

Fourth
Australasian Shorebird Conference

**“Status and Conservation of Shorebirds
in the
East Asian-Australasian Flyway”**

Australian National University, Canberra
December 13-15, 2003

Program and Abstracts

**WELCOME TO THE
AUSTRALASIAN WADER STUDIES GROUP
CONFERENCE**

Dear Delegate,

Welcome to the AWSG's Canberra Conference. On behalf of the Organising Committee we extend our warmest greetings to you.

The AWSG conference promises to provide an opportunity to hear about shorebird studies both in Australia and throughout the East Asian Australasian Flyway. The quality of speakers, range of important and interesting topics and issues to be discussed will provide us all with guidance for the direction of future research and policy.

We hope that you will have time to enjoy some of the attractions around Canberra, Australia's capital.

Yours sincerely,

Rosalind Jessop
Chair
AWSG.

Foreword

This is the fourth ‘shorebird’ conference held by the AWSG since the first one held during the lead up to the Ramsar Convention in Brisbane in 1996. The need for a special interest group conference on shorebirds has arisen due to the interest in the long distance national and international movements of these birds and a need to look at threats to shorebirds and their wetlands habitats in Australia, the driest inhabited continent, and throughout the annual life cycle of many species from the Arctic regions of Asia and Alaska throughout the Asia Pacific Region.

This year’s conference is especially important as it immediately precedes the international Shorebird Working Group Meeting and the Shorebird Flyway Site Manager’s Meeting in Canberra enabling an international link between shorebird researchers and conservationists throughout the Asia Pacific Region.

For the second time the organisers of the AWSG Conference have seen the need to publish the proceedings of the conference for all to read instead of restricting this information to those fortunate enough to attend these conferences. In doing so it is hoped that we will help to further the needs for shorebird research and conservation worldwide. The proceedings of the first AWSG Conference have sold out long ago, however due to the advance in technology the proceedings from this conference should be available, at least in electronic format, for years to come.

This conference has come about due to the efforts of a few hard working members of the AWSG and Wetlands International – Oceania.

Phil Straw, Conference Convenor.

About the Australasian Wader Studies Group

The Australasian Wader Studies Group is a Special Interest Group of Birds Australia and is dedicated to studying waders throughout the Australasian East-Asian Flyway. The AWSG publishes *The Tattler*, a newsletter for the Flyway, four times a year and a journal, *The Stilt*, twice a year. There are about 300 members, some 50 from Asian countries which receive complementary subscriptions with the assistance of Wetlands International and AWSG.

The AWSG runs frequent banding expeditions to N.W. Australia. It carries out population monitoring and surveys of waders in Australia and is involved in developing knowledge about waders throughout the Flyway through participation in field work and training schemes in Asia. The group has close ties with Wetlands International, Oceania, the State wader groups and the International Wader Study Group. The AWSG is also directly involved in the conservation of wader habitats through the dissemination of information and direct contact with federal and state government departments.

Mission Statement.

To ensure the future of waders and their habitats in Australia through research and conservation programs and to encourage and assist similar programs in the rest of the East Asian-Australasian Flyway.

Objectives.

- To monitor wader populations through a program of counting and banding in order to collect data on changes on a local, national and international basis.
 - To study the migrations of waders through a program of counting, banding, colour flagging and collection of biometric data.
 - To instigate and encourage other scientific studies of waders such as feeding and breeding studies.
 - To communicate the results of these studies to a wide audience through *The Stilt*, *The Tattler*, other journals, the internet, the media, conferences and lectures.
 - To formulate and promote policies for the conservation of waders and their habitat, and to make available information to local and national governmental conservation bodies and other organisations to encourage and assist them in pursuing this objective.
 - To encourage and promote the involvement of a large band of amateurs, as well as professionals, to achieve these objectives.
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CONFERENCE PROGRAM

- 08:30 Welcome
- 08:35 Migratory Shorebirds – a Flyway perspective – Lew Young
- 08:45 Migratory Shorebirds – an Australian perspective – Jason Ferris
- 09:00 - 11:00 SESSION 1 – Endangered endemic species
- 09:00 – 09:30 The Breeding Bottleneck: Breeding habitat and population decline in the Australian Painted Snipe
- 09:30 – 10:10 The Hooded Plover:
 Managing the Hooded Plover *Thinornis rubricollis* – a critical review.
 Factors that mediate compliance to temporary beach closures: refining a technique to manage human disturbance of shorebirds
- 10:10 – 10:30 Morning tea**
- 10:30 – 11:00 Gains and losses in the recovery programme for New Zealand shore plover (*Thinornis novaeseelandiae*), 1993-2003
- 11:00 – 11:40 SESSION 2 – Assessing shorebird populations at the Australian end
- 11:00 – 11:20 A tour of some of the more important shorebirds sites around the NT coast
- 11:20 – 11:40 The Importance of Monitoring Shorebird Utilisation of the Coorong and Surrounding Wetlands in South Australia
- 11:40 – 12:20 SESSION 3 – Assessing breeding successes
- 11:40 – 12:00 Measuring age-ratios of shorebirds with a telescope: A pilot study.
- 12:00 – 12:20 Monitoring wader breeding productivity
- 12:20 – 13:20 Lunch**
- 13:20 – 14:20 SESSION 4 – Recognising threats to shorebird habitats
- 13:20 – 13:35 Shorebird habitat management in Australia – the threat of mangroves
- 13:35 – 13:50 Managing Shorebird Habitat in a Mangrove Environment in New Zealand
- 13:50 – 14:05 Roost Management in South-East Queensland: Building Partnerships to Replace Lost Habitat.
- 14:05 – 14:20 Threats from Marine Farming in New Zealand to Waders on the East-Asia Australasian Flyway
- 14:20 – 16:10 (including tea break) SESSION 5 – Community involvement
- 14:20 – 14:40 Wetland Centres – their role in shorebird conservation and education
- 14:40 – 15:00 Linking scientific knowledge on shorebirds with multiple sectors of local community through education and public awareness – Lessons learnt from the Kashima Model in Japan and its adaptive application to the Yellow Sea Ecoregion in China and Korea.

15:00 – 15:30 Afternoon Tea

- 15:30 – 15:50 “A Year on the Wing” the reality and rigours of shorebird migration
15:50 – 16:10 The Shorebird Conservation in Australia – Community Conservation Action
16:10 – 16:50 SESSION 6 Shorebird Studies
16:10 – 16:30 What have we learned from banding and flagging waders in Australia?
16:30 – 16:50 Shorebird Studies in Taiwan

Monday 15 December

- 09:00 – 10:20 SESSION 7 Key wetlands in the Flyway
09:00 – 09:20 Population Estimates and Important Sites for Shorebirds in the East Asian-Australasian (EAA) Flyway
09:20 – 09:40 Which shorebird species are most at risk of population collapse in the East Asian Australasian Flyway?
09:40 – 10:00 Yellow Sea-driven priorities for Australian shorebird researchers
10:00 – 10:20 Sea of Okhotsk - key issues for moving forward

10:20 – 10:50 Morning Tea

- 10:50 – 12:20 SESSION 8 The need to identify critical sites in the Flyway
10:50 – 11:20 The decline of the Spoon-billed Sandpiper – where are the threats?
11:20 – 11:40 One-way movements of Red Knot between Australia and New Zealand and their migration strategies on the East Asian-Australasian Flyway
11:40 – 12:00 Action planning to save the Dunlin?
12:00 – 12:20 Critical Habitat in the Yellow Sea from a Korean perspective

12:20 – 13:00 Lunch

- 13:00 – 13:40 SESSION 9 Frameworks for shorebird conservation
13:00 – 13:20 Shorebird Action Plan for the East Asian-Australasian Flyway – Lessons Learned
13:20 – 13:40 "The Wildlife Conservation Plan for Migratory Shorebirds - a new approach to migratory shorebird conservation in Australia"
13:40 – 17:00 WORKSHOP (including afternoon tea)

Migratory Shorebirds – a flyway perspective

Lew Young

Manager, Mai Po Nature Reserve, WWF Hong Kong

This meeting is taking place at an important time, at the start of the drafting process for the 2006 – 2010 Shorebird Action Plan, a time to review our achievements and acknowledges our failures, and to plan ahead for the next 5-year Action Plan.

