Strategy for Development of the Asian Waterbird Census 2004-2006

(The strategy was endorsed by the AWC coordinators in December 2003 through email communication)

Wetlands International
2003

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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. They 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, tourists, associated enterprises, hunters (both sport and subsistence) and research biologists throughout the world. They furthermore offer many opportunities for sustainable use of wetlands, particularly through eco-tourism, but also sustainable harvest. This is particularly important in developing countries since migratory waterbirds constitute an important resource for local communities. By involving these local communities, the conservation of migratory waterbirds through the principle of wise use of both the birds and the habitat will therefore be seen as an investment.

Waterbirds are one of the key attributes of the biodiversity of many wetlands, and waterbird counts form one of several elements which 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) and waterbird counts have been especially influential in the identification of Wetlands of International Importance (Ramsar sites). Bird counts can also provide vital evidence for the protection status of 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”.

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. In 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 developments elsewhere in the world. The IWC is one of the longest running and most extensive harmonised biodiversity monitoring programmes in the world. 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 Strategy 2002-2005 (see www.wetlands.org/aboutWI/Strategy.htm) defines four areas of work that are needed to allow Wetlands International to realise its vision and mission.

1. Work on the conservation of wetland species
2. Perform the inventory, assessment and monitoring of wetlands at all levels
3. Work on the wise use of wetlands
4. Strengthen capacity by training and awareness.

In 2001, Wetlands International started the development of a Programme Action Plan (PAP) for the Wetlands Species Conservation programme (programme 1 above). Traditionally this relates strongly to waterbirds (see background paper on http://www.wetlands.org/IWC/IWCstra.htm). In this PAP the strategic positioning of Wetlands International's waterbird related work is presented. The main recommendations for the future are to:

- continue expansion of the IWC towards a global census;
- Develop and implement a database format and program for 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 count data from additional seasons and sources;
- strengthen the input of IWC data into Waterbird Population Estimates, which is a crucial document for international conventions like the Ramsar Convention on Wetlands and the Convention on Migratory Species;
- increase capacity to deliver other products that meet the needs of conventions and their contracting parties and other users. This will be done on both the ‘input side’, mainly through the increase in species coverage and geographical coverage, and on the ‘output side’, by developing outputs like conservation status reviews but also indicators;
- increase cooperation with organisations working towards the conservation of (migratory) waterbirds (e.g. BirdLife International and their Important Bird Areas Programme, hunting organisations);
- embrace the use of spatial data, by preparing the databases for application of GIS systems. (standardise geographical definition of sites, include site boundary information etc.); and

- extend the scope of application of the data, for example with research on climate change or in supporting national, regional and international biodiversity strategies.

