The Asian Waterbird Census:
Development Strategy 2007–2015

WETLANDS INTERNATIONAL

CONTENTS

FOREWORD

The International Waterbird Census (IWC) is a global programme for the monitoring of waterbirds. It was established by Wetlands International in Europe in 1967, against a background of concern that waterbird populations were declining and that the time had come to develop effective conservation measures. Censuses had already been developed for many species of European breeding birds, but for waterbirds, so many of which breed in spring in the northern parts of Russia, a winter census was set up because of the inaccessibility of the important breeding areas. This programme to census non-breeding waterbirds was later introduced and established in Asia (1987), Africa (1991) and South America (1991).

Over 105 countries have participated in the IWC to date, and over 30 million waterbirds have been counted in the participating countries in recent years. The results of the IWC make up one of the most extensive biodiversity time-series databases. The waterbird data have provided important information for decision makers and planners at both national and international levels. One of the best known uses of the data has been their application in the selection and designation of Wetlands of International Importance under the Ramsar Convention on Wetlands: nearly half of the 1,675 Ramsar sites in its 155 member countries have been designated using the waterbird criteria. Important publications generated using the IWC data and informed by the network of waterbird specialists associated with Wetlands International include Waterbird Population Estimates (4th edition published in 2006).

Similarly, the data have been important for the Convention on Migratory Species and its daughter agreement, the African-Eurasian Migratory Waterbird Agreement, in assessing the status of – and identifying site networks for – waterbird species. The data are being used for similar purposes in the other flyways of the world through the Central Asian Flyway and the East Asian – Australasian Flyway Partnership initiatives. Partner organisations such as BirdLife International use the IWC data and its associated publications for their Important Bird Areas and Red List programmes. The waterbird time series have been used for the development of 2010 biodiversity target indicators.

The Asian Waterbird Census (AWC) has grown rapidly since 1987 and now covers a large part of the globe. To date at least 6,000 wetlands in 27 countries have been surveyed, with the active participation of tens of thousands of volunteers.

A review of the development of the AWC over the past 20 years clearly reveals that the programme has seen many achievements. Its greatest strength has been its ability to mobilise large networks of volunteers to undertake the census work. However, there have also been challenges, typical of the problems in many developing Asian countries. Major issues are the lack of adequate census capacity, equipment and financial support, and changes in levels of volunteer interest, resulting in inconsistent site coverage and data quality. Because, worldwide, financial resources for this work are very limited, it has not been possible to provide support strong enough to make a significant improvement to these constraints.

Recently it has become very apparent that the understanding of wild birds, their migration, numbers and sites they visit is of vital importance: the threat of avian influenza has increased the interest in waterbird data and, within the framework of the Global Avian Influenza Network for Surveillance (GAINS), a collaborative effort of a large consortium of stakeholders, coordinated by the Wildlife Conservation Society, important steps are being taken to upgrade the quality of the AWC database. This provides a very good basis for a strengthened AWC in the future.

What will happen to the AWC over the coming 10 or 20 years? What can we do to make this programme even more successful? The AWC Coordinators' Meetings in 2003 and 2006 were very successful in reaching agreement amongst the coordinators from all the participating countries on objectives and priorities to carry the programme forward and achieve a high standard of waterbird monitoring. I would like to thank the coordinators and many others within the Wetlands International network who have kindly helped to produce and review this strategy. In particular, I would like to thank the Keidanren Nature Conservation Fund for supporting the publication of the strategy.

The strategy presented here provides a clear direction and way forward for all of us working with and for the census. The strategy is intended to function as a guide not only for Wetlands International and the organisations that coordinate the AWC in the region but also for each individual who participates, supports or expresses interest in the AWC. It is only when we all continue to work together and build on what we have done so far that we can jointly achieve the success of the programme.

If our efforts are successful, in another 20 years we should be able to look back with pride and say that the AWC has been a great success for waterbird and wetland conservation. Let's work towards to this aim together!

Ward Hagemeijer

Programme Head Biodiversity and Ecological Networks
Wetlands International

1. BACKGROUND

Migratory waterbirds are one of the most remarkable components of global biodiversity. Their long migrations and tendency to concentrate in large numbers at particular wetlands make them both visible and charismatic. Waterbirds are important indicators of the ecological condition and productivity of wetland ecosystems, and their presence is widely valued by numerous stakeholders including local human populations, research biologists, tourists and associated enterprises. The presence of waterbirds also offers many opportunities for using wetlands sustainably, particularly through eco-tourism. This is particularly important for developing countries, since protecting waterbird habitats may impose an additional resource burden on them.

> “Waterbirds are one of the key attributes of the biodiversity of many wetlands.”

Waterbirds are one of the key attributes of the biodiversity of many wetlands, and waterbird counts form one of several elements that are used to identify important wetlands. It is widely accepted that the number of waterbirds using a wetland site is a good indicator of that site’s biological importance (e.g. Scott 1980). Bird counts can also provide vital evidence of the need to provide statutory protection for certain wetlands; Kushlan (1993) assessed the value of waterbirds as bio-indicators of wetland change, and one of his conclusions was that “population level data show special promise as sentinel bio-indicators”. Such long-term waterbird count data have been especially influential in the identification of Wetlands of International Importance (Ramsar sites), sites for designation under the East Asian – Australasian Flyway Site Network and the Important Bird Areas programme, and national protected areas.

Waterbirds are readily counted because many species congregate conspicuously during several stages of their annual cycle. No other group of birds has been so comprehensively and frequently surveyed. Within the framework of the global International Waterbird Census (IWC), there is a growing tradition in Asia of using long-term waterbird census data (from the Asian Waterbird Census – AWC) as a basis for estimating the sizes and trends of waterbird populations, parallel to similar developments elsewhere in the world. The IWC is one of the world’s longest running and most extensive harmonised biodiversity monitoring programmes. The information obtained from the IWC has considerable conservation value at the local, national and international levels and a growing scientific impact.

1.1 The International Waterbird Census as a global programme

The Wetlands International Strategic Intent 2005–2014 (Wetlands International 2005 – www.wetlands.org) defines four strategic global goals to realise its vision and mission.

Global Goal 1: Stakeholders and decision makers are well informed about the status and trends of wetlands, their biodiversity, economic values and priorities for action.

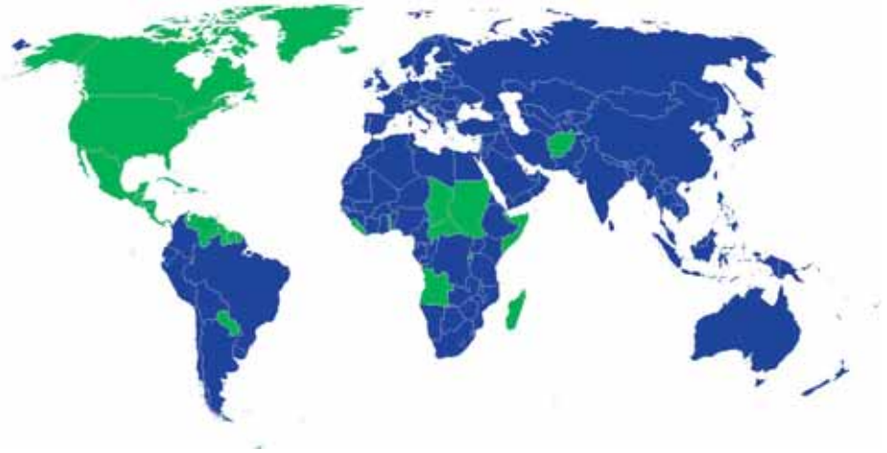
Global Goal 2: The values and services delivered by wetlands are recognised and integrated into sustainable development.

Global Goal 3: Conservation and wise use of wetlands is achieved through integrated water resource and coastal zone management.

Global Goal 4: Improved conservation status of wetland biodiversity is achieved through large-scale, transboundary initiatives for wetland-dependent species and critical habitats.

The IWC is a site-based counting scheme for monitoring waterbird numbers, organised by Wetlands International, which strongly contributes to the global goals, particularly goals 1 and 4. The census is coordinated as four regional programmes:

- The Asian Waterbird Census (AWC), which covers South, East and Southeast Asia (including eastern Russia) and Australasia and which is the subject of this strategy, is coordinated from the Wetlands International office in Kuala Lumpur, Malaysia (see e.g. Li and Mundkur 2004, 2007).
- The counts in the Western Palaearctic and Southwest Asia (IWC–WP&SWA) are coordinated and compiled by the Wetlands International office in Wageningen, The Netherlands (see e.g. Gilissen *et al*. 2002; Solokha 2006).
- The African Waterbird Census (AfWC) is coordinated from the Wetlands International office in Dakar, Senegal (see e.g. Dodman and Diagana 2003).
- In South and Central America, the Neotropical Waterbird Census (NWC) is coordinated by the Wetlands International office in Buenos Aires, Argentina (see e.g. Lopez-Lanus and Blanco 2005).



Country coverage of the Asian Waterbird Census

participating countries *not currently participating countries*

The recommendations of the Strategic Plan of the IWC include:

- continue expansion of the census towards a global survey;
- finalise the new database programme, merging taxonomical databases, and have it adopted in all regions, which will facilitate exchange of data between the regional databases;
- disseminate the results of the IWC more regularly, especially through the internet;
- include waterbird data from additional seasons and sources;
- increase capacity to deliver products that meet the needs of conventions and their contracting parties, mainly through the increase in species coverage and geographical coverage;
- increase cooperation with organisations working towards the conservation of (migratory) waterbirds (e.g. BirdLife International: Global Species and Important Bird Areas (IBA) Programmes, hunting organisations);
- link the database with a Geographic Information System (GIS), to standardise geographical definition of sites; and
- extend the scope of application of the data, for example with research on climate change and avian influenza.

The major change in the direction proposed for the IWC is the development of a more global character and closer interaction of the regional schemes in terms of standardisation and data management and application.

