require organisations to identify and incorporate new 'skill sets' into their program development mix. The base of support must broaden.

Opportunities for new protected areas still exist. Partnerships and networking to engage local communities will build local capacity, heighten awareness and knowledge, and influence how activities are undertaken in working landscapes. By becoming collaborative partners rather than competing interests, program goals can become integrated into general operating procedures of companies and government agencies

The financing of global flyway conservation must move beyond seeking funds for migratory birds to become more inclusive of all birds and refocus to embrace the local dimension. A reassessment of program goals should seek to refine priorities inline with key funding sources such as the GEF, World Bank, and national and international development agencies.

Migratory flyways need to be internalised within the biodiversity and sustainable development context. We must be able to bridge the needs of migratory birds by responding to the needs and aspirations of society for poverty alleviation, and sustainable development in a growing and diversified economy. We need to respond to the CBD and other conventions by shifting our focus to mainstream biodiversity conservation into developing projects which promote poverty alleviation – tackling the cause rather than the symptoms. By addressing the needs of people we will produce an environmental dividend in the conservation of migratory birds.

The symposium concluded the following key points:

1. Funding for migratory bird and flyway conservation is not expected to increase to meet identified needs.
2. Programs must be inclusive, collaborative and broadened through partnerships and networking to include working landscapes where goals can be integrated into general operating procedures of those who influence practices on the land.
3. Financing global flyway conservation must be more than birds. Migratory flyways need to be internalised within the biodiversity and sustainable development context.

Conflict resolution

Convener: Bruce Batt

The conservation of waterbirds will often come in conflict with the advancement of economic, recreational, transportation and agricultural development on broad landscapes and on specific key sites. This symposium covered several examples of the kinds of issues that are emerging as society advances. Among the key points emerging from the papers were:

- Waterbird specialists must play key roles in the development of practical and sustainable solutions to most problems. It is critical to waterbird conservation that the best science available is applied to each situation.
- Problems can emerge unexpectedly in areas that may, even recently, have been thought to be of low threat to conservation interests. It is highly desirable to monitor all waterbird species, even the most common, to help assure sensitivity to environmental changes when they occur in the future.
- After management actions have been implemented, it is important to follow through with adequate evaluation programs to encourage the continuation of satisfactory practices or to offer feedback that provides guidance for improvements of future management programs.
- Competing alternative uses for limited habitats remain at the center of most conflicts. With the habitats available to most species already generally much limited over what was historically available, it is critical that waterbird interests engage in these problems before significant investments have been made by economic interests.
- It is usually preferable to define mutually compatible uses of areas for both their natural values and for economic development, but these cases are often illusive to discover.
- It is critical to get all stakeholders involved in the resolution of most conflicts as mutual ownership of action plans is a highly desirable element that can lead to the successful results.
- The unusual problem of overabundant species has begun to emerge among a few species of waterbirds. Management experience of the current cases will provide important guidance for similar issues when they arise in the future with other species, or in other regions.
- Introductions of exotics should be prevented at the onset, but once damaging species have become established, it is preferable to move quickly to remove or contain them before the problem grows to the point where little can be done.
- New industrial uses of intertidal and supratidal habitats are especially threatening as these areas are critical to many species of waterbird. These problems are emerging in both developed and developing countries.
- Two examples of apparently successful resolution of conflicts between hunting and the local protection of waterfowl populations were described in this symposium.
- The growth of the wind farms is a broadly important issue for avian conservation and has recently emerged in offshore environments. It is highly desirable to implement extensive monitoring of the impacts on waterbirds as better knowledge is critical for the location and management.

USFWS

Black Skimmers.

The marine environment: challenges for conservation and implementation

Convenor: John Croxall

This session/symposium, the only one of the conference devoted exclusively to a marine theme, recognised that some of the world's greatest conservation challenges are in the marine environment, both within territorial (Exclusive Economic Zone) waters and on the high seas.

Amongst the biggest challenges for marine conservation are:

a) implementation of precautionary ecosystem-based approaches to sustainable use of resources;
b) minimisation of the environmental consequences of human activities.

The five presentations in this symposium illustrate some current approaches to these issues, both methodological and practical, mainly focusing on sea ducks and coastal areas in the Northern Hemisphere, but including one example, primarily relevant to high seas, from the Southern Hemisphere.

Two presentations illustrated the use of new methods and instrumentation. Mosbech described how satellite telemetry was used to define migration routes and offshore key habitats during winter for King Eiders in Arctic Greenland. With increasing potential human impacts from oil activities and fisheries more knowledge on the key habitats outside the breeding areas is needed. However, offshore surveys whether by plane or ship are costly and are limited by light, ice and bad weather during the Arctic winter. Therefore satellite telemetry provides an important supplementary tool. West Greenland though in the Arctic, provides areas of open water during winter and is an important wintering area for Arctic marine birds.

On behalf of BirdLife International, Taylor summarised recent collaborative initiatives between holders of tracking data for albatrosses in combining their information to identify key habitats and migration routes, particularly in open ocean areas. Especially for the Southern Hemisphere, whence most data derive, particular areas of shelf, shelf slope, frontal zone and open ocean habitat could be identified as of key importance for at least one (and often many) species of albatross. It is likely to be an essential element for delimiting areas for protection, particularly involving pelagic marine environments on the high seas.

Three presentations addressed the subject of developing guidelines to apply protected area approaches to coastal systems. Webb *et al.* described how, in the United Kingdom, the EU Birds Directive (1979) is being used to establish marine Special Protected Areas (SPAs) for seabirds and coastal waterbirds. Different types of aggregation require different data-driven approaches to identification of the most suitable sites. The Joint Nature Conservation Committee has developed guidelines for the identification of the most suitable sites as SPAs for coastal waterbirds where they form very dense aggregations.

Garthe and Skov reported that the German Baltic Sea was one the first areas in which the Special Protection Area (SPA) concept was applied to offshore concentrations of seabirds. In 2002 a GIS and geostatistical procedure was applied to define concentration areas for seabirds, mainly sea ducks. It was concluded that it is possible to describe offshore aggregations of seabird species exhibiting high aggregations by applying geostatistical routines. For species showing widespread distributions this procedure is much more difficult and needs to be further developed.