Although it will be difficult to meet the ambitious targets set in the previous Plans for the number of countries and sites joining the Network, the Network has however, been successful in stimulating greater **awareness** and cooperation on shorebird conservation issues along the flyway.

Apart from successful cooperation between Sites, such as between Yalu Jiang Kou (P.R. China) and Miranda (New Zealand) to provide training on shorebirds banding techniques, there are also more national (e.g. Philippines and P.R. China) and regional (e.g. between Singapore, Malaysia and Thailand) initiatives to promote shorebirds conservation.

However, more needs to be done in providing benefits to sites once they have joined the Network, such as in gaining access to training courses (e.g. on shorebird identification, survey and banding techniques), advice (e.g. on site management) and resources (e.g. good quality telescopes and field-guides).

Once the benefits of joining the Network has become clearer, then more countries and sites will be willing to join the Network.

Migratory Shorebirds – an Australian perspective

Jason Ferris

Migratory and Marine Species Section,
Australian Government Department of the Environment and Heritage

Australia and Japan have led efforts to conserve migratory shorebirds in the East Asian-Australasian Flyway for more than 10 years, supported by a large number of enthusiastic volunteers and non-government organisations. During this time, the Australian Government has actively promoted the development and implementation of the Asia-Pacific Migratory Waterbird Conservation Strategy. They have also supported the associated Action Plan for the Conservation of Migratory Shorebirds in the East Asian – Australasian Flyway, along with a number of specific purpose frameworks promoting cooperation. These include the Colour Flagging Protocol for Migratory Shorebirds in the East Asian–Australasian Flyway. Domestically the arrangements for conservation of migratory shorebirds have significantly progressed with the recognition of migratory species as a matter of national environmental significance and subsequent protection under the *Environment Protection and Biodiversity Conservation Act 1999*. This recognition took effect in July 2000. Significant challenges lie before us in conserving migratory shorebirds. Habitat continues to be lost and degraded both internationally and in Australia. The efforts of volunteers and non-government organisations remain vital, particularly in collecting information to assist in understanding and protecting important sites, raising awareness of migratory shorebirds, and encouraging conservation efforts.

Session 1 – Endangered endemic species

Chair: Roger Jaensch

NOTES:

The Breeding Bottleneck: Breeding habitat and population decline in the Australian Painted Snipe

Danny Rogers¹, Ian Hance², Steve Paton², Chris Tzaros², Roger Jaensch³,
Matt Herring¹ and Mike Weston²

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The Australian Painted Snipe *Rostratula australis* is a striking wader of inland wetlands. Records from the Atlas of Australian Birds indicate that it has suffered a great decline since the 1950's, particularly in its apparent former stronghold in the Riverina (Murray-Darling Basin). The Australian Painted Snipe project was initiated by the Threatened Bird Network and the Australian Wader Study Group (AWSG) in 2001, with the broad intention of learning enough about the species to propose conservation actions. Progress so far is summarised in this presentation. One of our main activities has been compiling a database of past Painted Snipe records, starting with published literature and 'Atlas of Australian Birds' records, and attempting to contact the original observers to obtain additional details about the recordings. In particular, categorical descriptions of structural habitat were sought, especially for breeding records. Analysis of these records indicates that although Australian Painted Snipe can be found in a wide range of wetland habitats, their requirements are much more stringent when breeding. Continuous stands of reedbeds are avoided, as are ricefields and areas with no surrounding low cover. Nesting typically occurs in ephemeral wetlands drying out after an influx of fresh water, provided they have complex shorelines (nests are almost invariably placed on small islands) and a combination of very shallow water, exposed mud, dense low cover and (sometimes) some tall dense cover.

This combination of habitat attributes appears to be a successional stage of ephemeral wetlands in southern Australia. We contend that the decline of Australian Painted Snipe can be attributed to the loss of breeding habitat through intensive water management and agricultural development. This is especially so in the Murray-Darling Basin, through: (1) reduced frequency of flooding of previously suitable habitat (this has been exacerbated by loss of much fresh water to irrigation and other diversions); (2) water levels being stabilised in remaining wetlands so that water becomes too deep or continuous reedbeds develop; (3) changes to vegetation through increased cropping, and possibly through fire regimes in some northern sites. Such processes are also likely to be detrimental to several other inland shorebirds. There is encouraging evidence that human management of water levels and creation of artificial wetlands can restore Painted Snipe breeding habitat, but successes so far have been serendipitous. There is an urgent need for research on how existing water regimes and environmental flows can be managed in order to provide breeding habitat for Painted Snipes and other inland shorebirds.

Managing the Hooded Plover *Thinornis rubricollis* – a critical review.

Michael A. Weston

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Information on threatened species is often incomplete and fragmentary. Significant contributions are sometimes found in rather obscure publications, or buried within lengthy management plans. This paper critically reviews the information available on Hooded Plovers, from a management and conservation perspective.

Over 160 publications on the species were uncovered and reviewed. Published articles on the species are becoming more frequent, particularly over recent years. Most published information on Hooded Plovers was in semi- or un-refereed publications, and there was a high number of management plans available in comparison with the number of major research studies. The bulk of information available is based on research of the eastern population. A comprehensive review of the available information identified three main areas of concern with regard to Hooded Plover conservation. These were reproductive success, breeding habitat and the effectiveness of management techniques. Research needs are identified to address these critical information gaps. Most of the research needs centre around the effectiveness of particular management techniques. A few focus specifically on unknowns about the species (e.g., chick fate and mortality, and factors influencing territory stability).

Factors that mediate compliance to temporary beach closures: refining a technique to manage human disturbance of shorebirds.

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Increasing recreational use of coastal beaches has significantly reduced the reproductive success of some shorebirds. Species such as the Hooded Plover (*Thinornis rubricollis*) are threatened mainly because of disturbance by humans and by inadvertent crushing of eggs and chicks. Temporary beach closures (TBCs) represent one technique used to manage human disturbance to Hooded Plovers during peak visitation times. This study tested three TBC treatments based on designs currently used to determine what features produce the highest level of compliance among beach users. Study sites were located at fifteen coastal beaches throughout southern central Victoria and corresponded with potential but inactive Hooded Plover breeding sites.

This study found that TBCs modified human behaviour although the effect varied with TBC design. Human compliance was generally good but varied with age, sex and TBC design. Compliance was greatest for those participating in the most common recreation activities. These results suggest that TBCs are a worthy management option.

Gains and losses in the recovery programme for New Zealand shore plover (*Thinornis novaeseelandiae*), 1993-2003

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Until the 1870s, the New Zealand shore plover (*Thinornis novaeseelandiae*) occurred on mainland New Zealand. Following the spread of mammalian predators on the mainland, it was confined to the Chatham Islands. For the past century, the species has probably numbered less than 200 individuals and, until recently, been confined to one or two small islands.

During the past 10 years the primary objectives of the recovery programme have been to protect and monitor the main existing population on South East Island (one of the smaller of the Chatham islands) and to found new populations on other of the Chatham Islands and on other offshore. On the Chatham Islands, wild-bred juveniles from South East Island have been successfully transferred to Mangere Island but suitable habitat is very limited. In 1999, a previously unknown population of about 20 birds was discovered on Western Reef, Chatham Islands; genetic analysis showed that these birds differed substantially from birds on South East Island. The Western Reef population has declined dramatically since its discovery.

A captive population has been established at two facilities on mainland New Zealand, and juveniles bred at these facilities have been released on two offshore islands. From 1994, 75 birds were released on Motuora Island, Hauraki Gulf. Breeding occurred but these releases failed to establish a viable population. Since 1998, 76 shore plover have been released on a second (privately-owned) island, and have apparently resulted in the establishment of a self-sustaining population. In autumn 2003, the resident population was about 50 birds and included 11 breeding pairs.