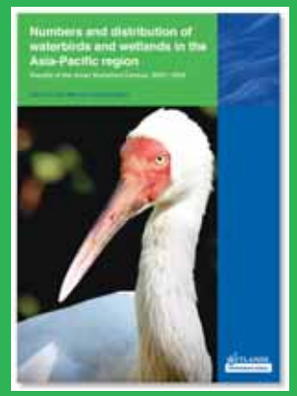
1.2 Background to the Asian Waterbird Census

The AWC is coordinated from Wetlands International's office in Kuala Lumpur, Malaysia. The census was initiated in 1987 in the Indian subcontinent, and has grown rapidly to cover South Asia, Southeast Asia, East Asia (including eastern Russia) and Australasia. Until 1993, the AWC included the region of South West Asia (which comprised the Arabian Peninsula, Iran and the Central Asian Republics). Responsibility for coordination of this region was transferred to the Wetlands International Netherlands office in 1994 to unify coordination of the IWC in all range states covered by the African Eurasian Waterbird Agreement (AEWA) and to enable improved use of IWC data to support the growing needs of the agreement.

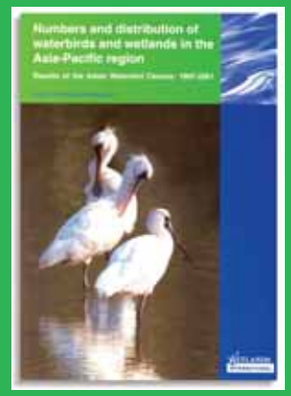
Information generated by the AWC from 1987 to 1993 has been published in a series of annual reports (van der Ven 1987, 1988; Scott and Rose 1989; Perennou et al. 1990; Perennou and Mundkur 1991, 1992; Mundkur and Taylor 1993). In addition to these annual reports, results from the years 1987 to 1991 were analysed to generate the first regional estimates of numbers and trends of waterbird populations, to summarise species distribution and to identify important wetlands; the results were published in a comprehensive report (Perennou et al. 1994). The data for the periods 1994–1996, 1997–2001 and 2002–2004 were compiled by Lopez and Mundkur (1997), Li and Mundkur (2004) and Li and Mundkur (2007) respectively.

A review of the implementation of the AWC was presented to the Global Flyways Conference in 2004 (Li and Mundkur 2006). In addition, national reports have been compiled by several of the participating countries.

To its credit, the AWC has been extremely successful in achieving its primary objectives (see section 1.3). As a result of their increased awareness, local people and governments are now setting about the conservation of important sites in most of the countries covered by the census. However, coverage and conservation efforts vary considerably, and the increasing pressure on wetlands and their biodiversity highlights the need to strengthen the programme to tackle emerging challenges; these include global climate change and its far-reaching impacts on changes in distribution, cover and type of wetlands as well as seasonal variations linked to probable changes in the carrying capacities of the wetlands used by the waterbirds for feeding, nesting and roosting.



The AWC 2002-2004 report



The AWC 1991-2001 report

Country coverage of the Asian Waterbird Census

In October 2003, the first meeting of the AWC national coordinators was held in Kuala Lumpur (Malaysia) and a Strategy for the Development of the Asian Waterbird Census: 2004–2006 (Wetlands International 2003) was developed as the major output of the meeting; it provided a clear direction for the development of the AWC. Progress on the implementation of this strategy was reviewed before the second AWC National Coordinators' Meeting, held in October 2006 in Manila (Philippines). Following this review, plans for a strategy to develop the AWC in 2007–2015 were discussed at the Manila meeting. The present strategy is an outcome of the deliberations in Manila and was agreed at the meeting by the national coordinators.

1.3 Objectives of the Asian Waterbird Census

The AWC aims to contribute to the conservation of waterbirds and their wetland habitats by:

- providing the basis for estimates of waterbird populations;
- monitoring changes in waterbird numbers and distribution by regular, standardised counts of representative wetlands;
- improving knowledge of little-known waterbird species and wetland sites;
- identifying and monitoring (networks of) sites that are important for waterbirds in general and, more specifically, identifying and monitoring sites that qualify as Wetlands of International Importance under the Ramsar Convention on Wetlands;
- providing information on the conservation status of waterbird species and wetland sites, for use by international agreements and other nitiatives;
- increasing awareness of the importance of waterbirds and their wetland habitats at local, national and international levels.

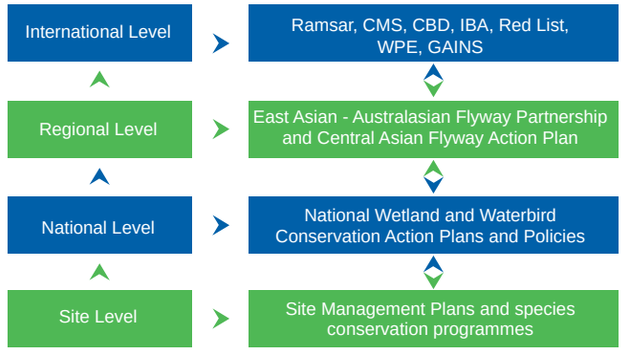
The AWC also aims to build and strengthen national networks of enthusiastic and dedicated volunteers and facilitate their training as an integral part of achieving its objectives.

1.4 Applications of the Asian Waterbird Census and rationale for its continued development

The AWC has played a significant role not only in the conservation of waterbirds and their habitats at the national level but also at the international level. It has contributed to a variety of conservation activities at levels ranging from local to global by supporting:

- the Ramsar Convention in identifying wetlands of international importance through regular monitoring of waterbird sites;
- the Convention on Migratory Species (CMS) by monitoring the status of migratory waterbirds and their habitats;
- the Convention on Biological Diversity (CBD) in its goal to conserve and use biodiversity sustainably;
- the development and implementation of the East Asian – Australasian Partnership and Central Asian Flyway Action Plan initiative;
- BirdLife International's Important Bird Areas (IBA) Programme;
- IUCN Red List/BirdLife International's Global Species Programme;
- Wetlands International's Waterbird Population Estimates (WPE) Programme;
- Global Avian Influenza Network for Surveillance (GAINS) programme led by the Wildlife Conservation Society;
- the development of national wetland and waterbird conservation Action Plans and Strategies; and
- species and site conservation and research programmes and campaigns to raise awareness of the importance of wetlands and waterbirds in many countries.

The Asian Waterbird Census's contribution to national and international conservation frameworks



Key: Ramsar – Convention on Wetlands, CMS – Convention on Migratory Species, CBD – Convention on Biological Diversity, IBA – BirdLife International's Important Bird Areas Programme, Red List – IUCN Red List/BirdLife International's Global Species Programme, WPE – Wetlands International's Waterbird Population Estimates Programme, GAINS – Global Avian Influenza Network for Surveillance.

As an important conservation programme for waterbird conservation, the AWC has been widely recognised by agencies and organisations responsible for nature conservation at local, national and international levels, and there is a need to develop a long-term strategy to ensure the successful future development and delivery of the AWC at all these levels. The following section provides a brief insight into the relationship between the AWC and the main data users.

1.4.1 Convention on Wetlands (The Ramsar Convention) www.ramsar.org

The Convention on Wetlands (Ramsar, Iran, 1971) promotes the conservation of wetlands worldwide. The Convention has grown rapidly since its establishment in 1971 and, as at 1 August 2007, 155 countries were signatories. Contracting Parties are required "to recognise and conserve any internationally important wetlands", by designating them as Ramsar sites; on 1 August 2007 the Ramsar List of Wetlands of International Importance comprised 1,675 sites worldwide covering more than 150 million hectares. The majority of sites are designated based on their importance for waterbirds. Data for these designations in Asia are normally based on annual count data generated through the AWC and similar programmes.

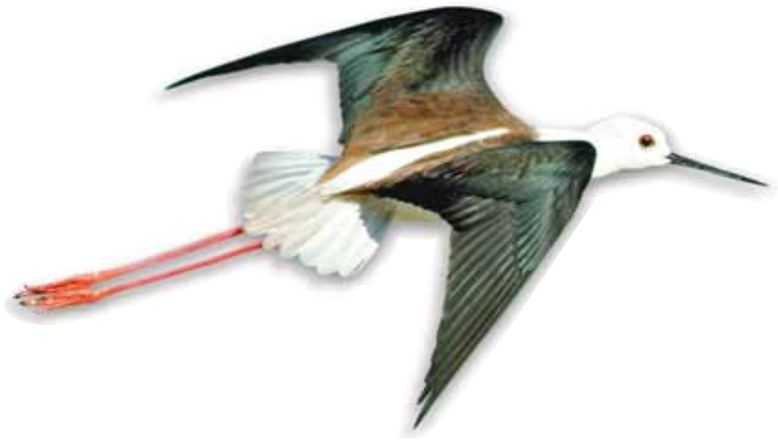
The Convention has adopted eight criteria for identifying wetlands of international importance, three of which relate to waterbirds:

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

The updated information on waterbird populations and wetlands provided by the AWC offers support to the efforts of governments in the region to continue to identify wetlands that qualify for designation as Wetlands of International Importance. In addition, the data published in various AWC reports make a vital contribution to the understanding of the status of the wetlands and waterbird species through the assessment of population sizes and trends; these are regularly published by Wetlands International in the Waterbird Population Estimates series (see 1.4.3). The development of the AWC (as part of the IWC) and regular updating of the Waterbird Population Estimates was strongly encouraged and requested at the 6th and 8th meetings of the Contracting Parties to the Ramsar Convention (Res.VI.4: Adoption of population estimates for operation of the specific criteria based on waterfowl and Res.VIII.38: Waterbird population estimates and the identification and designation of Wetlands of International Importance).



1.4.2 Convention on Migratory Species (CMS, The Bonn Convention) www.cms.int

The Convention on the Conservation of Migratory Species of Wild Animals (CMS, Bonn, 1983) provides an international framework for the conservation of migratory species, which include many species of waterbirds. The Convention has grown rapidly since its establishment in 1983 and, as at 1 August 2007, 104 countries were signatories to it. The Convention requires the Contracting Parties to promote, cooperate with and support research relating to migratory species and to avoid any migratory species becoming endangered.