Nikolaeva *et al.* reported that although the present system of Russia strictly protected nature reserves (Zapovedniki) do not currently include marine protected areas. An important goal is to establish 13 strictly protected reserves with offshore areas for protection of seabirds and waterfowl and coastal marine habitats. Some of the most important areas in the Barents and White Sea include: (1) east Murman coast including the archipelagos of the Kandalaksha Zapovednik ; (2) the main moulting, migrating and stop-over areas of waterfowl in the Pechora Sea area; (3) the main breeding moulting, migrating and wintering areas in the White Sea area. Rapid oil and gas development and transportation on the Russia Arctic shelf will come into conflict with the existing habitat protection strategy for seabirds.

Overall, it was agreed that sufficient data, expertise and relevant methodological approaches now exist to identify key sites within coastal areas, notably Exclusive Economic Zones (EEZs). The challenge here is primarily to integrate the necessary species and habitat protection into an appropriate overall system for managing all aspects of such habitats.

For high seas areas and pelagic marine systems, however, considerable new work is required to develop approaches for identifying critical habitats and biodiversity hot-spots for marine vertebrates, especially seabirds. This will require combining existing data from at-sea surveys with records from remote-tracking sources and developing new analytical and modeling approaches for visualising and integrating such data with information from other marine taxa and with data on the physical and biological marine environment. New standards of management and governance of the high seas will also need to be implemented, particularly by Regional Fisheries Management Organisations.

Declining waterbirds: problems, processes and sites

Convenor: David Stroud

The status of many waterbird populations is poor, with major declines reported for many taxa, in many parts of the world. Habitat loss and degradation remains the principle driver for these declines, although many other factors are significant, including the impact of over-exploitation. For long-distant migrants, the ecological quality of major staging areas appears to be of key importance in sustaining populations.

Whilst much conservation attention has been focused on the needs of migratory species – the subject of several international legal instruments concerning their conservation – a high proportion of globally or near threatened waterbird species are sedentary. Some of these species are much more poorly known and have a significantly worse conservation status than migrants. Evaluation of their current status suggests these species should receive urgent priority conservation attention, especially in light of the absence of international structures to promote their conservation.

Of particular conservation concern is the declining environmental status of several key staging areas, which provide energetic springboards for long-distance migrants. The degradation of these areas compromises the status of many migrant waders and other waterbirds. The rapid collapse of populations, forced below threshold levels, has been predicted theoretically, and now appears to be occurring in a number of rapidly declining populations. Conservation responses must urgently address causes of wetland loss and degradation, as well as enhancing monitoring and research so as better to inform appropriate conservation policies. National and international strategies and conservation instruments have scope to help, but need to be much more strategic in their implementation so as to address root causes.

A range of actions are desirable:

- There is urgent need for more and better population monitoring. As a minimum, adequately funded national monitoring programmes are required. The International Waterbird Census co-ordinated by Wetlands International offers an effective framework within which such monitoring can be organised.

Avocets Bear River Migratory Bird Refuge.

USFWS

- Internationally co-ordinated programmes should be developed to assess waterbird productivity and survival. This information would aid in the development of more focused and cost-effective conservation responses to information from count programmes. Interpretation of multiple information sources and especially spatial data is greatly helped by Geographic Information Systems.
- The application of IUCN Red-list criteria at sub-species/population level should be encouraged to highlight the conservation status of individual biogeographic populations. This information is especially valuable in the context of listings under various international treaties.
- Further comparative analyses, using existing data and information, of waterbird status in different regions and flyways should be undertaken.
- The status of waterbird worldwide should continue to be reviewed with the aim of continuing to provide technical advice to international conventions and other organisations as to those populations which should receive major attention with respect to their conservation, monitoring and research.

World leaders at the World Summit on Sustainable Development, Johannesburg, in 2002, established a target of "a significant reduction in the current rate of loss of biological diversity" by 2010. The declines reported in from all over the world suggest that, for many groups of waterbirds, it will be extremely challenging to achieve these targets.

World leaders noted that to achieve this target "will require the provision of new and additional financial and technical resources to developing countries". It was noted also that at a minimum, significantly greater investment is urgently needed not only in developing countries, but also in developed nations. This is required to establish and maintain national monitoring schemes, as well as to understand the causes of population declines so that appropriate, targeted conservation responses may be made.

Flyway monitoring – rising to the challenge

Convenor: Ward Hagemeijer and Leon Bennun

Counts of migratory waterbirds in their breeding, staging and non-breeding areas have taken place for many decade. For non-breeding birds, the International Waterbird Census (IWC) has developed into a systematic global programme since its introduction in the 1960s. Long-term monitoring of breeding birds is also well-established at particular sites. However, it is clear that many gaps remain and there are many challenges in obtaining and using the data needed for more effective flyway management.

At a flyway scale, the symposium aimed to provide an overview of present monitoring approaches and programmes, identifying important gaps, and discussing ways to improve coverage and effectiveness. It suggested ways to link monitoring

and results more closely to waterbird conservation and management.

It concluded that monitoring under the IWC is a strong contribution to the current knowledge of the status and trends of waterbird flyway populations; and also that there are many challenges ahead to improve monitoring so as to effectively address data needs in relation to flyway management.

The following recommendations were made:

- The expansion of spatial and temporal coverage of the IWC, and improvement in the quality of data obtained, through capacity building and the training of observers in data deficient regions, as well as the monitoring of sites during migration and breeding seasons.
- Strengthening the monitoring of demographic parameters.
- Incorporating data obtained by various methods including hunting bag statistics, ringing and other marking methods.
- Development of monitoring site characteristics and threats to sites using methods including remote sensing.
- Improvement in co-operation between Wetlands International, BirdLife International and other organisations so as to ensure optimum efficiency.