With a total population of less than 200 individuals, the shore plover is still highly endangered. However, in the past decade the total number of birds has increased, the number of breeding pairs has increased, and a second secure population has been established. Most importantly, a technique for founding new populations is available and there is a better understanding of the factors governing the success of releases. Further releases are planned around New Zealand and on the Chatham Islands.

Session 2 – Assessing Shorebird Populations at the Australian end

NOTES:

A tour of some of the more important shorebirds sites around the NT coast

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Over 10,000 km of coastline and 1 million ha of coastal wetlands were extensively surveyed in the Northern Territory by air and on the ground between 1990 and 2002. These surveys dealt with a large range of fauna but primarily concentrated on birds, marine turtles, cetaceans, dugongs and flying foxes. The main aim of this program was to locate and document important sites for these species groups in this large, remote and rarely surveyed area. During the 13 year survey period over 65 000 records totalling over 5 million animals were collected involving in excess of 500 days in the field including 2,500 hours of low level flying and over 3,500 separate ground surveys at more than 600 sites.

This presentation will involve a brief examination of this coastline with special attention given to a number of significant sites and the shorebirds recorded there. Shorebirds were found throughout the survey area and over 13,000 records, involving over 2 million shorebirds, were made. More than 40 species of shorebirds were recorded in the survey area. Most of those species recorded were rerecorded on numerous occasions. As little effort was given to searching areas or flocks for rare and/or vagrant species it is likely that more species could occasionally be present in the survey area. The distribution and status of most shorebird species have been documented in one of a series of reports and with the exception of the Beach Stone-curlew are briefly covered in this presentation.

Of the coastal wetlands surveyed, many met the criteria for listing as Ramsar wetlands of international importance (based on numbers of birds present) and or were likely candidates for listing as East Asian-Australasian Flyway Network Sites. Details of a few of the more significant sites are considered here rather than a brief discussion of many sites.

The Importance of Monitoring Shorebird Utilisation of the Coorong and Surrounding Wetlands in South Australia

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The Coorong is ranked among the top 10 sites for waders in Australia and is also listed as a Wetland of International Importance under the Ramsar Convention. While it had a peak of almost 250,000 waders in the early 1980's it has shown dramatic declines to a low of 50,000 waders in 2001. The most numerous species are Red-necked Stint, *Calidris ruficollis*, Curlew Sandpiper, *Calidris ferruginea*, Sharp-tailed Sandpiper, *Calidris acuminata*, and Banded Stilt, *Cladorrhynchus leucocephalus*.

The Coorong has been the subject of a number of changes to habitat, both man made and natural over the last 150 years which has influenced its use by all waterbirds. While wader counts were undertaken in the 1980's, it was not until 2000 that the site was revisited and a comprehensive count was performed. This paper describes a population monitoring program that has been carried out each summer since February 2000 and outlines the trends both in total numbers and key species and their distribution within this large coastal system. These trends are compared with other long-term counts in southeastern Australia and their relevance to the East Asian-Australasian Flyway is discussed.. This program is now one of the tools available to environment managers to make water management and land management decisions and to review the outcomes of changes in management. The methodology of counting this extensive system is described demonstrating what can be achieved by combining the resources of government, the Australian Wader Study Group (AWSG) and the community.

Session 3 – Assessing breeding success

Chair: Mike Weston

NOTES:

Measuring age-ratios of shorebirds with a telescope: A pilot study.

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The breeding success of migratory waders differs from year to year; it is affected by factors such as an abundance of alternative prey for predators during lemming cycles and the time of snow-melt on the breeding grounds. Fluctuations in breeding success can be detected in Australia because they affect age-ratios in the non-breeding flocks of waders that we observe here. Documenting these age ratios can provide valuable information; it can help to interpret population trends revealed by wader counts; it improves our understanding of why breeding success varies from year to year, and as breeding success varies geographically, it can provide insights about where our waders breed. In the future it may play a large role in understanding the effects of global warming on wader populations. Australian wader banders, especially in Victoria, put a great deal of effort into catching and ageing large numbers of waders in summer so that age-ratios can be assessed. Some nice results are coming out of this work. However, huge efforts and large banding teams required are required to collect this data, so few sites can be tackled.

In the right circumstances, many species of waders can be aged accurately and objectively in the field with a telescope. In this presentation we demonstrate how Red-necked Stints can be aged in the field right through the austral spring, illustrating the methods by using photographs obtained through ‘digiscoping’. Ageing is simple early in the spring, when first year stints have complete juvenile plumage. It becomes more difficult as post-juvenile body moult proceeds, but remains possible until the end of November.

Age-ratio data obtained in this manner are presented from a pilot study at Werribee Sewage Farm, near Melbourne, during the austral springs of 2001 and 2002. We found that the great majority of juveniles had arrived before post-juvenile moult became too advanced for easy field ageing. Local distribution of juveniles was not homogenous; juveniles tended to cluster in small groups and spent far more time feeding at high tide than did adults. Implications of these findings for assessment of age-ratios by cannon-netting are discussed (in particular the sample sizes required for representative data), and we compare our overall age-ratios with those obtained through cannon-netting at the same site in the same years. We conclude that both cannon-netting and telescope observations can provide solid data on age ratios. Telescope observations have the great advantage that representative data can be obtained by a single observer, and can be obtained from species that are difficult to catch, or at sites where cannon-netting is not practical.

Monitoring wader breeding productivity

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Reproductive rates are one of the two key variables governing population levels of water birds. Direct measurement on a long-term basis at breeding locations is not practicable for most migratory waders due to sparse distribution of nest sites over expansive nesting grounds. Currently the best monitoring method seems to be the measurement of the proportion of young (first year) birds (to other age groups) in samples caught for banding. 25 years of data collected by the Victorian Wader Study Group show that year to year variations in the first year age group are quite marked and that there is little synchrony between species except for the occasional very good or very bad breeding year. Correlations between this measurement with population count data are good. It is important to continue the “% juvenile” breeding success data collection on a long term basis if population trends determined from counts are to be understood. This will be important if we are to understand possible causes to population declined such as climate change on the breeding areas and habitat loss at migratory staging sites.

Session 4: Recognising threats to shorebird habitats

Chair: Sandra Harding

NOTES:

Shorebird habitat management in Australia – the threat of mangroves

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With the loss of extensive areas of coastal wetlands due to landfill and development there has been a concerted effort by conservationists to protect the remaining habitat and where possible restore ‘wetlands’ by planting mangroves. There is no doubt that mangroves are an important part of the coastal wetlands ecosystem providing fisheries as well as bird habitat and should be protected. However in the process of restoring mangroves many people are ignoring the other essential components of coastal wetlands such as saltmarsh and open tidal flats which are essential for many species of wildlife including shorebirds. Recent research in Sydney and Newcastle has shown that mangroves are extending their range to areas where they have not existed before, at least in recorded history. The loss of shorebird habitat to mangroves is most noticeable in these areas where a major proportion of habitat has already been lost in the name of progress. To what extent will tidal flats be squeezed out between mangroves and the sea or will saltmarsh be squeezed out between mangroves and reclaimed land? Are there any solutions?