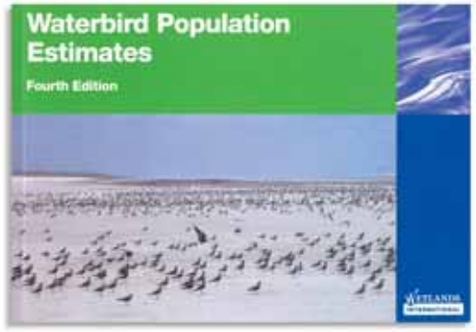
The waterbird monitoring data generated by the AWC provide a valuable information base for the Convention and its Contracting Parties in promoting the conservation and management of migratory waterbirds and their habitats in the region. Information collected by the AWC contributes to the updating of the species currently listed in the CMS Appendices (inclusion of a species in either appendix constitutes the basis for taking action by the Convention), and to the identification of new species to be listed in the Appendices.

1.4.3 Waterbird Population Estimates Programme
www.wetlands.org

Wetlands International collates information on the status of the populations of waterbirds around the world and regularly produces *Waterbird Population Estimates*, which is the authoritative reference for the identification of Wetlands of International Importance based on the Ramsar Convention's '1% criterion' and the species on the CMS Appendices (see 1.4.1 and 1.4.2).

The fourth edition of *Waterbird Population Estimates* was published in 2006 (Wetlands International 2006). It identifies 815 waterbird populations in Asia and notes the lack of population trends for 56% of these; for populations with trend information, 62% are decreasing or extinct, 27% are stable and only 10% are increasing. Waterbirds thus have a less favourable status in Asia than in any other continent. It calls for the collection of new information, recognising the absence of updated and reliable estimates for a high proportion of Asian species.

The wealth of data collected through the AWC serves as a basis of collating and evaluating information on waterbird populations and trends for inclusion in *Waterbird Population Estimates*.



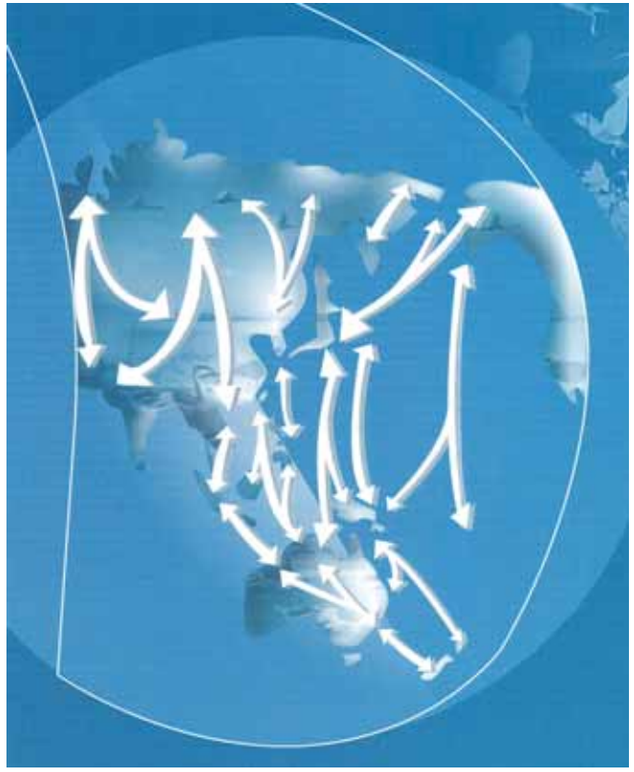
1.4.4 East Asian – Australasian Flyway Partnership initiative

The East Asian – Australasian Flyway Partnership is an international cooperative initiative of governments, conventions and international organisations launched in late 2006. The East Asian – Australasian Flyway Partnership initiative focuses on 1) developing the Flyway Network of sites of international importance for the conservation of migratory waterbirds, building on the achievements of the existing flyway site networks; 2) enhancing communication, education and public awareness of the values of migratory waterbirds and their habitats; 3) enhancing flyway research and monitoring activities, building knowledge and promoting exchange of information on waterbirds and their habitats; 4) building the habitat and waterbird management capacity of natural resource managers, decision makers and local stakeholders; and 5) developing, especially for priority species and habitats, flyway-wide approaches to enhance the conservation status of migratory waterbirds. Achieving these objectives will require strong participation and support from governments, local non-government organizations, experts and interested individuals.

The Partnership has evolved as one of two flyway initiatives (the other being the Action Plan for the Central Asian Flyway) from the Asia-Pacific Migratory Waterbird Conservation Strategy (APMWCS). The APMWCS (Anonymous 1996; Asia-Pacific Migratory Waterbird Conservation Committee 2001) has served as an international cooperative conservation initiative for waterbirds and wetlands in the Asia-Pacific region and was supported by government agencies, the Ramsar Convention, CMS, non-government organisations and technical experts.

The strategy has been very successful in setting frameworks for conserving migratory waterbirds and their habitats through a range of activities such as the development and implementation of species action plans and site networks for Anatidae, cranes and shorebirds in the East Asian – Australasian flyway region (Mundkur 2006).

The AWC played a key role in supporting the development and implementation of the APMWCS, and will continue to support the implementation and development of the Flyway Partnership initiative.



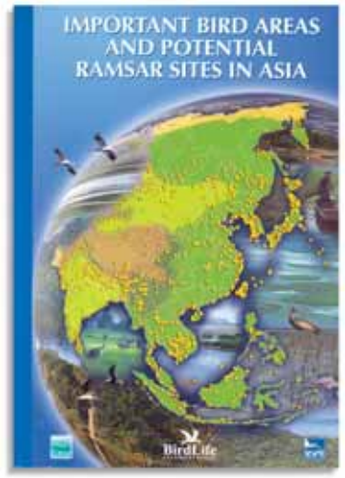
1.4.5 Central Asian Flyway Action Plan for the Conservation of Migratory Waterbirds and their Habitats

The Central Asian Flyway Action Plan for the Conservation of Migratory Waterbirds and their Habitats was finalised in 2005 (CMS 2006); it covers the conservation of species, conservation and management of habitats and management of human activities. It states that "Range States shall endeavour to be involved in regular monitoring programmes, such as the AWC and IWC in central Asian countries, complemented by surveys of important breeding grounds, staging and non-breeding (wintering) sites. The results of such surveys shall be published and disseminated widely. The results will also be sent to appropriate international organisations, to enable reviews of population status and trends."

1.4.6 Important Bird Areas Programme www.birdlife.org

BirdLife International's IBA Programme is a worldwide initiative aimed at identifying, documenting and protecting a network of sites critical for the conservation of the world's birds. These sites are selected as IBAs under one or more of the following four global IBA criteria: A1: a site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern; A2: a site holds a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA); A3: a site holds a significant component of the group of species whose distributions are largely or wholly confined to one biome; A4: a site holds on a regular basis >1% of the biogeographic population of a congregatory waterbird, seabird or terrestrial species, or more than 20,000 waterbirds or seabirds of one or more species.

A total of 2,293 IBAs have been identified in 28 countries and territories in the Asia region (BirdLife International 2004). Amongst these, 1,111 IBAs have been identified that contain areas that also qualify under the Ramsar Criteria as potential Ramsar sites (BirdLife International 2005a). A significant proportion of the wetland sites coveredin the AWC meet IBA criteria A1 and/or A4, and the AWC counts are the primary source of data to support the identification of many of these sites as IBAs. BirdLife International recently developed an IBA Monitoring Framework (BirdLife International 2005b), which presents techniques that will be used by the BirdLife Partnership to monitor the status of IBAs worldwide. This is currently being adopted by the BirdLife Asia Partnership, and there is potential in the future to coordinate IBA monitoring with wetland monitoring that is conducted as part of the AWC.



1.4.7 Globally threatened waterbirds www.birdlife.org

BirdLife International leads on the update of the status of the world's threatened birds. It is the official Red Listing Authority on birds and supplies this information for the IUCN (World Conservation Union) Red List of Threatened Species. It collates information from a global network of experts and from published and unpublished sources to assess each species's extinction risk using standard quantitative techniques.

Four main criteria used to identify threatened species are: (a) rapid population reduction, (b) small range and fragmented, declining or fluctuating population trend, small population and declining, and (d) very small population or range. Species are assigned a Red List Category based on the standard IUCN Red List Categories (IUCN 2001) as follows: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), and Near Threatened (NT). Other categories are Least Concern (LC), Data Deficient (DD) and Not Evaluated (NE).

The IWC has already provided the basis for much important work by conservation practitioners at local, national and international levels. Important (and perhaps the most urgent) targets of conservation action are species in danger of extinction, as documented in the publications Threatened Birds of the World (BirdLife International 2000), Threatened Birds of Asia (BirdLife International 2001) and in the Data Zone on the BirdLife International website. A Globally Threatened Bird Forum for Asia has been set up on the BirdLife International website (also on behalf of Wetlands International) to facilitate the annual update of the IUCN Red List. Asia supports more globally threatened waterbird species than does any other region of the world; these include a

large number of relatively widespread species (Crosby and Chan 2006), and the AWC data have been used extensively to document and update the Red List status of these threatened waterbirds.

Whilst the AWC is able to provide information that is useful for the conservation of these threatened species, it also aims to monitor the trends of more numerous and widespread species for which changes in status and distribution would otherwise go unnoticed.

1.4.8 Global Avian Influenza Network for Surveillance
www.gains.org

The Global Avian Influenza Network for Surveillance (GAINS) is a global collaborative effort by an international consortium led by the Wildlife Conservation Society, to provide updated online information to a worldwide audience on the results of avian influenza surveillance (particularly the highly pathogenic H5N1 strain) in wild birds by studying bird numbers, distribution and migration. It aims to support improved early warning, disease intervention, technical information exchange and capacity building.

The IWC – and the AWC as part of it – is making summarised waterbird count data (site level) and distribution data (maps of sites with presence and flyway maps) available through the GAINS website. It is also working to build capacity for waterbird monitoring and surveillance and to undertake waterbird surveys in several countries.