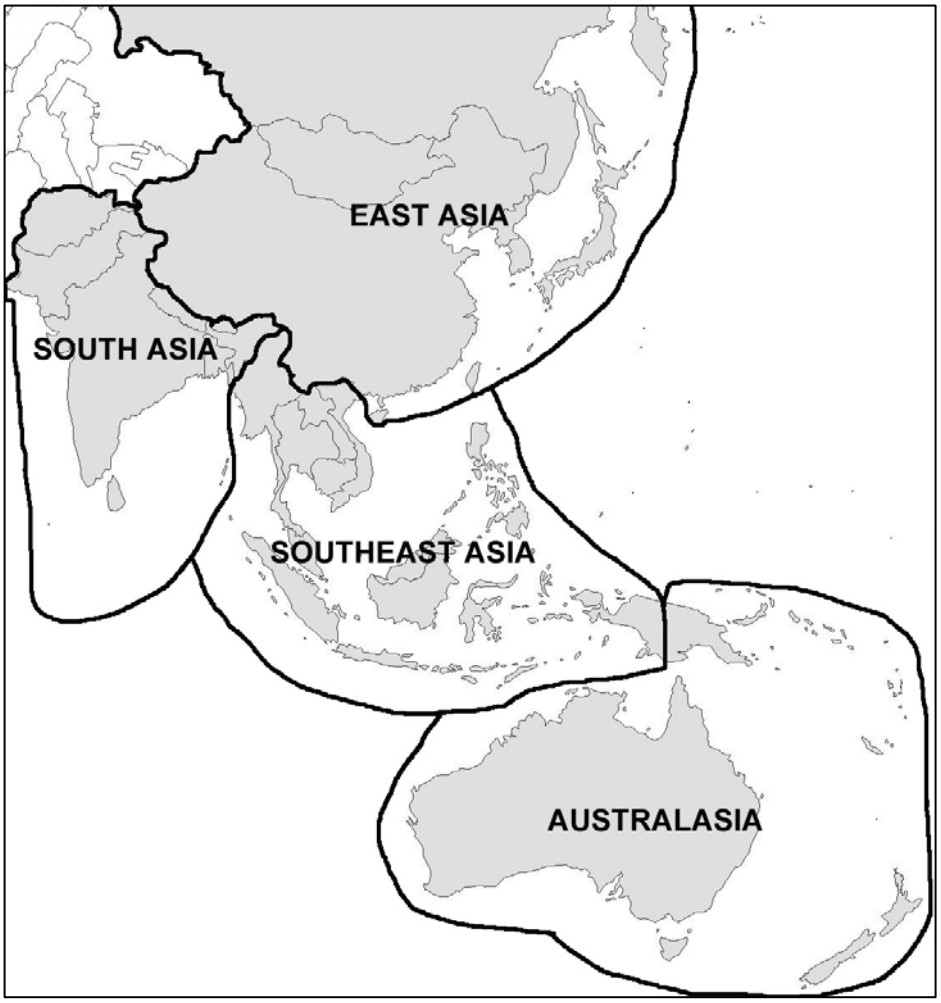
The major change in direction proposed for the waterbird work, and for IWC as the central component of that, is development of a more global character and closer interaction of the regional schemes and global programmes of partner organisations in terms of standardisation and data management.

Wetlands International is currently updating its IWC data management system, the database is proposed to be in place from 2004 onwards.

1.2 Background of the AWC

The Asian Waterbird Census, which includes Asia, Australasia and eastern Russia is coordinated from Wetlands International's office in Kuala Lumpur, Malaysia. It runs in parallel to other international censuses of waterbirds in Africa, Europe and the Neotropics under the umbrella of the IWC. The census was initiated in 1987 in the Indian subcontinent, and has grown rapidly to cover South Asia, Southeast Asia, East Asia and Australasia, as well as eastern Russia. Up to 1993, the AWC included the region of south west Asia; responsibility of coordination for this region was transferred to the WI Wageningen office in the Netherlands in 1994 in an attempt to bring together the coordination of IWC in all countries covered by the African Eurasian Waterbird Agreement (AEWA). This allows better use of IWC data to support AEWA.

Figure 1: Regional Coverage of the AWC



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

- providing the basis for estimates of waterbird population sizes;
- monitoring changes in waterbird numbers and distribution by regular, standardized 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 conservation status of waterbird species for use by international agreements;
- increasing awareness of the importance of waterbirds and their wetland habitats at local, national and international levels.

In Asia, the census has also aimed at building and strengthening national networks of enthusiastic volunteers and facilitating their training to enable the collection of high quality information.

Information collected by the census from 1987 through 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 estimate numbers and trends of populations, to summarise species distribution and to identify important wetlands in a comprehensive report by Perennou *et al*. (1994). The data of the 1994-1996 are compiled in a three year report by Lopez & Mundkur (1997). The results for the AWC 1997-2001 are being compiled and will be published by early 2004 (Li & Mundkur, in preparation). A comprehensive website on the AWC in English on http://www.wetlands.org/IWC/awc/awcmain.html provides basic information, access to reports, newsletters, etc.

To its credit, the AWC has been extremely successful in achieving its primary aims. As a result of the increased awareness, local people and governments are now setting about the conservation of important sites in almost every country. However, coverage of the census and conservation efforts varies considerably and the increasing pressure on wetlands and their biodiversity highlight the need to strengthen the programme to tackle the emerging challenges.