Disease emergence and impacts in migratory waterbirds

Convenor: Tonie Rocke

The frequency and magnitude of disease losses amongst waterbirds (from emerging or re-emerging disease agents) have increase to the extent that they demand attention. These diseases not only affect waterbirds, but impact the economic, health and cultural values of humans.

A number of common themes and conclusions emerged from the presentations:

- Disease (both newly emerging and previously established agents) has increased in prominence as a cause of mortality in wild waterbirds and impacts significantly on certain waterbird populations.
- Some waterbird diseases also have human and domestic animal implications and vice versa. Communication, collaboration and co-ordination between ornithologists, conservation biologists, wildlife health experts, veterinarians, and public health officials is critical to improve knowledge of, and facilitate, the mitigation of these diseases.
- Underlying factors for emergence of diseases are related to increases in human populations, human consumption patterns, the redistribution of species and/or further aggregation of gregarious species in a manner that facilitates disease transmission.
- Improvements in disease surveillance, diagnosis and prevention are critically needed to address and manage disease problems in waterbirds.
- Integration and understanding of underlying concepts and impacts of disease are critical for global waterbird conservation.

Gerard Boere

Stork "village" in the Netherlands; a successful re-introduction project.

- Education of the public, government officials and the media on the role of wild birds in disease transmission is mandatory to prevent common misconceptions.

The following recommendations were made:

- Increase our awareness and educate others that disease in populations should be viewed in an ecological context, responsive to environmental changes and perturbations.
- Institute a global wildlife health policy that provides standardised methods for investigation, diagnosis and reporting of mortality events in waterbirds and other wildlife (similar to those in place for domestic animals and humans, e.g. WHO and OIE).
- Encourage discourse and interaction between conservation biologists, animal welfare proponents and the food animal industry so that animal welfare considerations do not jeopardise wildlife conservation (i.e. proximity of open range animal production to wetlands).
- Actively work to curtail the excessive movement of wild animals through the exotic pet trade to reduce the risk of disease transmission and to enhance the conservation of wildlife species.

The symposium called, in particular, for urgent action to mitigate disease emergence and losses in waterbirds by integrating fundamental disease concepts into the global strategies for waterbird conservation.

Let the waterbirds do the talking

Convenor: Christine Prietto

Waterbirds have great potential to increase support for conservation at all levels.

Communication, education and public awareness (CEPA) are invaluable complements to waterbird conservation but must be valued and funded accordingly. Conservation efforts may not realise intended aims without CEPA.

The symposium was constructed to showcase the range of strategies, products and initiatives that deliver educational outcomes among various target audiences. This range was significantly broader than what is normally considered under the classification of communication, education and public awareness.

The ultimate aim of those working in waterbird and wetland conservation is to increase support for conservation across all sectors. The CEPA symposium aimed to show that CEPA products produce real outcomes on their own but also adds value to all conservation work. However, CEPA strategies and products must be tailored to the framework and needs of the target audience.

Speakers presented information on formal and community educational programs, community events, networks and partnerships. All speakers emphasised the value of these initiatives in increasing support for conservation efforts and underscored the need for funding.

Overall the symposium presenters agreed that there is a need for communication components to be fully integrated with management efforts. Even in a conference such as this it would have been good to have relevant CEPA papers slotted into other presentation.

Sustainable use of natural resources in the African-Eurasian Flyway

Convenor: Bert Lenten

Conservation of migratory waterbirds can only be achieved by connecting the protection of migratory waterbird populations and the conservation of their habitats to the sustainable use of their populations themselves and the natural resources they depend upon.

Traditional knowledge in the use of these resources by local human communities is more and more in danger of being lost and should be safeguarded: it should be taken into account when developing action and management plans. The impact of intensive and/or detrimental use of natural resources, be it marine fisheries or hunting, has to be reduced and controlled in order not to interfere with traditional sustainable use. However, there are some highly-unsustainable practises that need to be stopped (such as the use of lead gunshot in wetlands).

High school students complete their fieldwork at The Wetlands Centre in Newcastle, Australia.

Christine Prietto

The Agreement on the Conservation of African-Eurasian Migratory waterbirds entered into force in 1999. Since then, 49 out of 117 potential Range States have ratified the Agreement to become Contracting Parties. The Preamble to the Agreement stresses that any taking of waterbirds must be undertaken sustainably, taking account of the conservation status of the specie concerned. A number of projects in the agreement's International Implementation Priorities have addressed the sustainable use of natural resources. Accordingly, the Agreement provides a valuable framework within which to consider these issues.

Flyway management for species of conservation concern

Convenor: Baz Hughes

For migratory species of conservation concern, common or complementary approaches to conservation at international scale are necessary to ensure their survival throughout their annual cycle. The last decade has seen a number of initiatives to seek co-operation for single species of threatened migratory waterbirds at international or flyway scales. Some of these initiatives have been more successful than others.

The symposium reviewed existing flyway management planning, and reached the following recommendations:

- Plan Production. Plan production needs holding focused participatory workshops using an established structure.
- Plan Structure. Action plans need to be produced to an established format with clear targets backed up by thorough annual work programmes, realistic funding plans and facilitating monitoring and evaluation of subsequent implementation.
- Plan Endorsement/Affiliation. Endorsement by relevant international institutions, conventions, agreements and conservation organisations, and national governments is highly desirable, although this in itself does not determine success or failure.
- Plan Implementation. Action plan implementation needs to based on the premises of sound science and collaboration. International plans need to be transcribed into national action plans and should be enshrined in national legislation. In many cases, local community involvement is critical for successful implementation. The success of long-term implementation may be enhanced if there is measurable short-term progress, demonstrating the success of plans.
- Plan Review and Update. Plans need to include a predetermined process for monitoring and an appropriate feedback mechanism. Most importantly, plans should be viewed as "living" rather than "static" documents incorporating an iterative monitoring and re-evaluation process to refresh priorities in order to react to inabilities to achieve the ideal agreed objectives. If the other issues identified in this series of recommendations can be addressed, the only (but totally defeating) reason for failure may be the lack of flexibility in an action plan to deal with evolving constraints.

Ingar Oystein

Highly endangered Lesser White-fronted Goose; Scandinavian population.