1.4.9 National wetland and waterbird conservation

The AWC provides baseline information on wetland and waterbird conservation activities in Asian countries. In most countries, information collected by the AWC on waterbird and wetland status has been used to develop national wetland and waterbird conservation policies and action plans. At the site level, the information has been used for site conservation and management plans. The importance of monitoring waterbirds and their habitats has been recognised by many countries, such as Japan, Republic of Korea and Hong Kong SAR (China), and standard waterbird monitoring programmes have been conducted regularly (annually, seasonally or monthly) with funding support from the national or local government and other sources.

The AWC also raises public awareness on wetland and waterbird conservation through the active participation of the public; this is particularly important for countries such as India, Bangladesh and Cambodia.

2. ASIAN WATERBIRD CENSUS – OVERVIEW OF CURRENT STATUS

2.1 Country and site coverage by the Asian Waterbird Census

Since the establishment of the AWC in 1987 more than 6,000 sites in 27 countries have been covered at least once (Table 1). The peak totals of waterbirds reported by the AWC occurred in 1989–1994, when some 1,160–1,600 sites were counted each year. However, census results fell dramatically in 1997–1998 when information was submitted by national coordinators and participants for only 310–380 sites. Since then, following concerted efforts by national coordinators, participants and Wetlands International, the census has grown, and covered more than 1,000–1,300 sites in 2003–2004.

The number of sites covered varies from year to year as it is dependent primarily on the capacity of national networks of volunteers. Smaller countries and territories have tended to manage more consistent coverage of sites, while in large countries coverage has been more variable. Coverage of protected areas and sites designated under international conventions/initiatives has also varied. There is a need to prioritise sites to be covered by the AWC to ensure that the data are relevant at the national and international levels.

> “There is a need to prioritise sites to be covered by the AWC to ensure that the data are relevant at the national and international levels.”

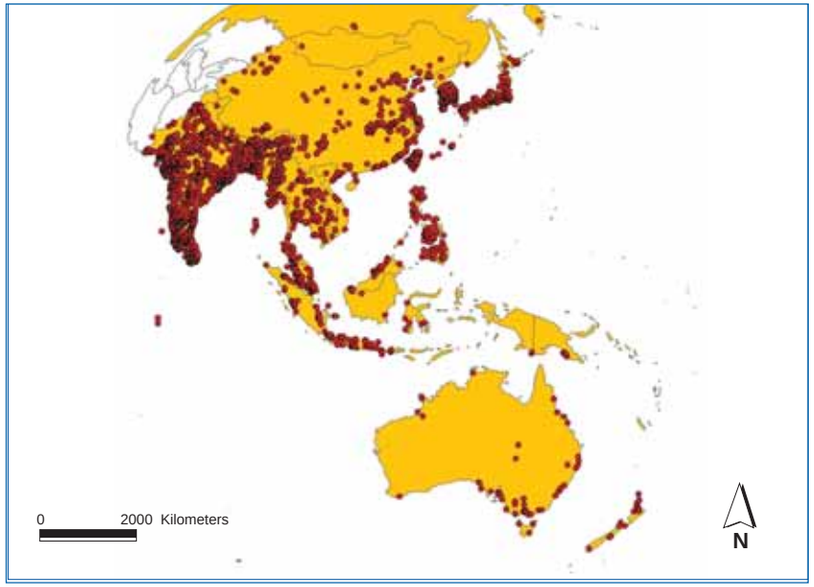
Table 1: Total numbers and overall total of sites counted for the Asian Waterbird Census, 1987–2004

COUNTRY	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	TOTAL
Bangladesh	8	12	22	19	35	59	57	40	34	46	6	25	12	13	29	33	30	42	192
Bhutan														18	3	6			18
India	181	427	625	643	780	784	722	981	576	574	34	65	176	17	193	341	549	407	3227
Maldives																		2	2
Nepal	8	11	2	10	8	15	12	7	12	4				11	8	3	3	9	41
Pakistan	65	141	186	140	175	254	264	33	32	15	42	37	42	42	55	68	87	23	535
Sri Lanka	67	99	109	115	105	67	64	58	53	42	44	67	53	61	37	67	66	65	367
South Asia	**329**	**690**	**944**	**927**	**1103**	**1179**	**1119**	**1119**	**707**	**681**	**126**	**194**	**283**	**162**	**325**	**518**	**735**	**548**	**4382**
Brunei Darussalam				4	4		4	4	4	4	5	5				9			13
Cambodia								10					12	12	11	5	1	6	30
Indonesia			1	19	8	17	18	15	19	16			47	12	10	40	34	14	200
PDR Lao			2	4	5	3	2	1						14	1				23
Malaysia			69	78	105	92	17	10	7	10			20	25	25	25	43	42	217
Myanmar	5	3	12	17	16	21	21	14	13	3	4	2		10	33	49	75	24	166
Philippines				21	25	37	41	49	53	40	29	32	35	46	40	48	50	61	127
Singapore				4	12	17	16	13	15	10	10	6	11	10	10	9	9	9	22
Thailand	9	3	21	26	12	23	16	18	5	9	3	1		7	3	9	27	21	121
Timor Leste						1													1
Vietnam			2	2		1	4		1	1		1	8	2	2	16	4	4	28
Southeast Asia	**14**	**6**	**107**	**175**	**187**	**212**	**149**	**124**	**117**	**93**	**51**	**47**	**133**	**138**	**135**	**210**	**243**	**180**	**948**
China																			
• Mainland China	1	36	12	62	69	76	30	7	14	6	12	18	17	11	7	18	43	72	266
• Hong Kong	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3
• Macao																1	1	1	1
• Taiwan			32	28	32	34	20	33	30	38	38	40	52	38	40	33	23	33	77
Japan*			53	39	53	47	22	50	40	47	37	41	37	108	112	101	107	95	203
DPR Korea*				3															3
Republic of Korea		11	12	23	20	10	15	10	23	26	22	15	69	100	112	118	113	115	166
Mongolia														1			1		1
Eastern Russia											2	1	2	1	1	2	1	2	4
East Asia	**2**	**48**	**110**	**156**	**176**	**169**	**90**	**103**	**110**	**120**	**114**	**118**	**180**	**262**	**275**	**276**	**292**	**321**	**724**
Australia					16	19	20	21	31	28	23	26	27	28	34	29	29	26	59
New Zealand*						20	20												24
Papua New Guinea				8	8	7		6											11
Australasia				**8**	**24**	**46**	**40**	**27**	**31**	**28**	**23**	**26**	**27**	**28**	**34**	**29**	**29**	**26**	**94**
Total No. of Sites	**345**	**744**	**1161**	**1266**	**1490**	**1606**	**1398**	**1373**	**965**	**922**	**314**	**385**	**623**	**590**	**769**	**1033**	**1299**	**1075**	**6148**

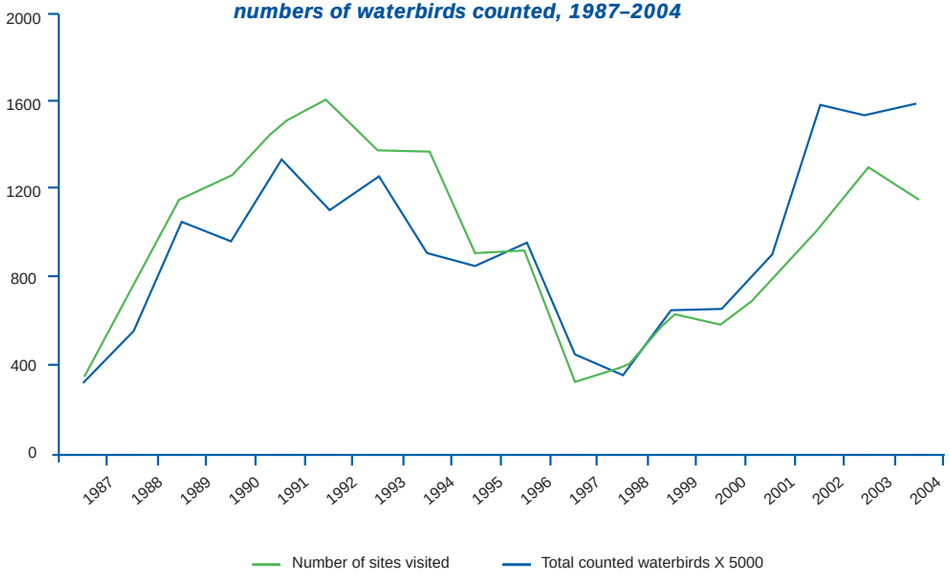
Notes:

- *The site details presented in this table were extracted from Li and Mundkur (2007) with additional counts received from Taiwan in 1993, the Philippines in 1995 and Singapore in 2002. The figures represent the number of sites actually recorded on the updated AWC database and may differ from the number presented in earlier reports. Some sites may have been combined into larger sites for standardisation purposes. A small number of site counts with no or very few bird records have been removed.*
- *Japan* – Annual count data were received from a small number of selected wetland sites for all waterbird species in 1989–2004; the increase in site numbers during 2000–2004 related to the addition of the shorebird count. Totals for Anatidae and cranes were received in 2002–2004, but no site details were provided.*
- *The counts for DPR Korea in 1990 and New Zealand in 1992 and 1993 give only total numbers of waterbirds for each site on the AWC database.*

Sites covered by the AWC, 1987–2004



Number of sites covered by the AWC and total numbers of waterbirds counted, 1987–2004



2.2 National coordination and network development

Coordination of the AWC in each country is undertaken on a voluntary basis by a government agency, non-governmental organisation (NGO) or individual. Since 2001, Wetlands International has made efforts to strengthen the national coordination of the AWC. To date, AWC coordinators have been nominated in 19 countries (Table 2). For historical and political reasons, the AWC has been coordinated separately in mainland China, Hong Kong and Taiwan. In some countries, particularly those with large volunteer networks, sub-national (regional/provincial/state) coordinators have also been nominated. Regular contact has not yet been established in some countries, including Bhutan, PDR Lao, Maldives, DPR Korea, Papua New Guinea and Timor Leste, and there is still a need for national coordinators to be nominated and networks of participants to be established in these countries.