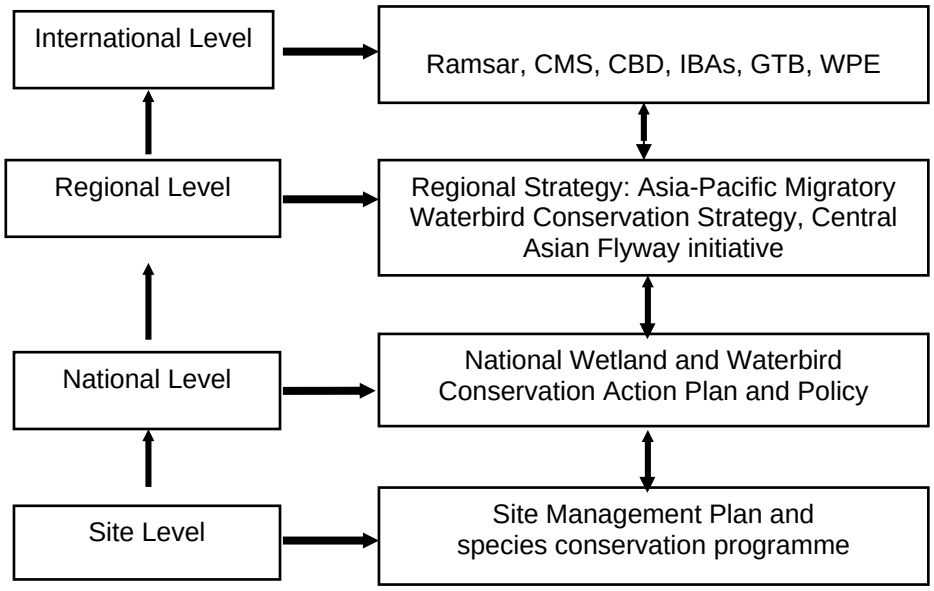
1.3 Applications of the AWC

The AWC has taken a significant role not only for the conservation of waterbirds and their habitats at national level but also at international level (see Figure 1) The AWC has contributed to conservation activities ranging from local to global levels by supporting:

- species and site conservation and research programmes and campaigns to raise awareness of the importance of wetlands in many countries
- development of national wetland and waterbird conservation Action Plans and Strategies
- the Ramsar Convention in identifying wetlands of international importance through regular monitoring of waterbirds
- the Convention of Migratory Species (CMS) by monitoring the status of migratory waterbirds and their habitats
- the Convention on Biological Diversity's (CBD) goal in conservation and sustainable use of biodiversity
- implementation of the *Asia-Pacific Migratory Waterbird Conservation Strategy: 2001-2005*
- BirdLife International's Important Bird Area (IBA) Programme
- IUCN/BirdLife's Globally Threatened Bird Update (GTB) Programme
- Wetlands International's Waterbird Population Estimates (WPE)

As an important conservation programme for waterbird conservation, the AWC has been widely recognised by bodies 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.

Figure 2: Chart on contribution of the AWC to national and international conservation framework



Key: Ramsar – Convention on Wetlands, CMS – Convention on Migratory Species, CBD – Convention on Biological Diversity, IBAs - BirdLife International Important Bird Areas, GTB - World Conservation Union (IUCN)/BirdLife International Globally Threatened Bird Update, WPE – Waterbird Population Estimates.

1.3.1 Convention on Wetlands (The Ramsar Convention)

The Convention on Wetlands especially as waterfowl habitat (Ramsar, Iran, 1971) promotes the conservation of wetlands worldwide. The Ramsar Convention has been growing very fast since its establishment in 1971 and as at 10 December 2003, 138 countries are signatories to the Convention. Contracting Parties are required "to recognise and conserve any internationally important wetlands", by designating them as Ramsar sites; the Ramsar list of wetlands of international importance comprised 1,328 sites worldwide covering more than 112 million hectares. A high proportion of sites designated are based on their importance for waterbirds and data generated through the IWC and similar programmes.

The Convention has adopted eight criteria for identifying wetlands of international importance, of which three 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.

It encourages Contracting Parties to regularly monitor waterbirds as the basis for identification of wetlands of international importance. More information on the Ramsar List and descriptions of Ramsar sites is available at www.wetlands.org/RDB/Directory.html.