Managing Shorebird Habitat in a Mangrove Environment in New Zealand

Keith Woodley

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The Firth of Thames, on the North Island of New Zealand (80km south east of Auckland), is a significant site for migratory shorebirds. In particular it is an important site for Bar-tailed Godwit (*Limosa lapponica baueri*) which breed in northwest Alaska, and Red Knot (*Calidris canutus rogersi*) which breed primarily in Chukotka, Siberia. It is also a highly important site for the endemic Wrybill (*Anarhynchus frontalis*) 30-35% of which winter there, along with other shorebirds such as such as Pied Stilt (*Himantopus himantopus*), and South Island Pied Oystercatcher (*Haematopus ostralegus*). The Firth of Thames is a Ramsar site and an East Asia-Australasia Shorebird Network site

On the southwest corner of the bay is a good example of a shellbank chenier plain. These shellbanks and associated embayments of intertidal mudflat and adjoining saltmarsh, have, in recent years been the most important high tide roosts for shorebirds. However over the same timescale, there has been a dramatic expansion in mangroves (*Avicennia marina resinifera*) around the southern margins of the bay. From a few isolated stands of mangrove in 1961, there is now a strip of 300-400 metres along most of the coast. Land use practices in the surrounding catchment - forest clearance, drainage, stopbanks and run off from intensive dairy farming - are all implicated in this expansion. Of most concern to Miranda Naturalists' Trust is the loss of wader roosts to mangrove expansion.

Recently a block of 11 hectares was purchased by the Trust, in association with a number of funding agencies. The block is 3-400 metres from the current shoreline and existing roost sites. Currently the land is dairy pasture on old shellbank cheniers. Our intention is to redevelop the land (along with any subsequent acquisitions of adjoining properties should they become available) as wader roosting habitat. We are now exploring how to proceed with this project. We envisage at least two major challenges: 1) Creating and maintaining a shallow water regime (fresh or saline, or both) 2) keeping vegetation cropped to a height suitable for waders.

Roost Management in South-East Queensland: Building Partnerships to Replace Lost Habitat.

Jill Dening

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South-East Queensland has for the past decade experienced some of the highest population growth in Australia, producing unsustainable impacts on some wildlife habitats. The Queensland Wader Study Group has been active for some years in the building of artificial roosts for migratory shorebirds, in an effort to replace coastal habitat losses.

This address looks at the building of partnerships with business and government, the structure of those partnerships, and how they can work so that each partner reaps some benefit from the liaison. Relationships which start out in an atmosphere of mutual mistrust can, when enough incentive is provided, progress to genuine partnerships in which each party reaps dividends on its investment, but not necessarily the same dividends.

The construction of the Kakadu Beach roost on Bribie Island, SE Qld, is tracked as a case study. The various stages of the undertaking, including its strengths and weaknesses, are discussed.

Once built, artificial roosts require regular maintenance, or they can become unattractive to waders. A structure should be set in place for the managing authority to understand clearly what on-ground work is required, and to receive ongoing advice from wader experts and other interested parties.

A challenge for the future of waders in urban areas, such as Moreton Bay, may be to take a broad approach to the pro-active management of roosts, both artificial and natural. This would involve the ongoing commitment of wader study groups, community groups and state and local government. One such fledgling group, the Pumicestone Shorebird Management Group, is currently working towards such an outcome.

Threats from Marine Farming in New Zealand to Waders on the East Asia-Australasian Flyway

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The majority of the 120,000 international wading birds on the New Zealand segment of the East-Asia/Australasian flyway, are found on the seven largest coastal wetlands and Lake Wairarapa in the North Island. These wetlands appear to be particularly important as staging points during the spring and late summer migrations, as birds congregate at these wetlands on arrival and departure. These coastal wetlands have also been identified by the marine farming industry as important areas for the expansion of marine farming and commercial shellfish gathering. A recent change to New Zealand's *Resource Management Act, 1991* has opened up opportunities for a significant expansion of marine farming throughout New Zealand including these key coastal wetlands. Implementation of planning for marine farming is most advanced in the Auckland region. A case study of the potential impact of the expansion of this industry illustrates the potential for significant impacts on wading bird populations in New Zealand and the East-Asia/Australasian flyway.

Session 5 – Community involvement

Chair: Roz Jessop

NOTES:

Wetland Centres – their role in shorebird conservation and education.

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The idea of building centres to raise awareness of the importance of wetlands and their wildlife, probably began with the opening of the centre at Slimbridge (U.K) in 1946 by Sir Peter Scott. Since then, a network of similar centres has been built around the world and wetland education has become one of the key tools in the conservation of wetlands and their wildlife. However, these Centres do not just focus on wetland education and public awareness. They are often carefully located on the edge of a significant wetland, so that the Centre may also play an important role in management of the wetland, conducting monitoring and research, and working with local communities and lobbying government for the long-term protection of the site.

Over the past decade, wetland centres around the world have been working more closely together through the Wetland Link International (WLI) initiative. This has allowed them to share resources and ideas for programmes, and to carry out co-operative projects. This has been particularly true in Asia, where a number of older wetland centres have played important roles in providing support for the establishment of new protected wetland sites and associated centres in other countries. Similarly in Australia, established Wetland Centres have been networked under the coordination of The Wetlands Centre Australia to build capacity among wetland educators. Education programmes, such as the Sister Schools Programme, have also brought together children from different countries that share the same migratory flyway, allowing them to learn more about wetlands and the migratory waterbirds that depend on them.

This presentation will provide a brief overview of the wetland centres along the East Asian – Australasian Flyway and the work that they carry out in promoting the conservation of migratory shorebirds and other wetland wildlife.

Linking scientific knowledge on shorebirds with multiple sectors of local community through education and public awareness – Lessons learnt from the Kashima Model in Japan and its adaptive application to the Yellow Sea Ecoregion in China and Korea.

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Sufficient scientific knowledge on shorebird population and ecology are fundamental to conservation of shorebirds and their habitat. However, usually this knowledge has been communicated only between narrow circles of government departments responsible for wildlife conservation and conservation NGOs in Japan. To test strategies for expanding this information exchange the Kashima-Shingomori site in Kashima City in Japan was chosen. It was chosen because it is an internationally important site for a number of shorebird species, including Whimbrel (*Numenius phaeopus*) in particular. However, because the area around the site is actively used for fisheries and agriculture, the local community had resisted the designation of a legally protected area in the past.

WWF-Japan started developing an environmental education programme in 2000 on this site with the participation of the local government, the local education board, a local primary school as a model school, and local environmental NGOs. Local community groups that were involved in education and public awareness activities not only recognised the importance of the Kashima-shingomori site, but they became motivated to continue the education and public awareness activities. After setting this precedence (of working with the local community on education and public awareness), WWF proposed a voluntary conservation option to the local government, which was to nominate the site as part of the East Asia-Australasia Shorebird Site Network. The local government consulted extensively with different sectors in the local community, and finally the local community agreed to nomination. The Kashima-shingomori site was formally designated as the network site in 2002.

The lessons learnt from the Kashima Model were that communication, education and public awareness activities that are based on scientific knowledge and that are targeted at multiple local sectors can create wider acceptance of and voluntary support for internationally important sites. This has happened because these local sectors, which had no direct wildlife conservation interests previously, were surprised by the scientific fact that the local site was internationally important and later they have developed a sense of local pride about their local site. Some of these groups also found new potential benefits such as opportunities for promoting regional development, nature-base tourism, community studies in formal education, better custodianship of a local area. These various local groups are continuing to develop their initiatives to better manage the site. The key to motivating multiple sectors in this case was that based on scientific knowledge, a site in the local community was given a accreditation as internationally important site.

Since 2002, in partnerships with WWF-China in China and the Korea Ocean Research and Development Institute (KORDI) in South Korea, WWF-Japan started the Yellow Sea Ecoregion Planning Programme and it has incorporated lessons from the Kashima Model into the design of the Yellow Sea Ecoregion programme. The programme has designated Chongming Dongtan in Shanghai City, China and the Geum estuary in Gunsan City, South Korea as community-based management model sites. The project is currently working with local communities on formal education at the initial stage, and plans to develop community-based management with multiple local sectors.

***"A Year on the Wing"* the reality and rigours of shorebird migration**

An Online Documentary

Nell White

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"A Year On The Wing" is a multimedia documentary project designed for viewing via the Internet. It takes us on an astounding journey with over two million wading birds as they attempt their annual migration from the Southern Pacific to Siberia and back.

Our guide for the journey is the largest of all migratory wading birds, the Eastern Curlew. We travel with Dr Clive Minton, world renowned ornithologist, and Sarah Watt, multi-award-winning animator and artist, both of whom have travelled the migratory path of the birds in their own way.