- Plan Funding. Existence of national or international funding instruments (e.g. EU-LIFE fund) increase the chance of successful implementation. However, Species Recovery Teams need to incorporate fund-raising expertise in order to make the most of these opportunities. Species Recovery Teams also need to exploit all possible marketing opportunities.
- Species Recovery Team. The existence and enthusiasm of a highly motivated, multi-disciplinary Species Recovery Team, comprising key individuals and bodies and meeting regularly is critical to successful implementation. A dynamic co-ordinator to drive the implementation process is essential. All Recovery Team members should be in agreement over the goal and priorities outlined in the action plan thus engendering a strong sense of plan ownership. Recovery Team members should be sensitive to cultural differences between Range States and of the effects of human and logistical capacity limitations on the timescale for plan implementation.
- NGO Involvement. The wholehearted, and ideally financial, backing of national or international NGOs is probably the most crucial factor in determining the success or failure of species action plans.

Migration ecology

Convenors: Theunis Piersma and Nils Warnock

Over the last decade many research projects have been undertaken to look at the way migratory birds handle their energetic needs in relation to flight ranges (including individual decisions of birds regarding these routes), stop-over places and available food resources.

The aim of the symposium was to identify conservation consequences of the many different strategy waterbird species apply during their annual cycle; to identify and discuss the value of modern research techniques (stable isotopes, geo-locators, satellite tracking); and to formulate priorities for further research.

In eight talks these issues and new techniques were illustrated with presentations on Common Snipe, shorebirds along the eastern Atlantic Flyway, Brent geese, Bewick's Swan, Bar-tailed Godwit migration from Alaska to New Zealand (non-stop!) and Red Knot and isotope research.

Key points coming out of this symposium are:

- Strong re-emphasising the need of a host of interconnected sites along the whole migration route.
- Human habitat alteration has a major and measurable impact on migratory species.
- In spite of a number of long term in depth studies on some species there are is still crucial information lacking on basic migration ecology, population structure, resource abundance and requirements during specific stages of the migration.
- A thing in common was also the demonstration that there is a great deal of plasticity in the migration of waterbirds and the strategies they use.

How waterbirds use the flyways of the world is a truly amazing but fragile phenomenon that deserves intense human attention, study and care.

Flyway conservation in the Central Asian Flyway

Convenor: Taej Mundkur

The Central Asian Flyway covers a large continental area of Eurasia between the arctic and Indian Oceans. Thus flyway comprises several important and overlapping migration routes for different species of waterbirds, most of which extend from Siberia to S and SW Asia. The information on populations needs to be strengthened but many species appear to be declining. The semi-arid condition of the Central Asian region and the effects of climatic changes observed on wetlands have considerable impacts on the distribution and status of waterbirds.

Most of the countries along this flyway have developing economies or economies in transition. Accordingly, there is an inadequate allocation of resources for research and conservation, and for the involvement of local stakeholders. In addition, changes in political systems and instabilities in some countries, language and other barriers, have hindered co-operation to be developed between the agencies of the countries within the flyway. Thus there has been more limited co-operation in information sharing, research and conservation activities compared to other flyway systems or geographical regions.

The symposium made the following recommendations:

- An international framework for the development to conservation initiatives for migratory waterbirds and wetlands in the Central Asian Flyway is urgently required to promote co-operative action.
- An Action Plan for wetland and migratory waterbird conservation for the Central Asian Flyway identifying regional priorities should be finalised and endorsed by the governments of the region, in co-operation with other major stakeholders (conventions, NGOs etc.).

Implementation of the plan will require participation and resources from agencies within and outside the flyway.

- A network of internationally important sites in the Central Asian Flyway should be established to raise awareness and promote the conservation of migratory waterbirds and wetlands in the context of sustainable development.
- Trans-boundary wetland and waterbird projects should be developed with international supporting and involving local agencies and organisations in each participating country.
- Strong networks of people in each country within the flyway should be established for undertaking surveys and monitoring waterbirds and their habitats.
- Key threatened species which need immediate attention should be short-listed and conservation efforts for them initiated.

Migration and flyway atlases

Convenor: Jacquie Clark

Over hundred years of bird ringing has 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 role.

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. There is a strong need for atlases using data from all countries, within a continent, in a flyway, or best of all, based on the biology of the birds.

EURING has demonstrated 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 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.

We need to integrate count data with ringing data to assess the conservation status of such sites even more clearly, and to better understand how each species uses the parts of its entire range.

Developing analytical techniques

Systematic analyses of ringing data are needed to:

- Describe the distributional patterns of birds in space, how these vary seasonally, and long-term changes in distribution and movements.
- Reliably distinguish the patterns of different populations, ages and sexes.
- When ringing data are computerised, modern computing technology provides immense analytical power.
- Various analytical methods have been developed for ringing data and there is active progress in developing further methods. This must continue.
- The major need is to overcome biases associated with geographical variation in reporting rates and with method of recovery.

East Asia-Pacific Flyway

Convenor: Taej Mundkur

The symposium reviewed existing policies, case studies and problems within the East Asian flyway, and there was discussion of the effectiveness of the different approaches.

The following recommendations were made:

- Networks of internationally important sites provide a sound foundation for flyway conservation initiatives.
- Voluntary conservation initiatives can provide a successful model for migratory waterbirds and wetland conservation.
- Conservation of migratory waterbirds must be achieved increasingly through delivery of sustainable development.
- Conservation of migratory waterbirds must address the needs of local communities and national governments if they are to be successful in the longer term.
- Developing networks of wetland education centres should be promoted to create greater local awareness and support, and provide the foundation for conservation of migratory waterbirds through strong and functional flyway site networks.
- Management of migratory waterbirds requires sound monitoring information covering their annual life cycles. Development and strengthening of such monitoring programmes requires long-term investments across flyways.

Building effective ecological networks

Convenor: Leon Bennun and Ward Hagemeijer

Flyway-level conservation requires attention to site networks, not just individual sites. This is a practical challenge to planners and managers. Among other problems are limited resources, patchy data, restricted opportunities for new designations of protected sites, and the wide distributions of migratory species in space and time.