During the Ramsar Conference in 1996 (COP6), Contracting Parties passed a specific resolution (*Resolution VI.4: Adoption of population estimates for operation of the specific Criteria based on waterfowl*) recognising the value of monitoring of waterbirds. The resolution urges Wetlands International to continue to develop the International Waterbird Census and to enhance its global coverage as an important basis for the application of Ramsar Criteria on waterbirds. The Contracting Parties further request Wetlands International regularly to update the best available waterbird population estimates at each of their triennial Conferences of the Parties, and every nine years, to revise the 1% thresholds for each waterbird population. The Ramsar COP 8 in November 2002 has again endorsed the 1% population levels as published in Waterbird Population Estimates (3rd edition, Wetlands International 2002), through resolution VIII.38 (*Waterbird population estimates and the identification and designation of Wetlands of International Importance)*. The resolution also encourages Contracting Parties to identify networks of sites

of international importance and provide information and updates to support waterbird monitoring (to support the IWC).

1.3.2 Convention on Migratory Species (The Bonn Convention, CMS)

The Convention on the Conservation of Migratory Species of Wild Animals (CMS, Bonn, 1983) plays a major role in conservation of migratory species, which include many species of waterbirds. The Convention requires that Contracting Parties should promote, cooperate in and support research relating to migratory species to avoid any migratory species becoming endangered, and to enhance the conservation status of any that are already endangered.

The waterbird monitoring data generated by the IWC provides a valuable information base for the Convention and its Contracting Parties to decide on changes in conservation status of species and populations of waterbirds and whether they should be added to or removed from the lists of species of concern of the Convention (Appendices I and II), that determines whether there is need to take additional actions to protect the species.

1.3.3 Asia-Pacific Migratory Waterbird Conservation Strategy (APMWCS)

The APMWCS 1996-2000 was launched in 1996 with support from The Australian Government Department of Environment and Heritage (formerly Environment Australia), Ministry of the Environment Japan (formerly Environment Agency of Japan) and other government agencies in the region. The Strategy was updated for a second five year term, 2001-2005 following the success of the implementation of the first phase.

The Strategy acknowledges the importance of monitoring waterbirds and their habitats as a basis for promoting and enabling waterbird conservation. (Asia-Pacific Migratory Waterbird Conservation Committee 2001).

Under the APMWCS, three action plans have been developed for the flagship species groups, namely, *Action Plan for the Conservation of Migratory Anatidae in the East Asian Flyway, Action Plan for the Conservation of Migratory Cranes in the North East Asian Flyway*, and *Action Plan for the Conservation of Migratory Shorebirds in the East Asian – Australasian Flyway*. The need for monitoring of waterbirds has been listed as a priority action in all of these action plans. Such actions are also required for identifying internationally important sites to enable their inclusion in the three Site Networks established under the three action plans http://www.wetlands.org/IWC/awc/waterbirdstrategy/docs/Flyway-Website/main.htm.

1.3.4 Central Asian Flyway initiative

An *Action Plan for the conservation of migratory waterbirds and wetlands in the Central Asian Flyway* is currently under development by Wetlands International. This work started in 2001 and following a first regional consultation meeting for the range states in August 2001, a draft action plan will be presented to the range states for adoption in 2004. This action plan identifies the monitoring of waterbirds as a high priority for the region.

1.3.4 BirdLife International's Important Bird Areas (IBAs) Programme

The Important Bird Areas (IBAs) Programme of BirdLife International 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) site regularly hold significant numbers of a globally threatened species, or other species of global conservation concern; (A2) site holds a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA); (A3) site holds a significant component of the group of species whose distributions are largely or wholly confined to one biome; (A4) 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. To date, some 7,000 IBAs have been identified in 130 nations worldwide. A significant proportion of the wetland sites covered in the AWC meet criterion A4, and the AWC counts are the primary source of data to support the identification of many of these sites as IBAs.

1.3.5 Globally threatened waterbirds

BirdLife International leads on the update of the status of the world's threatened birds. BirdLife collates information from a global network of experts and from published and unpublished sources to assess each species's extinction risk using standard quantitative criteria based on a species's population size, population trends and range size to determine its Red List Category based on the standard IUCN (World Conservation Union) Red List Categories: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), three Lower Risk categories (conservation dependent (LR/cd), near threatened (LR/nt), least concern (LR/lc) and Data Deficient (DD). BirdLife is the official Red Listing Authority on birds and supplies this information for the IUCN Red List of Threatened Species.