With their help we are able to visit communities, discover the wetlands and meet the people in locations from Aotearoa/New Zealand to places across Australia and throughout South East Asia. Artists, storytellers, and bird enthusiasts are just some of the interesting people we meet to see and hear how people across the world have for centuries been inspired by these shy and powerful creatures.

Initially released in June 2002, "A Year On The Wing" was designed to tell the story of the birds' journey as it unfolded in real time. Beginning with the breeding of wading birds in Siberia, each month, paralleling the progress of the birds' southern migration and their return north, a further leg of the documentary became available on-line, over 12 months.

The project was supported by the Australian Film Commission, ABC and Environment Australia. An interactive component with the facility for the contribution of stories, information, observations, art-work and argument, is an integral part of this on-line documentary.

Key aims of the project have been to develop a new media project which brings together the concepts of storytelling through documentaries together with the interactivity of the internet; Create a popular and innovative means to raise awareness of the amazing flight of migratory wading birds and in particular the Eastern Curlew; Raise greater awareness of the vital importance of preserving our environment, particularly wetland sites throughout the East-Asian Australasian Flyway; and Build understanding and develop links between people throughout the East-Asian Australasian Flyway so as to facilitate active involvement in conservation activities.

Over the first 12 months "A Year on the Wing" attracted an average of 3,500 hits per week and received enthusiastic responses from around Australia and the Flyway. There are a number of lessons to be learnt on how this medium can be best harnessed for use in community education.

Shorebird Conservation in Australia – community conservation action

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As the human population continues to increase, overlap between human activities and habitats for shorebirds will intensify. Threats to shorebirds and their habitats, both direct and indirect, include loss of wetlands, altered water regimes, pollution, introduced predators, invasive weeds, a lack of public education and related human disturbance, inappropriate planning schemes and climate change.

To date, Australia's efforts to conserve shorebirds have been directed through international agreements (eg. China Australia Migratory Birds Agreement (CAMBA) and Japan Australia Migratory Birds Agreement (JAMBA)), legal means to protect sites (eg. the Ramsar Convention on Wetlands of International Importance, the *Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act, 1999 protection within conservation estate)*) and the promotion of the East Asian-Australasian Shorebird Site Network to facilitate recognition and improved management of important sites. Also, Commonwealth programs have supported community-based action through initiatives such as Coastcare, Envirofund, the Australasian Wader Studies Group banding and monitoring program, and more recently the Shorebird Conservation Project.

The Shorebird Conservation Project, which focuses on encouraging and enabling communities to engage in shorebird conservation, has found that, at a community-level, the general lack of awareness and on-ground action reflects the limited information, resources and incentives available to local communities and decision-makers (eg. landholders and managers, user and interest groups and local government). There are many opportunities to be gained by building community capacity, and efforts in the future must recognise and address the needs of local communities and the contribution they can make towards the conservation of shorebirds in Australia.

Session 6 – Shorebird studies

Chair: David Melville

NOTES:

What have we learned from banding and flagging waders in Australia?

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A quarter of a million waders have been banded in Australia over the last 30 years. Around 120,000 of these have also been colour leg-flagged, since this process was introduced in 1990. Banding recovery rates are low (0.1 – 0.8%) but reporting rates of flagged birds, away from their marking area, are 20 times higher. Overall an outline is now available of migration routes, stopover locations and migration strategies for most of the main wader species. Every species has a different migration pattern. Many also use different routes and stopovers on northward and southward migration. The strategy used by most species is to make 2 to 5 long non-stop flights to travel the 10-13,000 km distance between the northern hemisphere breeding grounds and the non-breeding areas in Australia. Individual flights of 2000-8000 km on each stage are fuelled by pre-deposited fat resources, equivalent to 50-80% of normal body weight. It is therefore critical that stopover sites en route have sufficiently abundant food to enable migrants to gain weight at a rate of 3-5% per day. The Shorebird Site Network and the designation of important habitats under the RAMSAR Convention are helping to secure critical refuelling locations. Considerable ancillary data has also been generated during banding operations. For example the complex and varied way in which each species and age group fit the moult of their flight feathers into the annual cycle is now well understood. Biometric data has facilitated detection of differences in migratory behaviour between the sexes. Age data has helped determine how long birds have to live before they first return to their breeding grounds. Two critical areas require priority in ongoing data collection in the future and further analysis now. These are reproductive rates (determined from the proportion of young in the population) and survival rates (derived from retraps). Knowledge of these, and particularly changes in them over time, are fundamental to understanding population changes revealed by monitoring counts.

Shorebird Studies in Taiwan

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Migratory shorebirds have special conservation needs because of their annual migrations which pass through many different areas and countries for distances of thousands of kilometres. Taiwan, which is located in the midpoint of a major route on the East Asian-Australasian Flyway, is an important stopover and wintering area. The wetlands of Taiwan include tidal mudflats, mangrove swamps and salt marshes, primarily along the west coast.

Some of the Taiwanese coastal wetlands have been managed for conservation purposes, for example Fu-Bou Ecological Park, Kuan-Du Nature Park and Szutsao Wildlife Refuge. Some shorebird surveys are also conducted by individuals, local Wild Bird Societies or academic units. In other regions in Taiwan, some research has been undertaken into the relationship between shorebird communities and landscape change, temporal and spatial variations of shorebird communities and influenza surveillance of wild birds. The research of influenza surveillance just started to focus on waders in 2002.

TWSG (Taiwan Wader Study Group) is an informal group and the only shorebird study group in Taiwan. The members of the group are mainly lab colleagues of the Department of Environmental Science in Tunghai University. Our group has focused on shorebird studies for over 10 years in coastal areas of Changhua county and the studies have been variously focussed, including the feeding and breeding ecology, habitat utilization, migration strategy and population management of some target species. Counting and banding of shorebirds at Changhua coastal area were also undertaken by our group at least once a month. We put a metal ring and two flags (**White/Blue**) on each bird we banded and we also built and maintain a database of all wader banding and recovery data of Taiwan. A more convenient flag reporting system has also been built for local birders who found flags in the field. In recent years and the near future, the studies of the migration strategy and status of the three dominant species, Dunlin, Kentish Plover and Greater Sand plover, are what we are mostly interested in continuing.

Session 7 – Key Wetlands in the Flyway

Chair: Alison Russell-French

NOTES:

Population Estimates and Important Sites for Shorebirds in the East Asian-Australasian (EAA) Flyway

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This project was undertaken by Wetlands International Oceania, through funding by Environment Australia, in response to needs identified in the Asia-Pacific Migratory Shorebird Action Plan. The two major components were:

- Revise population estimates for shorebirds in the region;
- Use the 1% criterion (1% of the flyway population) of the Convention on Wetlands of International Importance (Ramsar) to identify sites of international importance.

The project involved a review of count data (where available) from 22 countries in the East Asian Australasian Flyway (EAA), and considered 54 species of migratory shorebirds. Major sources of data were the Australian Wader Study Group (AWSG) count database and the Asian Waterfowl Census, but many other sources were accessed. These data were entered into a database that was then used for the calculation of population estimates.

The review of count data provided population estimates for each species in each country during the non-breeding season (December to February), with these country estimates being used to calculate an EAA Flyway population estimate for each species. For species for which count data were inadequate, existing population estimates were retained. Over 5,000,000 migratory shorebirds are estimated to occur in the EAA Flyway.

EAA Flyway population estimates for each species provided 1% values that could be run against the database to find sites that met the 1% criterion for that species. Counts from any time of the year were considered, and the staging criterion (0.25%) was cautiously used for count data from migration periods.

Almost 450 important sites were identified across 21 countries. The report on this project contains species and country accounts and the Red-necked Stint within Australia are discussed as examples of the sort of information presented.