The symposium aimed to review and discuss different approaches to: identifying key sites; building a coherent ecological network; linking site networks with the Convention on Biological Diversity's 'ecosystem approach'; recognition and practical conservation of site networks.

Sustainable waterbird harvest

Convenor: Niels Kanstrup

The presentations showed that there is a long tradition of harvesting waterbirds in various ways. In many countries the harvest takes place as a primary food source, but sport hunting is also popular.

Projects are underway to reduce unsustainable waterbird harvests. Subsistence hunting of waterbirds dates back to when mankind began. In many remote regions, waterbirds are still an important food source (e.g. the arctic, central Siberian lowlands, tropical regions). Besides the aspect of the harvest itself, there is the knowledge of trapping techniques, how to locate species within the landscape, and the emotional value of spring hunting in the arctic. The newly-restored Wetlands International Waterbird Harvesting SG was urged to play an important role to collect information and support the development of sustainable harvest globally. The conflict with agriculture still exist at many places. Examples were given from Africa and Argentina. The Danish presentation underlined the importance of an integrated approach through intensive co-operation between all levels of administration and the science world. The experiences of waterbird harvest in North America and the Russian Federation showed that a rational system of harvest is possible provided good administrative, monitoring and enforcement systems are in place. The symposium participants underlined the need for co-ordinated waterbird harvest on a flyway level to be sure that populations are harvested in a sustainable way keeping populations on a favourable level.

Arctic wetlands are the source of many of the world's waterbird flyways.

David Stroud

Integrating waterbird conservation: populations, habitats and landscapes

Convenor: Jim Kushlan

The conservation of waterbirds requires conservation and management of a wide range of habitat resources within flyways at different times in their life cycle. Establishing population goals requires integration of monitoring of population sizes, habitat extent and linked to landscape-scale planning, management of key sites and networking.

The symposium aimed to suggest approaches to conserving waterbirds within habitats, landscapes and sites using management and planning tools.

The Arctic: source of flyways

Convenor: Gudmundur Gudmundsson

The Arctic is the breeding ground for millions of connected to all global flyways. Conditions in the Arctic are important for long term flyway conservation and management. The symposium aimed to present recent developments in the arctic in terms of local and global changes, legislation and conservation issues conservation, highlighting their meaning for flyway conservation.

There is a developing network of institutions, organisations, multinational agreements etc. for the arctic showing the increased interest for the region. Research in various regions of the arctic focuses on studies to the factors influencing breeding success as this can strongly fluctuate from year to year. These fluctuations can also be measured on migration if the trapping methods are carried out in a consistent way. Species like Red Knot show a decline, other species are increasing. Classic morphological studies of waders can for some species identify their geographical origin. Many geese species show an increase after hunting was regulated but proportions of juveniles in wintering flocks are decreasing.

There is also more attention, both in the breeding and wintering areas, for endangered arctic waders like the Spoon-billed Sandpiper, The reasons for its decline are still unknown.

With the predicted climate change effecting the arctic more than other regions, the need for an increased research and conservation effort was underlined.

Side events and other meetings held during Waterbirds Around the World

Introduction

Waterbirds Around the World provided great opportunities for international organisations, specialist groups, species action groups, working groups on certain scientific issues, to meet formally or informally.

Also several international meetings were held just before or after the conference to benefit from the presence of so many experts in Scotland. These included:

- the twelfth meeting of the Scientific Council of the Bonn Convention in Glasgow;
- the fourth meeting of the AEWA Technical Committee held at North Berwick, near Edinburgh;
- a Board of Directors meeting of Wetlands International, and;
- a meeting of the Steering Group of the African Waterbird Census held on Papa Westray in the Orkney Islands.

Conference participants had the opportunity to meet informally:

- the excellent reception and dinner offered by the UK Government and the Scottish Executive in the beautiful setting of the central hall of the National Museum of Scotland;
- the celebration of the 25th Anniversary of CMS (Bonn Convention) and the signing of the Joint Workplan between CMS and the Ramsar Convention;
- A number of excursions on the mid-conference day;
- an evening session entirely devoted to the large poster exhibition of really high quality. Participants enjoyed the whisky tasting, refreshments and food offered by the Dutch Government as one of the hosts of the conference; and
- on the last evening, Scottish Natural Heritage organised a Ceilidh with reception. The

Conference dinner held in the Royal Museum of Scotland.

Taej Mundkur

international community of the conference (90 countries present!) enjoyed the folk music and intensive dancing.

The following is an overview of the side events, not in any particular order, with a summary and contact person.

IUCN Species Survival Commission/ Wetlands International waterbird Specialist Group activity

The meeting was attended by Specialist Group Co-ordinators, Partner Organisations and some Specialist Group members. The welcome address was by Wetlands International's CEO, Jane Madgwick, who reiterated the importance of SGs to Wetlands International programmes and their role in the development of the new ten year strategy plan.

Some of the agenda items discussed were: Wetlands International's policy and advisory service provision, fundraising for SG activities, planning for Waterbird Population Estimates 4 planning, Specialist Group Network development etc.

The Global Flyway conference provided a huge opportunity for Co-ordinators of the various SGs to be present and many SGs held their own meetings at the conference (below).

Contact: Tunde Ojei (Tunde.Ojei@wetlands.org)

Launch of the book "Shorebirds, an illustrated behavioural ecology"

This beautiful and interesting book on flyways and shorebirds, written and illustrated by Dutch authors Jan van de Kam, Bruno Ens, Theunis Piersma and Leo Zwarts, is published by the Dutch Royal Society for Nature Study and Conservation (KNNV). It is the English and extended version of an original Dutch publication. Thanks to the support of KNNV, the Flemish Institute for Nature Conservation and the AEWA Secretariat, all participants of the conference received a copy.

Launch of "Shorebirds, an illustrated behavioural ecology". Theunis Piersma signing book; standing Alan Martin, Wetlands International Board of Directors.