The detailed, long-term monitoring of waterbirds at wetlands, one of the world's most damaged and vulnerable groups of habitats, 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, listed in the publications *Threatened Birds of the World* (BirdLife International 2000) and *Threatened Birds of Asia* (BirdLife International 2001) which are based on the Red List criteria. The AWC data has been extensively used to update the status of the globally threatened waterbirds in Asia.

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

2. AWC – overview of current status

2.1 Country and site coverage by the AWC

Since the establishment of the AWC in 1987, more than 5,700 sites of 25 countries have been covered at least once without count of countries of Southwest Asia (Table 1). The peak totals of waterbirds arising from the AWC occurred during 1990-1994, when about 1,200-1,600 sites were counted each year. The census dropped to a low point in 1997 when information was submitted by national coordinators and participants for only about 314 sites. Since then, following concerted efforts by national co-ordinators, participants and Wetlands International, the coverage of the census has grown to more than 1,000 sites in 2002-2003. Much of eastern Russia and Mongolia are normally frozen during the count period in January and do not participate in the census.

Since 1994, the coordination of the census in countries in south west Asia (The Middle East, Caucasus and Central Asia) has been from the Wetlands International office in the Netherlands.

The annual coverage of sites varies between years as it is primarily dependent on the capacity of national networks. Smaller-sized 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. Prioritization of sites for coverage in the AWC is required to ensure that the data is relevant at the national and international level.

2.2 National Co-ordination and Network development

Coordination of the AWC in each country is undertaken by a government agency, NGO or individual on a voluntary basis. Since January 2001, Wetlands International has made efforts to strengthen the national co-ordination of the AWC in countries such as in Bangladesh, Brunei, mainland China, India, Malaysia and Myanmar, Sri Lanka and Thailand. To date, AWC co-ordinators have been nominated in 20 countries (Table 2). Due to history and political reasons, the AWC in mainland China, Hong Kong and Taiwan has been coordinated separately. In some countries with large networks, regional/provincial coordinators have also been nominated. Currently, seven countries (Afghanistan, Bhutan, Laos, Maldives, Democratic People's Republic of Korea, Papua New Guinea and Timor Leste) do not have a national coordinator or established networks of participants. Political conditions in Democratic People's Republic of Korea and Timor Leste have not been conducive to maintaining regular contact with residents interested in study of birds or for appointing of coordinators.

With the efforts of the national and regional co-ordinators, 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 seven countries listed above and in New Zealand (where although data is being regularly collected by local groups, counts have only been contributed to the AWC in 1992 and 1993), to ensure that consistent and quality coverage of the census can be ensured from across the region.

Table 1: Number of sites reported by the AWC between 1987-2003
(as at 31 December 2003)