The EAA Flyway population estimate for the Red-necked Stint is 315,000, considerably less than previous estimates. Over 80% of the population occurs in Australia during the non-breeding season. There were 65 important sites for the species, with all non-breeding season sites in Australia. Sites important during migration were in Australia, Indonesia, Malaysia, Thailand, China, South Korea, Japan, Philippines and Russia, with more sites recognised during the northward (31 sites) than southward (20 sites) period. There were important sites in Australia recognised on the basis of breeding season counts, indicating that a considerable proportion of the population (presumably juveniles and non-breeding adults) remains in Australia at this time. On available data, almost all Red-necked Stints appear to migrate south through the Moroshechnaya River Estuary of the Russian Far East, but this site is used by fewer birds during northward migration. There were other seasonal differences in the distribution of important sites in eastern and south-eastern Asia and northern Australia.

Australia has 137 important sites for 28 shorebird species. This is a much smaller number of important sites than previously recognised because of the amalgamation of some clusters of sites. Australia supports >5% of the populations of 28 species in the non-breeding season, and over 75% of the populations of Bar-tailed Godwit (*L. l. menzbieri*), Little Curlew, Grey-

tailed Tattler, Great Knot, Red-necked Stint, Sharp-tailed Sandpiper, Oriental (Eastern) Sand Plover and Australian Pratincole. During migration, it supports over 75% of the populations of the Bar-tailed Godwit (*L. l. anadyrensis*), Red Knot and Ruddy Turnstone for which New Zealand is important during the non-breeding season.

Important sites in Australia were identified throughout the year, but with more (99) recognised during the non-breeding season, and more during southward (44) than northward (32) migration. 26 sites were important during the breeding season. These patterns indicate that birds concentrate more upon arrival on southward migration than during departure on northward migration, and that large numbers of some species remain in Australia through the breeding season. Only 4 sites were important for 10 or more species (Roebuck Bay, Eighty-Mile Beach, South-East Gulf of Carpentaria and Moreton Bay), while 80 sites were important for single species.

Which shorebird species are most at risk of population collapse in the East Asian Australasian Flyway?

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The East Asian Australasian Flyway has about 95 species of shorebird that breed and migrate through the Flyway. Of these, 48 species regularly migrate through the Flyway and the other 47 species are resident. Birdlife International has used the International Union for the Conservation of Nature (IUCN) risk criteria to identify bird species at risk of population collapse. They have identified 13 species of shorebird that are Threatened and have a high probability of extinction. Of these, 11 species are resident species and only two are long distance migrants. A further six species meet the criteria for Near-threatened status, which is the next level of risk. Of these, four are resident species and two are migrants. Thus, of the 19 species at risk in the East Asian Australasian Flyway, 15 species are resident.

Clearly, the majority of species at more immediate risk of population collapse are species resident or short distance migrants that are found in one or two countries. I assess the population characteristics of these species at risk in order to identify those parameters of most importance for sustaining the populations. To assess the probability of some of the more abundant migratory shorebird species, I undertook a similar analysis on key species potentially impacted by habitat reclamation in China and Korea. The results show that the majority of species that migrate through the Yellow Sea should be resilient to habitat loss, provided any increased death rate is less than 20%. Beyond this level, the mortality has a significant impact on breeding, especially in years of naturally poor fledging success.

Yellow Sea-driven priorities for Australian shorebird researchers

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If one single fact should focus the activities of Australian shorebird researchers it is that more than 1/3rd of the world's human population lives within the East Asian – Australasian Flyway - although it is only one of eight shorebird flyways around the globe. The great majority of these people live in very fast developing East Asian economies which are consuming and degrading shorebird habitats at an extremely rapid rate.

The Yellow Sea, located between China and the Korean Peninsular, is the most important staging region during the northward migration of shorebirds spending the non-breeding season in Australia. The information, or lack of it, gained from this region in recent years provides guidance on crucial research activities aimed at collecting the key data necessary to underpin effective conservation action.

Twenty of the 60 migratory shorebird species in the Flyway occur in Australia in numbers exceeding 30% of their estimated Flyway populations. Of these, it is believed that >90% of the breeding populations of three species pass through the Yellow Sea on their northward migration (Great Knot, Eastern Curlew and Bar-tailed Godwit), whilst the Yellow Sea supports in excess of 30% of the breeding numbers of an additional eight species at this time (Red-necked Stint, Red Knot, Whimbrel, Terek Sandpiper, Black-tailed Godwit, Broad-billed Sandpiper, Lesser Sand Plover and Common Greenshank).

Suggested opportunities for Australian shorebird workers include:

- Further survey work, spatially and temporally, in the Yellow Sea;
- Monitoring, within Australia, those species which are most threatened by habitat loss in East Asia;
- Marking populations and species not currently well covered; and,
- Co-operative migration studies within the Yellow Sea.

Sea of Okhotsk - key issues for moving forward

Yuri Gerasimov¹

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Daily observations of the southward migration of shorebirds at the Penzhina Estuary, Kamchatka were carried out over 61 days between July 12 - August 10 2002 and August 11 - September 10 2003. Two main methods of shorebird counting were used each day: a 5-6 hour count of shorebirds on mudflats along a fixed 10 km shoreline length; and a count of shorebirds flying past the study area. Observations have shown that shorebirds generally remain in Penzhina River Estuary no more than one day, as in this area suitable roosting places for species such as Dunlin, Red-necked Stint and some others are absent during high tide. There are no beaches, and only grasslands remain uncovered by water during high tide. Furthermore, during this migration, large numbers of shorebirds fly over the mudflats without stopping and are not included in the mudflat count. The total daily count of migrating birds therefore includes the count of birds on mudflats and birds in passing flocks (from visual daytime surveys). The fast passing of shorebirds through studied area has allowed estimate of total shorebird number by summation of data of daily counts. This survey has confirmed the high importance of the Penzhina River estuary for shorebirds during southward migration. In total of almost 450 thousand individuals of 30 shorebird species were counted. Most numerous were Dunlin (370 thousand), Red-necked Stint (62.8 thousand) and Red-necked Phalarope (10.7 thousand).

Session 8 – The need to identify critical sites in the Flyway

Chair: Mark Barter

NOTES:

The decline of the Spoon-billed Sandpiper – where are the threats?

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The Spoon-billed Sandpiper (SBS), a globally threatened species, has the lowest numbers among the East Asian waders. It is also one of the most poorly studied species in the flyway, with even the location of the main wintering grounds and key stopovers not known. Recent studies in the breeding grounds – Chukotka, Russia (2000-2003) brought us to the conclusion that the total numbers of the species may be critically low (300 – 500 pairs). Previous population estimates of 2800 pairs have been suggested (Flint, Kondratiev, 1977), however it is thought that these estimates may have been too high and that the population has declined over recent decades. Some of the previously known breeding locations are no longer used and the numbers of breeding birds in the key northern breeding site have declined twice in comparison with late 1980-s (Tomkovich, Soloviev, 2000). Preliminary results show high predation pressure and low fledging rate in SBS in the breeding grounds.

A number of factors may influence the decline. Among most likely ones are:

- Habitat change in key stopover or wintering grounds;
- Hunting pressure on some stopover sites;
- Decrease of breeding success and juvenile survival due to influence of unknown factors in the breeding grounds and other parts of the range.

It is possible that all factors are working together. Low recruitment may not be able to compensate increasing mortality, which bring the population to the decline. That may happen, especially in the species with low population numbers, even in the situation with no radical dramatic changes in one particular part of the flyway, but under the influence of numerous small pressures in different parts of the range.

Unfortunately we should state that our knowledge on which factor is the key responsible for the decline of the species is rather poor. More data are needed to make these conclusions and to define the conservation priorities.

What can we do to improve our knowledge and to take some steps towards SBS conservation?