With the efforts of the national and sub-national coordinators, most countries are actively engaged in conducting the AWC. This provides a good basis for the development of the AWC in the future. Additional efforts in the countries listed above and in New Zealand (where, although data are being collected regularly by local groups, total counts have been contributed to the AWC in 1992 and 1993 only), to ensure that consistent and high quality coverage of the census can be assured from across the region.

Table 2: Asian Waterbird Census coordination networks in the region (as at 1 August 2007)

Country	Network
Australia	Australasian Wader Studies Group
Bangladesh	Bangladesh Bird Club
Brunei Darussalam	Panaga Natural History Society
Cambodia	Wildlife Conservation Society – Cambodia
China	
• Mainland China	Wetlands International – China Office
• Hong Kong	Hong Kong Bird Watching Society
• Taiwan	Wild Bird Federation Taiwan
India	Bombay Natural History Society
Indonesia	Wetlands International – Indonesia Office
Japan	Wildlife Conservation Division, Nature Conservation Bureau, Ministry of the Environment
Republic of Korea	National Institute of Environmental Research and National Institute of Biological Resources
Malaysia	Malaysian Nature Society and Department of Wildlife & National Parks, Peninsular Malaysia
Myanmar	Myanmar Bird and Nature Society and Nature & Wildlife Conservation Division, Forest Department
Nepal	Bird Conservation Nepal
New Zealand	Ornithological Society of New Zealand
Pakistan	National Council for the Conservation of Wildlife, Ministry of Environment
Republic of the Philippines	Protected Areas and Wildlife Bureau, Department of Environment and Natural Resources
Singapore	Singapore Nature Society
Sri Lanka	Ceylon Bird Club
Thailand	Bird Conservation Society of Thailand and Department of National Parks, Wildlife and Plants of the Ministry of Natural Resources and Environment
Vietnam	BirdLife International – Vietnam Programme

Notes:
1: AWC counts have been received from the remainder of the countries in the region on a regular or irregular basis.
2: A data-sharing arrangement with the Ornithological Society of New Zealand and the nomination of coordinators in the Department of National Parks, Wildlife and Plants of the Ministry of Natural Resources and Environment, Thailand, are still to be finalised as at 1 August 2007.
3: In the Republic of Korea, the National Institute of Biological Resources is now in charge of waterbird monitoring, however a new national AWC coordinator has not yet been appointed.

3. OPPORTUNITIES AND CHALLENGES FOR THE ASIAN WATERBIRD CENSUS

The strength of the AWC is that it is a long-term, volunteer-based international network that has been able to continue despite a low input of resources. It is expected that volunteer interest in such an initiative will change over time and that there is an ongoing need to encourage and support the networks and to recruit new participants. The principal challenges involved in servicing the networks and developing the census, as outlined below, are typical of the problems faced by initiatives such as the AWC in developing countries in Asia.

3.1 Coordination and communication

Effective and regular communication, provision of support, encouragement and timely feedback on activities are key ingredients to developing and sustaining the volunteer-based network that implements the AWC.

The level of responsibility devolved to a national or sub-national coordinator can vary considerably and depends on a number of factors; these include the number of wetlands in the coordinator's geographic unit, number of participants (and potential participants) in their network, demands on resources by the network (training, equipment and funding support), availability of year-round communication to build and sustain networks, coordination of data collation and database entry, production and dissemination of reports, etc.

These demands may be time intensive and occur throughout the year. To ensure the success of the programme, coordinators are appointed based on their interest and individual skills, and the ability of their institution to respond to the coordinator's needs over a number of years. Periodic changes in coordinators without the provision of suitable replacements have resulted in the fragmentation of local networks, and it can take considerable time and effort to re-establish such networks.

Funding constraints at the international and national coordination levels have resulted in a lack of manpower for coordinating the AWC, therefore periodic lapses in coordination and communication have led to a decrease in the number of volunteers available to participate in the AWC.

Sustaining the interest of volunteers is also linked to the provision of regular feedback and to ensuring that their input into national reports and other outputs is visible. Thus, it is extremely important that national and regional reports and newsletters are collated and widely disseminated in a timely manner.

October 2003, Kuala Lumpur

October 2006, Manila

The collation, synthesis and dissemination of AWC data at the international level to the contributors and users of data are equally important. In the early years of the programme, when the number of countries and sites involved were fewer, AWC reports were produced on an annual basis. However, as the number of countries involved has increased national networks have become larger, and as more countries produce their own national reports the number of links in the chain has increased. As a result, not all countries have been able to submit information to the International Coordinator within 3–6 months of the census, as requested, so that the annual regional reports can not continue to be collated and produced in a timely manner. Consequently, the regional reports and syntheses are now collated into one report published every 3–5 years, and the publication includes an analysis of species and site data.

Establishing frameworks and mechanisms for data collation and transfer is important for enabling rapid data transmission without loss of information.

> “The strength of the AWC is that it is a long-term, volunteer-based international network that has been able to continue despite a low input of resources.”

The International Coordinator maintains all the count information on a standardised Access® database. The database software and instruction manuals were given to national coordinators in the mid 1990s. At the national level, many coordinators do not have sufficient skills and time to maintain and update annual count data on databases. Data are being handled in hard copy and various electronic formats, and submissions from national coordinators reflect these varied formats. The conversion of electronic data to the standardised AWC format has proved to be time consuming, and considerable discussion is required with national coordinators to ensure that all the data on counts, sites, uses and threats are provided and are being collated accurately.

The changing nomenclature of species (for example the white-headed gull group) causes problems in maintaining accurate records of count information, especially as field guides tend to use different scientific and English names to reflect advances in taxonomy.

3.2 Variable and non-targeted site coverage

The initial phase of building an AWC network in each country focussed on increasing coverage by counting as many sites as possible and encouraging and supporting the involvement of an ever-increasing number of participants. The sites covered by the AWC reached a peak of over 1,600 in 1992, after which coverage gradually decreased to a low of 300 sites in 1997. In recent years, coverage has recovered gradually to more than 1,000 sites counted in 2002–2004. Although this is only about two-thirds of the number of sites counted at the peak in 1992, this may in part be a reflection of the effort to cover more of the important sites.

The number of sites counted each year matched the initial enthusiasm of the participants, with the most accessible sites being counted regardless of their national or international importance. This has led to a greater understanding of the distribution of waterbirds and importance of local wetlands, and has resulted in several local conservation initiatives. However, the lack of sufficient strategic direction (and funding) has meant that sites designated as protected areas, Ramsar sites, sites on the East Asian – Australasian Flyway Site Network, IBAs and other sites of international and national importance have not always been adequately targeted for annual and consistent coverage.

In addition, many AWC sites lack an accurate site-coverage map, resulting in different parts of a site being counted and reported in different years.

3.3 Supporting the networks through capacity building and the provision of equipment

By its very nature, the AWC volunteer network has a variable capacity to implement the annual AWC to a very high standard. In relatively few countries are standards of bird identification and census high, and in most of the developing countries in Asia levels of technical capacity and access to the necessary survey equipment and bird guides are lacking. In some cases this has deterred participation and led to the submission of inaccurate count data and unreliable species' records.

Whilst there is increasing access to information on how to study and count waterbirds, especially through new publications and on the internet, the continued development of AWC participants' skills and the collection of high quality data both improve through the provision of training and equipment.

3.4 Funding basis

As the AWC is a long-term, volunteer-based regional programme, the lack of financial support (at all levels) has been a major limiting factor in the development of the census. At the international coordination level there has been shortage of funding for overall coordination (e.g. for staff time), publication and dissemination of reports, development and management of databases and a website, and organisation of coordinators' meetings. There has also been a shortage of funding for providing support in terms of training and equipment for the national and local networks. The AWC has always been run on a very small budget and financing has been inconsistent, relying of a few donors who are interested in funding the programme.

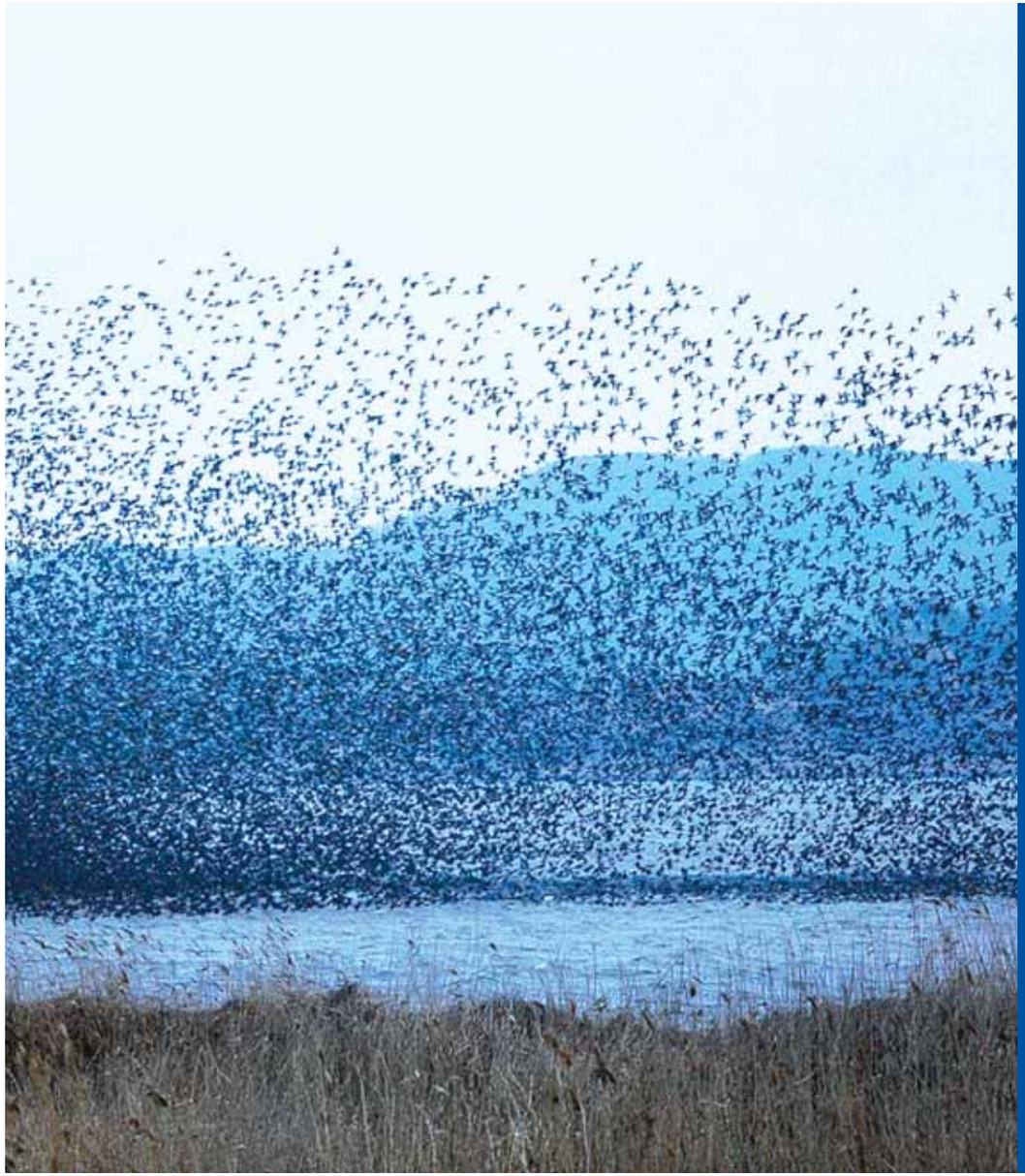
In some developing countries, coordinators are unable to access funds to undertake adequate coordination and communication activities, and therefore have not been able to promote the census and publication of national reports.