Saskia Henderikse

The first copy was presented to Yaa Ntiamoa-Baidu, Director of WWF International's Africa and Madagascar Programme, who said: "The research on which this book is based has focused on birds breeding in the arctic and wintering in the tropics, covering tundra and tropical mudflats from northern Europe to the coastal wetlands of west Africa, and involving many collaborators. As the Preface says 'waterbirds normally operate in groups and the researchers working on them have to do the same to produce good results'. The key here is collaborative research, sharing knowledge, experiences and expertise and strengthening the weaker links in the chain".

Contact: Theunis Piersma (Theunis@nioz.nl)

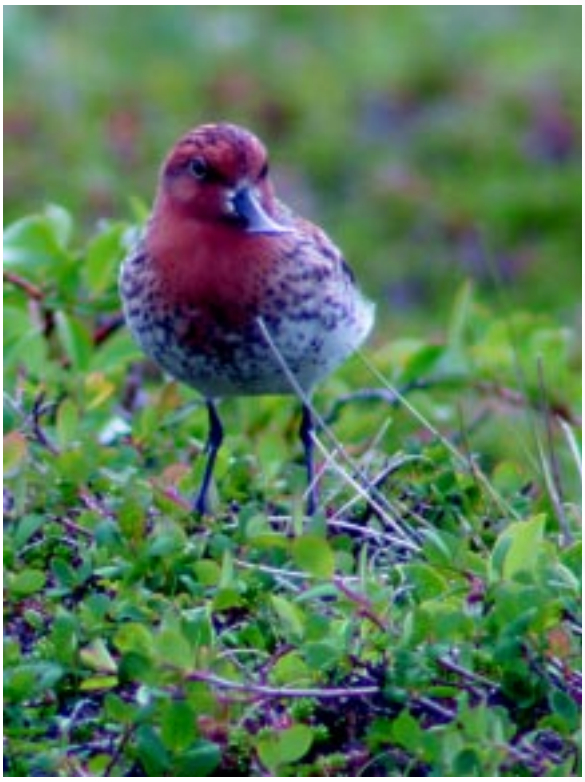
Spoon-billed Sandpiper Recovery Team meeting and Action Plan Development

The Spoon-billed Sandpiper is a globally threatened wader species with a population of 350–500 breeding pairs left. The Spoon-billed Sandpiper Recovery Team was created in 2003 to work in line with the Shorebird Action Plan of Asia-Pacific Waterbird Conservation Strategy and threatened bird conservation programs facilitated by Wetlands International and BirdLife Asia. The terms of references was adopted and an overview given of the current status and conservation problems of Spoon-billed Sandpipers.

The meeting reached the following conclusions:

- the species continues to decline on the breeding areas and in the wintering grounds;
- efforts of the Russian Academy of Sciences on the breeding grounds (2000–2003) are acknowledged and will continue, and

Spoon-billed Sandpiper.



Christoph Zöckler

- an Action Plan needs to be drafted and implemented for which the available CMS funds should soon be made available.

New field surveys were discussed and a questionnaire will be circulated to increase participation and to develop stronger links with Wetlands International and BirdLife International and the network in general.

Contact: Evgeny Syroechkovskiy Jr. (rgg@eesjr.msk.ru)

Duck capture and marking techniques workshop

This side event intended to share experiences on duck capture and marking, promote duck marking, and stimulate co-operation between European countries, by joint or complementary studies using capture/marking.

Three presentations were given on duck ringing with various methods in the UK, Czech Republic and Portugal followed by discussions. It was evident that duck marking continues to be a need for their conservation and correct management. The use of nasal markers showed advantages on data collection but some participants questioned their use in terms of safety for birds.

Contact: David Rodrigues (drodrigues@mail.esac.pt)

Seaduck Specialists Group

The Co-ordinator Stefan Pihl noted that the group had received an appeal from Wetlands International HQ to contribute to the forthcoming fourth edition of Waterbird Population Estimates. It had also been suggested that a regional group co-ordinator be appointed for East Asia. Yuri Gerasimov took on the post and his first task will be to develop/revise the sea duck population estimates for the East Asian region. The group was also informed about the Danish countrywide survey including the new methods of aerial surveys applied.

The next meeting of the Seaduck SG is in St Petersburg in October 2005 in connection with a major Russian Waterfowl Conference. Work on Seaduck Bulletin 11 will be progressed and Tunde Ojei from Wetlands International HQ informed about current opportunities for the development of project proposals.

Contact: Stefan Pihl (sp@dmu.dk)

Yukon Delta shorebird migration group

This side event gathered researchers and representatives of various institutions to plan migratory shorebird research in Alaska and New Zealand. The research is a joint enterprise between the Yukon Delta National Wildlife Refuge, US, FWS, Alaska Science Center, US Geological Survey and the Swedish Polar Research Secretariat, with participation of individual scientists from research units in Sweden, The Netherlands, New Zealand, Norway and the US.

The overall aim is to study the preparations for, and actual migrations of, shorebirds migrating from Alaska to New Zealand, Australia and the west coast of North America, with special focus on Bar-tailed Godwit, Sharp-tailed Sandpiper and Dunlin.

Contact: Åke Lindström (Ake.Lindstrom@zooekol.lu.se)

Launch of the AWC 1997–2001 Report

The first copies of the Asian Waterbird Census (AWC) 1997–2001 report were presented by Jane Madgwick (CEO Wetlands International) to Nick Davidson – Ramsar Secretariat, Marco Barbieri – CMS Secretariat and Shiho Kanie – Wildlife Division of the Ministry of the Environment of Japan. Shiho Kanie congratulated Wetlands International for the excellent work. David Li, on behalf of Wetlands International, introduced the report and expressed his appreciation for the contribution of thousands of AWC volunteers.

The report summarises the results of the counts from 1,392 sites in 22 countries including 61 wetlands of international importance listed under the Ramsar Convention, 32 migratory waterbird network sites in the East Asian-Australasian Flyway and 43 Important Bird Areas. A total of 291 species of migratory and resident waterbirds and 15 species of wetland-dependent raptors (birds of prey) were recorded and over 4.5 million waterbirds were counted in 2001. The publication provides distribution maps for 110 species, including 24 globally threatened species.