Country/Region	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03
South Asia	**343**	**598**	**967**	**940**	**1141**	**1210**	**1142**	**1124**	**708**	**681**	**126**	**194**	**285**	**164**	**327**	**548**	**599**
Bangladesh	8	12	12	19	35	60	59	42	34	47	6	25	12	13	29	37	
Bhutan		2	4											18	3	6	
India	189	326	650	655	816	776	738	986	577	573	34	65	178	17	194	356	462
Nepal	12	10	2	11	8	14	12	7	12	4				12	9	3	2
Pakistan	67	147	190	140	176	258	269	31	32	15	42	37	42	42	55	70	67
Sri Lanka	67	101	109	115	106	102	64	58	53	42	44	67	53	62	37	76	68
SE Asia	**6**	**12**	**108**	**163**	**195**	**210**	**155**	**128**	**63**	**61**	**51**	**47**	**133**	**139**	**134**	**208**	**212**
Brunei				4	4		4	4	4	4	5	5				9	
Cambodia						1	10						12	13	11	5	
Indonesia			1	19	8	18	18	16	18	16			47	12	10	44	
Laos			2	4	5	3	2	1						14	1		
Malaysia			70	66	108	86	17	10	7	15			20	25	24	23	47
Myanmar	5	3	12	17	16	21	21	14	13	3	4	2		10	33	53	77
Philippines				22	26	39	44	51			29	32	35	46	40	49	49
Singapore				3	12	18	19	15	15	13	10	6	11	10	10	1	9
Thailand	1	3	21	26	16	23	16	17	5	9	3	1		7	3	8	26
Vietnam		6	2	2		1	4		1	1		1	8	2	2	16	4
East Asia	**7**	**84**	**116**	**166**	**126**	**182**	**88**	**103**	**116**	**118**	**114**	**118**	**180**	**263**	**275**	**263**	**274**
Mainland China		40	12	62	12	75	30	6	14	4	12	18	17	11	7		32
Hong Kong	7	7	6	6	7	7	10	4	5	4	3	3	3	3	3	3	3
Macao																1	1
Taiwan		26	33	28	32	34		33	30	38	38	40	52	38	40	33	23
Japan			53	44	53	47	33	50	44	46	37	41	37	109	112	106	95
Democratic People's Republic of Korea				3													
Republic of Korea		11	12	23	22	19	15	10	23	26	22	15	69	100	112	118	118
Mongolia														1			1
Eastern Russia											2	1	2	1	1	2	1
Australasia	**0**	**0**	**0**	**8**	**9**	**39**	**25**	**27**	**31**	**27**	**23**	**26**	**27**	**28**	**34**	**29**	**0**
Australia						16		21	31	27	23	26	27	28	34	29	
New Zealand						16	20										
Papua New Guinea				8	9	7	5	6									
Sub Total of Sites	**356**	**694**	**1191**	**1277**	**1471**	**1641**	**1410**	**1382**	**918**	**887**	**314**	**385**	**625**	**594**	**770**	**1048**	**1085**
SW Asia	**80**	**160**	**148**	**199**	**215**	**221**	**224**	Census coordinated from Wetlands International Netherlands Office from 1994 onwards									
Azerbaijan					2		10										
Bahrain		11	9	22		21											
Iran	40	101	106	117	110	124	119										
Kazakhstan					4	3	2										
Kuwait		4		3			3										
Sultanate of Oman		6	13	14	14	13	13										
Qatar					6	8	8										
Saudi Arabia				19	21	31	18										
Turkmenistan	34	36	20	23	20		35										
UAE				1	21	13	7										
Uzbekistan	6	2			7		1										
Yemen					10	8	8										

Table 2: AWC Coordination networks in the region
(as at 31 December 2003)

Country/State	Network
Australia	Australasian Wader Studies Group
Bangladesh	Bangladesh Bird Club
Brunei Darussalam	University Brunei
Cambodia	Wildlife Conservation Society – Cambodia
Mainland China	Wetlands International – China Office
Hong Kong SAR	Hong Kong Bird Watching Society
Taiwan	Wild Bird Federation Taiwan
Japan	Individual contributors
India	Bombay Natural History Society and state networks
Indonesia	Wetlands International – Indonesia Office
Korea, Republic of	National Institute of Environmental Research
Malaysia	Malaysian Nature Society and Department of Wildlife & National Parks
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	Punjab Wildlife Research Institute, Sindh Wildlife Department and Zoological Survey Department
Philippines	Protected Areas and Wildlife Bureau
Russia	Individual contributors
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

Full contact details of the national coordinators on AWC website
http://www.wetlands.org/IWC/awc/awcmain.html .

3. Challenges faced in the development of the AWC

The strength of the AWC is that it is a long-term volunteer based international network which has been able to continue despite a low input of resources. It is expected that the interest of volunteers to be involved in such initiatives will change over time and there is an ongoing need to encourage and support the networks and to recruit new participants. The principal challenges in servicing the networks and development of the census are outlined below.

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 which implements the AWC.

The level of responsibility on a coordinator can vary considerably and depends on a number of factors. These include the number of wetlands in their geographic unit, number of participants (and potential participants) in their network, demands on resources by the network (training, equipment and funding support), year-round communication to build and sustain networks, coordination of data collation, production and dissemination of reports, etc. These demands may be time intensive and continue around the year. To ensure that the programme can be successful, coordinators are appointed based on their interest and individual skills, and the ability of their institution to respond to the coordination needs over a number of years. Periodic changes in coordinators have resulted in fragmentation of local networks that take considerable time and effort to re-establish.