Local bird groups often do not have funds to cover their field travel costs and the purchase/rental of equipment (binoculars and telescopes) and guide books, etc. for this voluntary activity, particularly in some of the developing countries. Similarly, staff in government agencies may not have access to equipment, or be allocated the time and support to participate actively in the census.

These four major factors have greatly affected the development of the AWC. The development of a long term strategy to address these issues should strengthen the functions and outputs of the census (Section 4).

The Asian Waterbird Census

4. OBJECTIVES AND PRIORITY ACTIONS TO DEVELOP THE ASIAN WATERBIRD CENSUS IN 2007–2015



The Asian Waterbird Census: Development Strategy 2007–2015 focuses on seven objectives and 28 priority actions at the international and national levels. Funds will have to be sought to undertake some of the actions.

4.1 Objectives

Objective 1:
To enhance geographic and site coverage of the AWC.

Objective 2:
To ensure the high quality of AWC data collected in order to monitor waterbird populations effectively and support the implementation of conservation actions.

Objective 3:
To develop a fundraising strategy for the AWC and seek funding opportunities to support its development.

Objective 4:
To build the capacity of national networks to monitor waterbirds and wetlands.

Objective 5:
To enhance communication and public awareness of the AWC.

Objective 6:
To support improved decision making on waterbird and wetland conservation at national and international levels.

Objective 7:
To develop a coordination mechanism for effective operation and targeting of the AWC.

4.2 Priority actions

Objective	Action	Implementation
Objective 1: **To enhance geographic and site coverage of the AWC.**	**Action 1:** Establish contact with all countries in the Asia-Pacific region to ensure consistent participation in the annual census and regular sharing of information with the AWC.	**1.** Encourage all countries to establish and maintain an effective national waterbird monitoring programme that can be linked to the AWC to create a "representative set of monitoring sites". Stimulate action through communication, promote training and, where needed, offer support to strategic fundraising efforts. [WI and NC] **2.** Formalise data sharing arrangements with all countries to ensure that waterbird count data are submitted annually to the AWC regional database to support regional and international conservation efforts. [WI and NC] **3.** Nominate national coordinators for Bhutan, PDR Lao, the Maldives, DPR Korea, Papua New Guinea and Timor Leste and establish networks of participants. [WI]
	Action 2: Strengthen national AWC coordination through the establishment of effective sub-national (state/provincial) AWC networks.	**4.** Establish sub-national (state/provincial) AWC coordination networks where necessary to strengthen coordination with local networks. [NC] **5.** Strengthen communication with sub-national (state/provincial) AWC networks, including through the organisation of national AWC coordinator meetings. [NC and SNC]
	Action 3: Review and prepare an updated list of priority wetland sites of national and international importance to be covered each year by the AWC.	**6.** Prepare a comprehensive national priority AWC site coverage list for each country (including Ramsar sites, Waterbird Network sites in the East Asian and Central Asian Flyways, World Heritage sites, Man and Biosphere (MaB) sites and protected areas, ensuring representative regional wetland representation). [NC, SNC and WI] **7.** Endorse the BirdLife International publications on Important Bird Areas and Potential Ramsar Sites in Asia (BirdLife International 2005a) and internationally important sites as identified by the AWC 1997–2001 (Li and Mundkur 2004) and 2002–2004 reports (Li and Mundkur 2007) as a basis for identifying a list of priority AWC sites for annual coverage until a comprehensive priority AWC site coverage list is produced. [NC, SNC and WI] **8.** In addition, encourage national networks to consider a more comprehensive list of national and local importance for coverage by a wider network, which would be more useful for broader awareness raising and public participation efforts. [NC and SNC]
Objective 2: **To ensure the high quality of AWC data collected in order to monitor waterbird populations effectively and support the implementation of conservation actions.**	**Action 4:** Review and prepare boundary maps for each site included in the priority list of important wetlands (Action 3) to be covered by the AWC, and make these available to all participants.	**9.** Encourage the preparation of geo-referenced site boundary maps for all priority sites as identified for coverage by the census. [NC and SNC] **10.** Develop improved boundary maps for poorly defined sites to enable proper census activities: • divide large sites or complexes into sub-sites, • combine small count units into clearly defined wetland areas, • define boundaries of coastal wetlands by using natural landmarks, such as rivers. [NC and SNC]

Objective	Action	Implementation
		11. Regularly update site maps to ensure that up-to-date boundary maps are available for use. Encourage use of GIS-based mapping that allows for changes to be incorporated. [NC and SNC]
	Action 5: Ensure that the annual AWC counts are undertaken in January during the suggested period.	**12.** Continue using January as the priority census period. Data collected from December to February may still be acceptable from countries where AWC coverage is currently poor. [NC and SNC] **13.** Encourage AWC participants to conduct the census counts within a short timeframe within the AWC period. [NC, SNC and WI]
	Action 6: Undertake adequate planning and make arrangements to ensure annual coverage of all sites in the priority list (Action 3) and other important sites and ensure that at least one experienced and reliable counter leads the census at each site.	**14.** Increase recognition nationally of the high value and need for consistent coverage of important sites for effective functioning of national and international waterbird and wetland monitoring programmes. [NC and SNC] **15.** Undertake detailed planning to involve participants, especially in the developing countries, to ensure that all priority sites are covered and high data quality is achieved. [NC and SNC] **16.** Expand participation of related agencies, institutions, bird organisations and groups in the AWC through the provision of proper training and advice. [NC]
	Action 7: Ensure effective mechanisms for national (and sub-national) coordination, including collection of all standardised data forms in a timely manner after the census.	**17.** Ensure that data are collected from participants and sub-national coordinators by the end of February. [NC] **18.** Develop methods to remind about and encourage timely data submission. [NC and SNC]
	Action 8: Ensure that coordinators undertake a quality check on the count information.	**19.** Develop a thorough checking system to ensure that data-quality issues (including identification of duplicate counts, unusually high species counts, unusual records of species, site location and coordinates) can be addressed within the national programme. [NC , SNC and WI] **20.** Review the validity and timeliness of data submitted to the database with Wetlands International. [NC] **21.** Ensure that sub-national coordinators perform this primary function of reviewing the validity of data before submitting them to national coordinators. [NC and SNC] **22.** Undertake regular meetings among experienced network members (post-counting) to evaluate the national implementation of AWC. [NC and SNC] **23.** Ensure that an updated standardised list of waterbird names, as used in Waterbird Population Estimates, is made available for national coordinators to check against prior to data submission. [WI]

Objective	Action	Implementation
	Action 9: Promote use of standardised AWC count and site forms and census techniques in all countries.	**24.** With national coordinators, undertake a review of the regional AWC forms to ensure that the forms are updated, especially with regard to the taxonomic status of waterbird species. [WI and NC] **25.** Send updated AWC count and site forms to national coordinators in November/December to enable preparations for the AWC. [WI] **26.** For non-English speaking countries/territories, make forms available in national language(s). [NC and SNC]
	Action 10: Promote the use of standardised AWC database programmes in all countries and at the international level to ensure timely and efficient transmission of data.	**27.** Ensure efficient national data analysis and reporting as well as timely and rapid transmission of data through the use of a user-friendly AWC database system in all countries. [NC] **28.** Provide/facilitate training for national (and sub-national) coordinators in the use of the AWC database system where required. [WI] **29.** Develop a user-friendly online AWC data-entry system. [WI]
	Action 11: Ensure that national coordinators submit national census data or databases to Wetlands International by the end of April each year.	**30.** Improve data collection and reporting mechanisms to ensure that data are submitted to WI by 30 April each year. [NC and SNC]
	Action 12: Support volunteers in data collection, including providing participation guidelines and support logistics, identification guides and equipment.	**31.** Promote a manual on AWC standardised count methods for national and international application (see Implementation point 52). [NC, SNC and WI] **32.** Support regular training and provision of materials for the AWC (also see Objective 4). [NC, SNC and WI] **33.** Develop and secure funding resources from local and national sources (including for the purchase of field guides and equipment) to sustain the efforts of AWC volunteer and bird watching groups (also see Action 16). [NC, SNC and WI]
	Action 13: Encourage countries to conduct additional surveys at other times of year (for example during the northward migration, summer period and southward migration) or undertake monthly counts and submit data to Wetlands International for inclusion in the AWC database.	**34.** Promote undertaking of the census at other times of year or the making of monthly counts, especially where there is willingness to initiate and sustain this. [NC and WI] **35.** Develop and distribute guidelines (protocols) for additional censuses to be undertaken by the individual countries according to local/national capacity. [WI]