- To continue the productivity-survival study by monitoring of color marked populations in the northern and southern parts of the breeding range to learn the population trend and to understand key limiting factors;
- To search for the main wintering and key stopover sites of the species, to define the threats there and start conservation planning and action;
- To study main ecological requirements and habitat preferences of the species in non-breeding period and understand the mechanism of limitations related with reclamation programs;
- To make the subpopulation genetic analyses to learn how many subpopulations we have, if all of them are declining and whether we should treat these subpopulations as subject for different conservation actions.
- To get better total population estimate by inventory of the potential breeding sites using satellite imagery interpretation methods followed by field studies;
- To continue pressing on Korean Government and companies to save the Saemangeum area in Korea – the main known stopover area.

In our opinion the key problem in species conservation for the moment is lack of recognition of the problem and lack of attention to the species from key international conservation bodies. The **SBS Conservation Expert Group** should be arranged and **Conservation Action Plan with adequate financial support** should be developed and implemented under the supervision of WI, Birdlife International and with the support of governmental agencies of key countries of the Australasian region. In spite of the fact that warning information on status and trends of SBS has been known for several years, no real action for conservation at the flyway level is going on. If we don't act now, we may see the extinction of SBS within the next couple of decades.

One-way movements of Red Knot between Australia and New Zealand and their migration strategies on the East Asian-Australasian Flyway.

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Extensive banding and flagging of Red Knot in various parts of Australia and New Zealand and comprehensive searches for flagged birds in New Zealand, have shown that there is considerable movement of Red Knot between different parts of Australia and New Zealand particularly during the southward migration. The majority of the birds observed at this time appear to be birds which have spent their first year in Australia and who then move to New Zealand during their second year. During subsequent years they seem to return directly to New Zealand. Such marked differences in the non-breeding areas of waders when they are immature compared with when they are adults is unusual. This phenomenon is considered in the perspective of what is currently known about the origins and migrations of the different races of Red Knot which occur in Australasia. Little is known about the migration strategies and staging sites of New Zealand and SE Australian Red Knot on the East Asian-Australasian Flyway, so we shall also look at what is known and what work should be undertaken to better understand the needs of the species.

Action Planning to save the Dunlin?

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Dunlin are the most numerous shorebirds within the East Asian-Australasian Flyway. They breed in Alaska and the Russian Far East, and spend the non-breeding season in East Asia. Serious concerns are held about the conservation status of the species, as much of the habitat Dunlin use during the non-breeding and migration periods is under very serious threat from reclamation, degradation, pollution and human disturbance.

The basis of effective conservation activity is good information. However, surprisingly little is known about Dunlin in our Flyway.

A summary will be given of the available information on the breeding ranges and population sizes of the different Dunlin subspecies, their non-breeding distribution and staging sites used during migration. Major gaps in our knowledge of the species are identified as are potential activities to fill these gaps, involving surveys, banding studies and population monitoring activities.

Critical Habitat in the Yellow Sea from a Korean perspective

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Recent surveys in Yellow Sea region show that this region support approximately 40 % of shorebirds in the East Asian-Australasian Flyway. Extensive intertidal mudflat areas at west coast of Korea have been major stopover sites for the migratory shorebirds, including two globally threatened shorebird species; Spoon-billed Sandpiper *Eurynorhynchus pygmeus* and Spotted Greenshank *Tringa guttifer*. During the last 10 years shorebird surveys in Korea, we found that more than 10% of shorebirds in the Flyway use Korean coastal habitats in their northward migration period. A total of 23 shorebird species exceeding 1% of their estimated flyway population occur in Korea and at least 12 species populations exceed 10% of estimated flyway populations.

Among the 22 sites that covered in Korea shorebird surveys, a total of 11 sites support more than 10,000 shorebirds. Among the sites, Dongjin Estuary (more than 140,000 birds), Mankyung Estuary (84,000 birds) and Asan Bay (79,000 birds) are the most important shorebird habitats in Korea. 19 sites support at least one shorebird species in internationally important number and 9 sites have been identified at which at least one globally threatened shorebird species occur in more than 1% of their estimated world populations.

The most threat that Korean coastal wetlands face is the habitat loss caused by the ongoing large-scale reclamation and development projects. During the last 10 years, large areas of intertidal mudflats in Yongjong Island and Namyang Bay have been lost by the new airport construction and local reclamation projects. And the estuarine habitats in Mankyung and Dongjin River are threatened by the large-scale development project.

Ministry of Environment, Korea is planning the countermeasure for the wetland loss and the serious biodiversity decrease, caused by past development-driven policy. And the two cooperated surveys (1999~2000, 2003) were conducted in Mankyung and Dongjin Estuary, to find out wise-use planning of the wetlands.

Major NGO activity for the conservation of shorebirds and their habitats is the "shorebird monitoring program" by the Korean Federation for Environmental Movement (KFEM). This program include the shorebird monitoring works, shorebird-guide training and the public education programs. Another relevant program is the "Yellow Sea Ecoregion Planning Programme" by Korea Ocean Research and Development Institute (KORDI) and WWF. Major purposes of this program are planning for the communication, environmental education and increase of public awareness in local communities and building a network of scientists in Korea, China and Japan. Gunsan City was selected as the first demonstration site of this project. In order to achieve this program's goals, several environment education programs have been conducted, focused on the importance of shorebird habitats in Mankyung Estuary and national workshop for the public awareness increasing was held in Gunsan City.

Session 9 – The need to identify critical sites in the Flyway

Chair: Lew Young

NOTES:

"The Wildlife Conservation Plan for Migratory Shorebirds - a new approach to migratory shorebird conservation in Australia"

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All migratory shorebirds which visit Australia and are listed under international migratory species conservation agreements received national protection as a matter of national environmental significance when the *Environment Protection and Biodiversity Conservation Act, 1999* took effect in July 2000. Under the Act, Wildlife Conservation Plans can be prepared to provide for the research and management actions necessary to support survival of listed migratory species.

The Australian Government Department of the Environment and Heritage is preparing a *Wildlife Conservation Plan for Migratory Shorebirds* in consultation with relevant stakeholders. The aim is to provide a strategic approach to management of migratory shorebirds and describe implementation of the *Action Plan for the Conservation of Migratory Shorebirds in the East Asian – Australasian Flyway* in Australia.

This presentation will provide background to the plan and procedure for its development, and inform the conference about the consultation process.

Shorebird Action Plan for the East Asian-Australasian Flyway – Lessons Learned

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The Asia-Pacific Migratory Waterbird Conservation Strategy was launched in 1996 as an international cooperative framework for conservation action across networks of key wetland sites for migratory waterbirds in the East Asian-Australasian Flyway. It includes separate Action Plans for each of the three main migratory waterbird groups: shorebirds, cranes and Anatidae. The Shorebird Action Plan for the East Asian-Australasian Flyway includes 14 actions grouped across three themes:

1. Developing the network of internationally important sites for shorebirds,
2. Improved management of these sites; and
3. Enhancing the information needed to conserve shorebirds.

The Shorebird Action Plan is commencing a review of its second 5-year term (2001-2005).

There are currently 33 sites in 11 countries participating in the Shorebird Site Network, and a target has been set to have 100 (25%) of the known internationally important sites, and 20 countries, participating by December 2005. Developing the size of the network is considered crucial to success of the program, but increasing the number of participating sites has been limited in many countries by extremely low levels of awareness about shorebirds, and limited capacity of site managers and governments to commence or complete the process for nominating new sites.

A focus to date on basic shorebird skills training, especially in the critically important Yellow Sea region, has led to major improvements in the collection of scientific information for setting conservation priorities, as well as benefits in site management, education and awareness, and government support. Other conservation, education and research activities within the current network of sites and organisations have proved very effective at improving the level of awareness even beyond the site networks, so that the program has moved into a new phase in countries such as China where initiatives and resources for shorebird conservation have recently begun to arise from within the country. Evaluation of the program to date has identified several potential areas of focus where the Shorebird Action Plan could strengthen conservation outcomes:

1. Examine more speedy ways to add sites to the network, eg. working closely with governments to nominate groups of sites into the Shorebird Site Network;
2. Enhance capacity in SE Asia through training programs in shorebird skills, education and awareness, and establish a directory of training providers in shorebird research, education and awareness and site management skills;
3. Promote partnerships between local stakeholders, business and corporate sectors to develop sustainable land and water use at key wetland sites and in catchments.