Time and funding constraints at the international and national coordination levels have resulted in periodic lapses of coordination and communication that in some countries has lead to a decrease in the number of volunteers available to participate in the AWC.

Sustaining interest of volunteers is also linked to the provision of regular feedback and ensuring visibility of their input in national reports and other outputs. Thus, timely and regular collation of national and regional reports and newsletters and their wide dissemination is extremely important.

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, AWC reports were produced on an annual basis when the number of countries and sites involved were fewer. 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 have increased. These changes have prevented information from all countries being submitted to the international coordinators within a three to six month time frame following the census to permit continuation of collation and production of annual regional reports in a timely manner. The purpose of regional reports and syntheses have had to evolve to collating information for a few years (three to five), and undertaking analysis of species and site data.

Establishing frameworks and mechanisms for data collation and transfer are important to enable rapid data transmission without loss of information. The International Coordinator maintains all the count information on a standardized Access database in Malaysia. The database structure with an instruction manual had been provided to National Coordinators in the mid 1990s. At the national level data many coordinators do not have sufficient skills and time to maintain and update annual count data on databases. Data is 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 format in Malaysia has proven time consuming and requires considerable discussion with National Coordinators to ensure that all the data on counts, sites, uses and threats are provided and being collated accurately.

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 had focussed on increasing coverage by counting as many sites as possible and encouraging and supporting involvement of an ever-increasing number of participants. The sites covered by the AWC reached a peak of 1,641 in 1992, after which coverage gradually decreased to a low point of 314 sites in 1997. Largest change has occurred in India, where only 34 sites were counted in 1997 compared to 776 in 1992. In recent years, site coverage has recovered gradually to more than 1,000 in 2002-2003. Even though there is still a big gap compared to the peak number of 1,640, although this may in part be a reflection of effort to cover more important sites.

The number of sites counted each year matched this initial enthusiasm of 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 finances) has meant that sites designated as protected areas, Ramsar sites, Migratory Waterbird Site Networks of East Asian-Australasian Flyways (established under the APMWCS) or similarly designated under other programmes and other sites of international and national importance have not always been adequately targeted for annual and consistent coverage.

3.3 Support to networks and inadequate expertise

In some countries, there are a number of people who are keen to contribute to the AWC, although they lack the skills of bird identification and counting. This may deter their participation and result in submission of inaccurate count data and unreliable species records. While there is increasing access to information (publications and on the internet) on how to study and count waterbirds, development of skills in new participants and collection of high quality data greatly improves through provision of training.

3.4 Lack of financial support

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

These factors have greatly affected the development of the AWC. Addressing these issues to strengthen the functions and outputs of the census forms the basis for the development of a short term strategy (Section 4).

4. Objectives and priority actions for AWC development during 2004-2006

The Strategy for the development of the AWC during 2004-2006 focuses on 7 objectives and 27 priority actions at the international and national levels. The principal practitioners (persons and agencies) responsible for implementation of the actions have been mentioned (text in square brackets following each action). The actions identified as highest priority are highlighted as [H] in bold in the end of the action. Funds to undertake some of these actions will need to be resourced.

4.1 Objectives

Objective 1: To enhance geographic and site coverage of the AWC.
Objective 2: To improve the quality of AWC data to achieve the aim of monitoring of waterbird populations.
Objective 3: To enhance communication amongst AWC Coordinators and the Networks.
Objective 4: To develop training, communication and public awareness programmes for the AWC.
Objective 5: To develop a fundraising strategy for the AWC and seek funding opportunities to support its development.
Objective 6: To support improved decision making on waterbird and wetland conservation at international and national levels through enhanced use of AWC data.
Objective 7: To develop a coordination mechanism for the AWC.

4.2 Priority actions

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

Action 1: Undertake a review of countries not currently participating in the census to identify opportunities for their involvement, through stimulation of potential coordinators and participants. Priority to stimulate national/sub-national AWC programmes will be targeted towards Bhutan, Laos, Macao and Papua New Guinea, with opportunistic involvement of the other countries like Afghanistan, Democratic People's Republic of Korea, Maldives, Mongolia and Timor Leste and to encourage submission of information from New Zealand.