Objective	Action	Implementation
	Action 14: Strengthen IUCN/SSC/WI waterbird specialist groups in the Asia-Pacific region through increasing awareness about the groups, and identifying potential members and mechanisms to improve data quality.	**36.** Raise awareness of the existence of waterbird specialist groups at the local/national level. [NC and WI] **37.** Identify and involve interested individuals in taking the lead on study and action for single species/groups of waterbirds at the local/national level. [NC and WI]
Objective 3: **To develop a fundraising strategy for the AWC and seek funding opportunities to support its development.**	**Action 15:** Develop a fundraising strategy based on a review of the critical funding requirements for the maintenance and development of the AWC.	**38.** Communicate with international partners, particularly the Ramsar Secretariat, CMS Secretariat and BirdLife International, to engage their continued support for and partnership in the development of the AWC. [WI] **39.** Communicate with AWC national coordinators and national coordination organisations to discuss ways and means to secure long-term funding for the AWC. [WI and NC] **40.** In accordance with Implementation points 38 and 39, develop and draft a fundraising strategy for the AWC and communicate this to all its partners for further development. [WI and NC] **41.** As part of the fundraising strategy, maintain and update a list of concept proposals that covers critical funding requirements for the development of the AWC for fundraising at national and international levels. [WI and NC] **42.** Maintain and update a list of funding resources for national AWC activities. [NC]
	Action 16: Raise funds for priority actions at the regional/national/local levels to strengthen national networks' capacities to implement the AWC.	**43.** Incorporate core funding needs for the AWC into the fundraising planning of national host organisations. [NC] **44.** Engage broad international support (such as through bilateral sources, regional environmental and flyway programmes) for waterbird conservation/monitoring needs. [WI and NC] **45.** Develop collaborative funding proposals to support AWC development and the sustainability of census activities in developing countries. [WI and NC] **46.** Build NGO–government relationships to secure long-term government funding for annual/regular counts with a focus on supporting national conservation efforts, such as nomination and monitoring of Ramsar sites, protected areas, Flyway Network sites and other important areas. [NC, SNC and WI] **47.** Develop corporate and private sector sponsorship through promoting widespread interest in bird watching and counting, photography, e.g. through waterbird festivals. [NC, SNC and WI]
Objective 4: **To build the capacity of national networks to monitor waterbirds and wetlands.**	**Action 17:** Develop a training programme to improve knowledge and skills to coordinate the AWC volunteer network.	**48.** Continue to encourage national and local training courses/workshops and seek funding support for these activities. [NC and SNC] **49.** Encourage international support and participation in national training activities. [WI and NC] **50.** Support/promote national fundraising efforts and provide strategic support for training activities. [WI]

Objective	Action	Implementation
		51. Develop training activities through regional initiatives such as flyway initiatives and large wetland projects. [WI and NC] **52.** Translate and distribute Guidelines for participants in the IWC (Delany 2005a) and Guidelines for National Coordinators of the IWC (Delany 2005b). [NC, SNC and WI]
	Action 18: Conduct national training activities for participants to enhance their capacity and skills in counting and identification.	**53.** Conduct waterbird census training programmes, and, when possible, incorporate them within habitat and species conservation training programmes. [NC and SNC]
Objective 5: **To enhance communication and public awareness of the AWC.**	**Action 19:** Undertake activities to strengthen coordination amongst coordinators; review and plan activities through regular communication and the organisation of regular meetings.	**54.** Establish an e-forum/list server for discussion and information exchange. [WI] **55.** Continue to organise an AWC National Coordinators' Meeting once every three years. Smaller-scale regional meetings with similar interests and issues may be held as opportunities arise. [WI]
	Action 20: Review the effectiveness of current national and international coordination and communication methods to enhance the networks at all levels.	**56.** Continue to improve mechanisms to strengthen and improve communication within the networks. [WI, NC and SNC] **57.** Nominate a contact person to ensure timely communication if a national coordinator cannot be in regular contact. [NC] **58.** Improve communication amongst national networks through email discussion groups, national reports and newsletters. [NC and SNC]
	Action 21: Maintain an up-to-date AWC website and produce bi-annual regional newsletters to enhance communication and public awareness.	**59.** Re-design and improve access to the AWC website. [WI] **60.** Provide national biannual updates and input to the regional AWC website. [NC]
	Action 22: Develop an awareness programme for government and conservation NGOs to improve their knowledge of the value of the census and the importance of conservation of wetlands and their biodiversity, particularly waterbirds.	**61.** Ensure links between national websites and AWC information/newsletters (or other websites) to increase the profile of the AWC. [NC] **62.** Promote AWC activities and outputs through newspaper articles (in national and English languages), newsletters, TV and other media.[NC, SNC and WI] **63.** Incorporate information about the AWC and waterbird conservation issues into existing education programmes, project activities, World Wetlands Day and other events to extend its outreach, and through regional/national AWC reports. [NC, SNC and WI] **64.** Develop translated versions of AWC information and documentation in countries where English is not widely used. [WI] **65.** Provide regular articles, updates and press releases to national coordinators for their use. [WI]

Objective	Action	Implementation
Objective 6: **To support improved decision making on waterbird and wetland conservation at national and international levels.**	**Action 23:** Provide an effective mechanism to respond to the priorities and needs of environmental conventions and regional organisations/ initiatives in the Asia-Pacific region for monitoring the status of waterbirds and wetlands (for example, Ramsar Convention, CMS, CBD,East Asian – Australasian Flyway Partnership, Central Asian Flyway Action Plan, CAFF, ASEAN and SACEP).	**66.** Strengthen the system for reporting AWC outputs, including conservation recommendations, to international data users to promote the value of the AWC. [WI and NC] **67.** Integrate AWC reports into the information bases and decision-making processes of international conventions/initiatives. [WI and NC] **68.** Undertake comprehensive planning and discussions with international partners (especially Ramsar, CMS, BirdLife International and Wildlife Conservation Society). **69.** Develop ways and means to improve the usefulness of the AWC to international conventions (and secure funds for AWC support). [WI and NC]
	Action 24: National coordinators should report proactively on the status of waterbirds and wetlands in their countries to national conservation and development agencies, national Ramsar committees and other data users.	**70.** Countries should produce national reports on an annual basis. Reports should be produced on CD-ROM or electronically on a website to increase access and publicity. If possible, country reports should also be produced in hard copy as a formal publication. [NC] **71.** Distribute AWC results, analyses and conservation recommendations to government agencies and institutes. [NC and SNC] **72.** Encourage the use of AWC data for: • national and local protected area nominations, • international designations (including Ramsar, World Heritage and Flyway Site Networks), IBA programmes, and other bird conservation network activities. • National Biodiversity Strategy and Action Plans (NBSAP) prepared by governments for the CBD; and • implementing resolutions of the Ramsar Convention, CMS and CBD and other regional commitments. [NC, SNC and WI] **73.** Promote mechanisms to share data with national and local organisations to support waterbird and wetland conservation efforts. [NC and SNC] **74.** Hold national workshops involving government, NGOs, academics, etc. to review/assess waterbird counts and data and their application to conservation. [NC and SNC]
	Action 25: Produce AWC regional reports and other publications to promote waterbird and wetland conservation initiatives and as feedback for AWC volunteers.	**75.** Develop and update a web-based AWC regional reporting system together with the data-entry system (also see Implementation point 29). [WI] **76.** Publish a list of sites of international importance that have been identified in the 20 years (1987–2006) that the AWC has been conducted. [WI and NC] **77.** Make an analysis of the status and trends of waterbird populations in the 20 years (1987-2006) that the AWC has been conducted. [WI and NC] **78.** Produce and update flyway atlases based on the results of the AWC and related information. [WI and NC]

Objective	Action	Implementation
	Action 26: Ensure timely provision of AWC data and related information to the development and review of estimates of waterbird populations to feed into the Waterbird Population Estimates and Globally Threatened Birds updates.	**79.** Generate and regularly review national waterbird population estimates. [NC, SNC and WI] **80.** Provide updated data to Waterbird Population Estimates updates and Globally Threatened Birds updates. [NC and WI]
Objective 7: **To develop a coordination mechanism for effective operation and targeting of the AWC.**	**Action 27:** Establish a mechanism to review the development of the AWC.	**81.** Use the triennial AWC National Coordinators' Meetings to review international-level directions and strategies. [WI and NC] **82.** Use the AWC list server and encourage regular national meetings to promote and stimulate the implementation of the AWC strategy. [NC and WI] **83.** Encourage countries to develop national implementation plans on a triennial basis. [NC]
	Action 28: Review the implementation of the AWC strategy for 2007–2015.	**84.** The AWC strategy for 2007–2015 will run for nine years and is to be reviewed triennially at the AWC National Coordinators' Meeting. [WI and NC]

Note: AWC – Asian Waterbird Census, ASEAN - Association of South East Asian Nations, CAFF – Conservation of Arctic Flora and Fauna, CBD - Convention on Biological Diversity, CMS - Convention on Migratory Species, NC – AWC national coordinator, Ramsar - Convention on Wetlands, SACEP – South Asian Cooperative Environmental Programme, SNC – AWC sub-national coordinator, SSC – Species Survival Commission, WI – Wetlands International.

5. REFERENCES

Anonymous. 1996. Asia-Pacific Migratory Waterbird Conservation Strategy: 1996–2000. Wetlands International – Asia Pacific, Kuala Lumpur.

Asia-Pacific Migratory Waterbird Conservation Committee. 2001. Asia-Pacific Migratory Waterbird Conservation Strategy: 2001–2005. Wetlands International, Kuala Lumpur.

BirdLife International. 2000. Threatened Birds of the World. BirdLife International, Cambridge.

BirdLife International. 2001. Threatened Birds of Asia: the BirdLife International Red Data Book. BirdLife International, Cambridge.