Contact: David Li (david@wiap.nasionet.net)

CHASM – Arctic Shorebird Monitoring

This meeting was convened by the Committee for Holarctic Shorebird Monitoring (CHASM) as part of an ongoing initiative to organise and standardise survey methods of arctic-nesting shorebirds. Members discussed results from the Pan-Arctic Shorebird/

Launch of the Asian Waterbird Census 1997–2001 Report. Nick Davidson (Ramsar Convention), Jane Madgwick (Wetlands International); Marco Barbieri (Bonn Convention).

Taej Mundkur

Ward Hagemeijer

Bass Rock, an internationally important colony of Gannets, Sula bassana, *and the location after which the species is named, was visited on the excursion day.*

Wader Monitoring and Research Workshop, held at Karrebäksminde, Denmark in early December 2003; when CHASM was established.

The next two one-day workshop will be held at the International Wader Study Group meeting in Papenburg, Germany, November 2004. The goal of that workshop will be to develop standardised survey methods for monitoring Arctic-breeding shorebirds in and outside of the Arctic.

Contact: Richard Lanctot (Richard_lanctot@fws.gov)

Pilot Analysis of Recovery Data for Africa-Eurasian Waterbirds (PARDAEW)

The concept of PARDAEW was presented to the meeting. It was agreed that a Working Committee should be established, with representatives from the Avian Demography Unit (Cape Town University) and EURING forming the core of the committee. This committee would take the work of PARDAEW forward. It was agreed that the work of PARDAEW could only be achieved through extensive collaboration of ringing schemes and researchers.

Potential problems for PARDAEW were identified as:

a) "buy-in" and co-operation of all European ringing schemes, with access to their data;
b) sufficient funds to support the work of those researchers who would do the sample analyses; and
c) sufficient time for otherwise busy ornithologists to make substantive contributions to PARDAEW.

Preben Clausen of the AEWA Technical Committee emphasised the strategic importance of demonstrating the usefulness of analyses of recovery data as a means of unlocking further funding opportunities.

Contact: James Harrison (batlas@adu.uct.ac.za)

AFRING

This meeting discussed two issues: the way forward to extend waterbird ringing in Africa; and the establishment of AFRING, a homologous body that would co-ordinate waterbird ringing schemes in Africa and provide an infrastructure for subsequent ringing data to be stored and curated. In addition, potential ringing projects were discussed as was the need to organise waterbird ringing courses in order to build adequate ringing capacity in Africa.

All participants agreed that the establishment of AFRING and developing waterbird ringing programmes was an important aspect for the growth of African ornithology, and in particular for waterbird conservation in Africa.

Contact: Dieter Oschladeus (dieter@adu.uct.ac.za)

Waterbird Harvest Specialist Group

The former Hunting Research Group of Wetlands International, initially set up by Teppo Lampio in 1969, has been re-launched as a Harvest Group. Aims and goals include:

- to assess (sustainable) hunting pressure on species
- to collect harvest data in the broadest sense; and
- to improve estimates of bird species which with the normal methods cannot be monitored (Jack Snipe; Woodcock etc.).

The first new Newsletter was published in May 2003 and supported by national and international hunting organisations as well as AEWA. Further discussion took place on defining the scope of the Waterbird Harvest Group and building the new network for which regional contact persons were nominated.

Furthermore the SG wishes to study other waterbird mortality as well. Presentations highlighted the above and the exchange of experiences between North America and other parts of the world was interesting and needs more attention

Contact: Gilles Deplanque (gillesdeplanque@nordnet.fr)

Meeting of the National Co-ordinators of the International Waterbird Census

A historic meeting of national co-ordinators of the International Waterbird Census (IWC) from all over the world involved people from 47 countries.
This lively group heard of plans for the globalisation of IWC, based on a new, user-friendly data management system. The regional co-ordinators of IWC provided overviews of current priorities, and a presentation on training in Africa was the entertainment and information highlight.

Lieuwe Haanstra presented details of the new data management system and Chris Baker talked about opportunities offered by the newly approved GEF project on African-Eurasian flyways. Nick Davidson, Deputy Secretary General of the Ramsar Convention on Wetlands, underlined the great contribution by volunteers to waterbird and wetland conservation.

Contact: Simon Delany (simon.delany@wetlands.org)

Demonstration of the new database program for the International Waterbird Census

As a follow-up to the meeting of national co-ordinators of the International Waterbird Census (IWC) earlier in the conference (above), Lieuwe Haanstra of Wetlands International demonstrated the new database program to people involved in IWC. The program is being used in the offices from which IWC is now co-ordinated, in Argentina, Malaysia, The Netherlands, Russia, Senegal and Ukraine. It will in the future allow use at national level by national co-ordinators of IWC.

Peter Kennedy

South American participants' meeting.

Lieuwe took the audience through each of the features of the data management system and answered a barrage of questions. It was not possible to demonstrate all the capabilities of this very powerful and versatile software. Nevertheless, participants have a good feel for what the new data management system will do, and how it relates to management of waterbird count data at national level.

Contact: Simon Delany (simon.delany@wetlands.org)

Central Asian Crane site network

The meeting was convened by the International Crane Foundation, as part of activities under the UNEP/GEF Siberian Crane Wetlands Project. The draft proposal was presented for a "Central Asia Site Network for Cranes" by Claire Mirande (UNEP/GEF Project Director).

It proposed three goals taking into account existing frameworks:

- to focus attention on wetlands of importance to the Critically Endangered Siberian Crane, while including protection of other migratory cranes and waterbirds;
- to determine the best mechanism to extend the CMS Memorandum of Understanding (MoU) on Conservation Measures for the Siberian Crane to other crane and waterbird species; and
- to invite Wetlands International to become an official participant in the CMS MoU.

The results of this meeting were then taken forward to the Fifth meeting of the Range States to the CMS MoU in Moscow in late April 2004. Wetlands International representatives provided background on the work done under the Central Asian Flyway project.