Loss of habitat continues to be the major threat to sustaining shorebird populations, especially in the Yellow Sea. Conservation actions must increase the appreciation of the values and benefits of the wetlands used by shorebirds, and enhance the priority given to biodiversity conservation in land-use planning and management. Further developing the network of sites needs to remain the crucial element of the Shorebird Action Plan as it fosters and demonstrates this increased appreciation of the values of these areas. Management activities must increasingly involve local and national stakeholders in the wise use of key waterbird habitats.

WORKSHOP SESSION – *where to from here?*

Objective of this workshop is to examine the future role of the AWSG in shorebird conservation in the Asia Pacific Region, with focus on the major concerns for shorebirds, how to next respond to these concerns, and enhancing the Shorebird Site Network and its activities in the Asia Pacific Region.

NOTES:

Poster Papers

Not Just Another Survey - Mackay Wader Surveys 2003

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The Queensland Wader Study Group (QWSG) has completed three surveys of the Mackay coastal region and a number of freshwater wetlands in 2003. This was supported with funding from the Natural Heritage Trust through the World Wide Fund for Nature (WWF) Shorebird Conservation Project. Previously, four sites in the region had been identified in Watkins (1993) as having internationally significant numbers of waders.

In 1996, Dr Peter Driscoll assessed waders along the Queensland coastline and he estimated the wader population for the central coast region (between 20° and 22° S) to be about 19,000 birds. He listed thirteen roost sites having over 300 waders each within the region covered by the current survey. However, this assessment was based on counts over several years and no single count had been made of the entire central coast of Queensland.

The QWSG, in partnership with the Queensland Parks and Wildlife Service, the Mackay Conservation Group and supported by the Mackay Bird Observers Club, undertook the surveys of the population of waders from Cape Palmerston to Proserpine. These comprehensive surveys have involved transportation of observers to about 40 significant high tide roosts

The first survey was conducted over two days in January 2003. Key regions surveyed included Armstrongs Beach, Ince Bay, Sandringham Bay, Sand Bay and New Beach. This survey recorded a count of 21,629 waders. The full population for the region is estimated to be in excess of 22,000 waders during the austral summer given that as many as 1,000 additional waders were noted during aerial surveys that were done in November and April at locations not counted in January.

Counts in April and October 2003 provided additional information on how the region is used during migration. Data collected during these two surveys indicated that the region is particularly important for Grey-tailed Tattler and Whimbrel during their northward migration, and Grey-tailed Tattler and Eastern Curlew during their southward migration. The region supports over 3% of the Flyway population of each species during these times. Nine species of waders occurred in internationally significant numbers in the region and they include Pied and Sooty Oystercatcher, Whimbrel, Eastern Curlew, Lesser Sand Plover, Greater Sand Plover, Grey-tailed Tattler, Great Knot and Bar-tailed Godwit.

The information obtained from these surveys will be useful to the QPWS in future surveys and for conservation planning. The Environmental Protection Agency and QPWS will also feed this information into the local governments in comments provided as part of the normal planning scheme preparation process. A copy of the final report has also been provided to local governments, providing them with knowledge of important wader roost sites within their jurisdiction.

Time activity budget of the Eurasian Curlew (*Numenius arquarta*), Mongolian Plover (*Charadrius mongolus*) and Common Redshank (*Tringa totanus*) in the intertidal mudflat of Kapar, west coast of peninsular Malaysia

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Focal individual sampling was used to collect time activity budget data (i.e. behavioural) on three species of migrant shorebirds; Eurasian curlew (*Numenius Arquarta*), Mongolian plover (*Charadrius mongolus*) and Common redshank (*Tringa tetanus*) in the intertidal mudflat of Kapar of the Selangor coast on the west coast of Peninsular Malaysia. This sampling was conducted during the southward migration period. The behaviours and activities investigated were feeding (pecking, probing or scything), locomotion (walking, flying or running), resting (stationary position with either their bill under wing, or neck and head kept without motion), body maintenance (preening, wing stretching) and alert (stationary position with bird visually scanning surrounding). Overall results indicated that these behaviours were significantly different among shorebird species (Wilk's $\lambda= 0.102$, $P<0.001$) and that the highest time ($>50\%$) was spent in feeding activity and least time was spent in resting/sleeping on the intertidal mudflat. In conclusion these activities proved that the mudflat on the west coast of Peninsular Malaysia provide important stopover and wintering sites for migrant shorebirds to replenish energy and nutrient reserves and perhaps as important resting sites during migration.

Managing Habitats for Shorebirds – the Parramatta River Estuary

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There has been a past history of treating wetlands as wastelands and waterways as drains for carrying wastewater. Rapidly expanding development around the bays and foreshores has caused extensive loss of habitat and disturbance. Sydney Olympic Park Authority has the opportunity, through wise management, to manage parts of the wetlands for shorebirds, by providing both quality feeding habitats and safe roosting sites. The Parklands Plan of Management ensures that conservation and enhancement of biodiversity has been incorporated into planning, design and construction of the landscapes. For an urban area, it is a place of high biodiversity value.

Fifteen species of migratory shorebirds have been recorded in the Parramatta River estuary and most of these have been in decline over the past years, as in other parts of the region. The estuary was listed as a priority 3 site of importance for migratory shorebirds in 1991. Other species of shorebirds use the estuary regularly or as a refuge during drought.

In the coastal zone there are increasing pressures to shorebirds and their habitats. Local challenges include disturbance, pollution and run-off, excess nutrient levels leading to algal blooms and growth of mangrove seedlings and other invasive species in feeding areas. This is a highly modified environment.

SOPA Management however continues to resource planning, training, monitoring and education. Substantial remediation, improvement of tidal exchange into the wetlands and ongoing research and monitoring all contribute to improving the environment. Appropriate management of the habitat is essential for the long-term protection of shorebirds.

Nocturnal and diurnal habitat use by Double-banded Plover

Charadrius bicinctus in Botany Bay, New South Wales, Australia.

Geoffrey Ross and Sally Weekes

Botany Bay National Park, Department of Environment and Conservation, Parks Service, Sydney 2003
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The aim of this study was to identify important feeding and roosting sites of Double-banded Plover *Charadrius bicinctus* in Botany Bay. Sites used during the day and at night were identified over a five-month period (May - September 2003), by making behavioural observations of 40 – 50 birds during the day and radio-tracking five birds at night. Opportunistic visual observations were also made of a night. *C. bicinctus* used three habitats within two sites. Penrhyn Inlet, a small inlet with tidally exposed sand and mudflats on the northern side of Botany Bay subject to high levels of human disturbance, was used primarily as a diurnal roost. The other site, Sydney Airport, was used as a diurnal roost and nocturnal roost and feeding site. During the day the birds were observed in a loose flock loafing on a crushed concrete perimeter or the retaining wall of the southern tip of the runway 34R. During the night they dispersed as small groups or individually over both runways. The population utilised a much larger home range at night (617.5 ha) than they did during the day (51.5 ha). Precipitation (mm), air temperature (°C), relative humidity (%), wind speed (km/h) and wind direction (°) did not have a strong influence on diurnal site choice. However, the population was recorded at Penrhyn Inlet more often when night time and daytime air temperature was low (<15°C), relative humidity was high (>75%), and when there was little wind (wind speed < 19km/h). Time of day best described diurnal patterns of behaviour while tide, air temperature, wind speed, wind direction and relative humidity had little influence. *C. bicinctus* spent the greatest proportion of daylight roosting than any other behaviour.

These results suggest that the Botany Bay population of *C. bicinctus* use the parallel runways at the airport to forage on a night. Considering that there is approximately 50km of shoreline, *C. bicinctus* showed a strong preference for only two sites within Botany Bay. Environmental variables appeared not to explain why such a preference exists.