BirdLife International. 2004. Important Bird Areas in Asia: key sites for conservation. BirdLife International, Cambridge.

BirdLife International. 2005a. Important Bird Areas and potential Ramsar Sites in Asia. BirdLife International, Cambridge.

BirdLife International. 2005b. Monitoring Important Bird Areas: a global framework. BirdLife International, Cambridge. Unpublished.

CMS 2006. Central Asian Flyway Action Plan for the conservation of migratory waterbirds and their habitats. Convention on the Conservation of Migratory Species of Wild Animals, Secretariat, Bonn. http://www.cms.int/bodies/meetings/regional/caf/pdf/report/Annex4_CAF_Action_Plan.pdf

Crosby, M.J. and Chan, S. 2006. Threatened waterbird species in eastern and southern Asia and actions needed for their conservation. In: Boere, G.C., Galbraith, C.A.

and Stroud, D.A. (eds.). Waterbirds around the world, pp. 332–338. The Stationery Office, Edinburgh.

Delany, S. 2005a. Guidelines for Participants in the International Waterbird Census (IWC). Wetlands International, Wageningen. Unpublished.

Delany, S. 2005b. Guidelines for National Coordinators of the International Waterbird Census (IWC). Wetlands International, Wageningen. Unpublished.

Dodman, T. and Diagana, C.H. 2003. African Waterbird Census 1999, 2000 and 2001. Global Series No. 16. Wetlands International, Dakar.

Kushlan, J.A. 1993. Waterbirds as bioindicators of wetland change: are they a valuable tool? In: Moser, M., Prentice, R.C. and van Vessem, J. (eds.). Waterfowl and wetland conservation in the 1990s - a global perspective, pp. 48-55. Special Publication No. 26. IWRB, Slimbridge.

Gilissen, N., Haanstra, L., Delany, S., Boere, G. and Hagemeijer, W. 2002. Numbers and distribution of wintering waterbirds in the Western Palearctic and Southwest Asia in 1997, 1998 and 1999. Results from the International Waterbird Census. Global Series No. 11. Wetlands International, Wageningen.

IUCN. 2001. IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission, IUCN, Gland, and Cambridge.

Li, Z.W.D. and Mundkur, T. 2004. Numbers and distribution of waterbirds and wetlands in the Asia-Pacific Region. Results of the Asian Waterbird Census 1997–2001. Wetlands International, Kuala Lumpur.

Li, Z.W.D. and Mundkur, T. 2006. Monitoring of waterbirds in the Asia-Pacific region. In: Boere, G.C., Galbraith, C.A. and Stroud, D.A. (eds.). Waterbirds around the world, pp. 339-342. The Stationery Office, Edinburgh.

Li, Z.W.D. and Mundkur, T. 2007. Numbers and distribution of waterbirds and wetlands in the Asia-Pacific Region. Results of the Asian Waterbird Census 2002–2004. Wetlands International, Kuala Lumpur.

Lopez-Lanus, B. and Blanco, D.E. (eds.) 2005. The Neotropical Waterbird Census 2004. Global Series No. 17. Wetlands International, Buenos Aires.

Lopez, A. and Mundkur, T. (eds.) 1997. The Asian Waterfowl Census 1994-1996. Results of the Coordinated Waterbird Census and an Overview of the Status of Wetlands in Asia. Wetlands International, Kuala Lumpur.

Mundkur, T. 2006. Successes and challenges of promoting conservation of migratory waterbirds and wetlands in the Asia-Pacific region: nine years of a regional strategy. In: Boere, G.C., Galbraith, C.A. and Stroud, D.A. (eds.). Waterbirds around the world, pp. 81-87. The Stationery Office, Edinburgh.

Mundkur, T. and Taylor, V. 1993. Asian Waterfowl Census 1993. Asian Wetland Bureau, Kuala Lumpur, and IWRB, Slimbridge.

Perennou, C., Rose, P. and Poole, C. 1990. Asian Waterfowl Census 1990. IWRB, Slimbridge.

Perennou, C. and Mundkur, T. 1991. Asian Waterfowl Census 1991. IWRB, Slimbridge.

Perennou, C. and Mundkur, T. 1992. Asian Waterfowl Census 1992. IWRB, Slimbridge.

Perennou, C., Mundkur, T., Scott, D. A., Follestad, A. and Kvenild, L. 1994. The Asian Waterfowl Census 1987-91: Distribution and Status of Asian Waterfowl. Publication No. 86. Asian Wetland Bureau, Kuala Lumpur.

Scott, D.A. 1980. A preliminary inventory of Wetlands of International Importance for Waterfowl in West Europe and North-west Africa. Special Publication No. 2. IWRB, Slimbridge.

Scott, D.A. and Rose, P.M. 1989. Asian Waterfowl Census 1989. IWRB, Slimbridge.

Solokha, A. 2006. Results from the International Waterbird Census in Central Asia and the Caucasus 2003–2005. Wetlands International, Moscow.

Van der Ven, J. 1987. Asian Waterfowl 1987. Midwinter bird observations in some Asian countries. IWRB, Slimbridge.

Van der Ven, J. 1988. Asian Waterfowl 1988. Midwinter bird observations in most Asian countries. IWRB, Slimbridge.

Wetlands International. 2003. Strategy for the Development of the Asian Waterbird Census: 2004–2006. Wetlands International, Kuala Lumpur. Unpublished.

Wetlands International. 2005. Wetlands International Strategic Intent 2005–2014. Wetlands International, Wageningen.

Wetlands International. 2006. Waterbird Population Estimates – Fourth Edition. Wetlands International, Wageningen.

ISBN: 978 90 5882 043 3

This publication should be cited as follows:
Wetlands International. 2007. The Asian Waterbird Census: Development Strategy 2007–2015. Wetlands International, Kuala Lumpur, Malaysia.

Published by Wetlands International www.wetlands.org

Design by Muse Studio.

Printed by CG Print Sdn Bhd.

Photo Credits

Front cover: *Flock of Baikal Teal in South Korea, Kim Hyun Tae.*

Page 3: *Great Egret and White-winged Tern, David Li.*

Page 5: *AWC in Bangladesh coast, David Li.*

Page 8: *Black-winged Stilt, Sumit Sen.*

Page 11: *Collared Kingfisher, Lim Kim Chye.*

Page 12: *Flying Ducks and Geese, Sumit Sen.*

Page 14: *AWC in Malaysia, David Li.*

Page 15: *AWC training in Malaysia, David Li and Tufted Duck, Enam Taludker.*

Page 16: *Group photos for first and second AWC Coordinator's Meeting, Wetlands International.*

Page 17: *Nordmann's Greenshank and Common Redshank, Ong Too Ping.*

Page 18 & 19: *Flock of Baikal Teal in South Korea, Kim Hyun Tae.*

Page 28: *Black-faced Spoonbill, Park Jing Yong.*

Mission:

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

For further information please visit our website or contact our offices.

www.wetlands.org

Wetlands International
3A39, Block A
Kelana Centre Point
SS7/19, Petaling Jaya
47301 Selangor, MALAYSIA
Tel: +60 3 7804 6770
Fax: +60 3 7804 6772
E-mail: malaysia@wetlands.org.my

Wetlands International
PO Box 471
6700 AL Wageningen
The Netherlands
Tel: +31 317 478854
Fax: +31 317 478850
E-mail: post@wetlands.org

- The Asian Waterbird Census (AWC), conducted each year in January, is a waterbird and wetland monitoring programme initiated in 1987 in the Asia-Pacific region within the framework of the International Waterbird Census.
- Since its establishment the census has covered more than 6,000 sites in 27 countries in the region at least once. The census is coordinated by Wetlands International and supported by one or more national coordination organisations in each country.
- The AWC plays a significant role in the conservation of waterbirds and their habitats at levels ranging from local to global by supporting:
  - the Ramsar Convention on Wetlands in identifying wetlands of international importance;
  - the Convention on Migratory Species by monitoring the status of migratory waterbirds and their habitats;
  - the Convention on Biological Diversity in its goal to conserve and use biodiversity sustainably;
  - the development and implementation of the East Asian – Australasian Flyway Partnership and Central Asian Flyway Action Plan;
  - BirdLife International's Important Bird Areas Programme;
  - IUCN Red List/BirdLife International's Global Species Programme;
  - Wetlands International's Waterbird Population Estimates Programme;
  - the Global Avian Influenza Network for Surveillance;
  - the development of national wetland and waterbird conservation Action Plans and Strategies; and
  - species and site conservation, research and awareness programmes in many countries.
- This strategy reviews the changing status of the AWC over the past twenty years. It also sets a clear direction for the future of the AWC and details actions to be taken over the next nine years to ensure the successful development and delivery of the census in order to conserve waterbirds and their habitats in the Asia-Pacific region.
- The strategy was discussed and agreed at the AWC Coordinators' Meeting held in Manila in October 2006.

The AWC is supported by a network of volunteers and coordinated by the following organisations in countries which work closely with Wetlands International.

Australasian Wader Studies Group

Bangladesh Bird Club

Panaga Natural History Society, Brunei

Wildlife Conservation Society, Cambodia

Wetlands International, China Office

Hong Kong Bird Watching Society

Wild Bird Federation Taiwan

Wetlands International, Indonesia Office

Bombay Natural History Society, India

Ministry of the Environment, Japan

National Institute of Environmental Research, Republic of Korea

National Institute of Biological Resources, Republic of Korea

Malaysian Nature Society

Department of Wildlife & National Parks, Malaysia

Myanmar Bird and Nature Society

Nature & Wildlife Conservation Division, Forest Department, MYANMAR

Bird Conservation Nepal

Ornithological Society of New Zealand

Ceylon Bird Club, Sri Lanka

Protected Areas and Wildlife Bureau, the Philippines

Singapore Nature Society

National Council for the Conservation of Wildlife, Ministry of Environment, Pakistan

Bird Conservation Society of Thailand

National Parks, Wildlife and Plant Conservation Department, Thailand

BirdLife International Vietnam Programme

Produced by : WETLANDS INTERNATIONAL

Sponsored by : KNCF Keidanren Nature Conservation Fund