Contact: Crawford Prentice (crawford@savingcranes.org)

Launch and signing of the new BTO-JNCC Partnership Agreement (UK)

Staff from both the UK Joint Nature Conservation Committee (JNCC) and the British Trust for Ornithology (BTO), along with colleagues from other UK governmental and non-governmental organisations, came together to celebrate the renewal of the partnership between the JNCC and BTO.

Deryck Steer, JNCC Managing Director, and Jeremy Greenwood, Director of the BTO, formally signed a new Memorandum of Agreement between the two organisations. This partnership is long-standing, dating back formally to 1963, beginning with the establishment of the Common Bird Census. Under the partnership, the BTO carries out research and other ornithological services required by JNCC, and in which it also has an interest. This work is of considerable importance to bird conservation and includes several national surveys, nest-recording, ringing and specific research projects on birds and their habitats.

Contact: Helen Baker (Helen.Baker@jncc.gov.uk)

International Wader Study Group

The International Wader Study Group (WSG) is a non-governmental organisation registered in the Netherlands and is a Specialist Group of Wetlands International and IUCN's Species Survival Commission and has more than 500 members in more than 50 different countries. The meeting considered a range of issues, including relationships with the Committee for Holarctic Shorebird Monitoring (CHASM) and both their roles in monitoring Arctic birds. A short public presentation of the activities of WSG created a possibility to discuss the scientific programmes and other activities.

Contact: Hermann Hötker (nabu-inst.hoetker@t-online.de)

Greenland White-fronted Geese – review of status, trends and management options

The meeting discussed ways of tackling the current problems of the world population of Greenland White-fronted Geese. The main influences on the recent decreasing population trend lie in breeding and staging areas – low numbers of birds breeding successfully and shooting mortality in Iceland.

The original 1992 flyway plan has not been implemented and could be re-worked under AEWA; provided the Greenlandic and Icelandic governments were able to fully endorse the plan.

Discussions should be held at the appropriate level between Scottish Natural Heritage and JNCC (plus appropriate UK government departments) and the Icelandic and Greenlandic governments on the flyway plan. Contact should also be made with the Icelandic government leading to bilateral initiatives to tackle the key issue of goose hunting in Iceland.

Gary Kramer

Great Blue Heron.

Contact: Tony Fox (tfo@dmu.dk)

Heron Specialist Group

There was a short meeting on progress of work with the group and to discuss issues on nomenclature and the nomination of a new co-ordinator.

Contact: jkushlan@earthlink.net

Report on the WWF Yangtze floodplain waterbird survey

The survey took place in January/February 2004. Wetlands between the Three Gorges Dam and the Yangtze estuary, a distance of 1,850 km. A total of 515,896 waterbirds of 83 species was counted. High proportions of six globally-threatened species were present: The conservation of these waterbirds requires a large number of well spread and well managed sites. Those sites that meet Ramsar criteria should be designated as National Nature Reserves and as Ramsar sites. Recommendations included the need for:

- additional surveys combined with a monitoring programme;
- further training courses for the many staff involved on site management the collation of historical data

both on the numbers of waterbirds and the loss of habitats;
- a study of waterbird hunting pressure; and
- public awareness programmes.

Contact: Mark Barter (markbarter@optusnet.com.au)

Meeting on the contribution of the Birds Directive and an enlarged EU to waterbird flyway conservation

Effectively this meeting was part of the original symposium programme and open for all participants in order to exchange information between in particularly Europe and Northern America. A full report of the session is available and some presentation will be published in the conference proceedings.

Contact: Anne Teller (anne.teller@cec.eu.int)

Wader colour-marking scheme

The many species-oriented studies on waders using colour rings and other marking systems makes a world wide co-ordination a must. There too many risks that people are using the same colour schemes and banding systems for the same species, making observations in fact useless. Already for quite some time the International Wader Study Group co-ordinates these systems for waders. The group discussed progress and the present administration.

Contact: Pavel Tomkovich (pst@zmmu.msu.ru)

EURING (Organisation of European Ringing Centres)

EURING is the co-ordinating body of all European Ringing Centres and has achieved much in the field of standardisation of information collection and modern data storage and handling. The meeting discussed progress on a number of issues; the programme of a few workshops to be organised and further involvement in some international conference like the European Ornithological Union meeting in Strasbourg, August 2005.

Contact: Fernando Spina (fernando.spina@infs.it)

Global Waterbird Committee

The increased activities of the International Waterbird Census (IWC) requires a good co-ordination and transparent accountancy on methods, science, involvement of volunteers etc. The meeting discussed the possible need of establishing a Global Steering Committee for the IWC.

Contact: Simon Delany (simon.delany@wetlands.org)

Central Asian Flyway (informal meeting)

Various activities are focusing on developing a strategy or even a formal Agreement (under AEWA or as a separate CMS Agreement) for this important region. Wetlands International/Moscow Office has a special staff member to develop the work. The meeting discussed progress made and the offer from the Indian Government to organise a workshop in 2005 to further progress the work on this important flyway.

Contact: Taej Mundkur (Taej.Mundkur@Wetlands.org)

Slender-billed Curlew Working Group of the Bonn Convention

This Working Group is active under the auspice of the Scientific Council of the Bonn Convention and co-ordinates all work related to this highly endangered waterbird. It discussed progress since its last full meeting in Kiyv. Issues under discussion were:
- the conservation aspects of putting a satellite transmitter on a bird if observed and identified;
- actions concerning the possible observation of the species (e.g. recent cases in the UK); and
- its next progress report to the CMS Scientific Council in November 2005.

Contact: Ken Smith (ken.smith.research@rspb.org.uk)

Wetlands International Board of Members informal meeting

A number of the participants of the conference are also involved in the Board of Members of Wetlands International. They were introduced to Wetlands International's new CEO, Jane Madgwick, in post for just a couple of weeks, and on the various work programmes, discussions on a new strategy and improved management structures.

Contact: Jane Madgwick (jane.madgwick@wetlands.org)

Dalmatian Pelican with Flamingos in the background.

Taej Mundkur