[AWC International Coordinator]

Action 2: Review and prepare an updated list of priority wetlands of national and international importance to be covered each year by the AWC. The first priority list should include Ramsar Sites, Crane, Anatidae, Shorebird Network Sites in the East Asian-Australasian Flyways and Important Bird Areas. The second priority list should include protected areas, wetland reserves, bird sanctuaries, MaB Sites, World Heritage Sites, and other important sites. **[H]**

[AWC National and Sub-national Coordinators]

Action 3: Conduct an evaluation in each country to identify sites used by species meeting the criteria for Globally Threatened status produced by BirdLife International on behalf of IUCN. Ensure that sites holding these Globally Threatened species are adequately monitored. **[H]**

[AWC National and Sub-national Coordinators]

Objective 2: To improve the quality of AWC data to achieve the aim of monitoring of waterbird populations.

Action 4: Ensure the annual AWC counts are undertaken in January during the suggested period, if possible to conduct the count in the whole country/region in a short time period (1 week) so as to minimize interference by double counts.

[AWC National and Sub-national Coordinators]

Action 5: Undertake adequate planning and make arrangements to ensure sites in the priority list (Actions 2 & 3) and other important sites are covered and ensure at least one experienced and reliable counter is leading the count at each site. **[H]**

[AWC National and Sub-national Coordinators]

Action 6: Review and prepare boundary maps for each site included in the priority list of important wetlands to be covered by the AWC, and make these available to all participants. **[H]**

[AWC National and Sub-national Coordinators]

Action 7: Establish effective mechanisms for national coordination, including collection of all standardised data forms in a timely manner after the census (February). To undertake a quality check of the content of information (including, identifying duplicate counts, unusually high counts of species, unusual records of species and addition of site codes). Promote use of standardised AWC count and site form, database programmes and structures in all countries and at the international level to ensure timely and rapid transmission of data.

[AWC National and Sub-national Coordinators]

Action 8: Production and dissemination of results of the annual census in the form of annual national reports to a national audience with accompanied letter from the AWC international Coordinator. **[H]**

[AWC National and Sub-national Coordinators]

Action 9: Submission of national census data or databases by National Coordinators on an annual basis to Wetlands International by end of April each year for collation into AWC international databases, production of AWC international reviews and analysis.

[AWC National and Sub-national Coordinators]

Action 10: Support volunteers in data collection, including provide participation guidelines and support logistics, identification guides and equipment. **[H]**

[AWC National and Sub-national Coordinators, AWC International Coordinator, Wetlands International]

Action 11: Strengthen waterbird specialist groups in the Asia-Pacific through increasing awareness about groups, identifying potential members, mechanisms of improving data quality.

[Wetlands International, Specialist Group Coordinators, AWC International Coordinator]

Objective 3: To enhance communication amongst AWC Coordinators and the Networks

Action 12: Develop an AWC communication strategy to enhance communication within the network and the outside world.

[AWC International Coordinator with National and Sub-national coordinators]

Action 13: Undertake activities to strengthen co-ordination amongst coordinators, review and plan activities through regular communication and through the organisation of regular meetings (conferences or side meetings in conjunction with other regional/international events).

[Wetlands International, AWC International coordinator, AWC National and Sub-national coordinators]

Action 14: Review effectiveness of current national co-ordination methods to enhance the national networks, such as through regular communication and production and dissemination of annual AWC national report and annual newsletter for counters. Use existing publications to disseminate information of AWC. **[H]**
[AWC National and Sub-national coordinators]

Objective 4: To develop training, communication and public awareness programmes for the AWC.

Action 15: Identify training needs as a basis for the development of a training programme to improve knowledge and skills to coordinate the AWC volunteer network and undertake the census. Identify resources and skills in the region could offer help. **[H]**

[AWC National and Sub-national coordinators, AWC international coordinator]

Action16: Conduct training activities for volunteers in countries to enhance counting and identification capacity and skills. **[H]**

[AWC National and Sub-national Coordinators, AWC International coordinator, Wetlands International]

Action 17: Develop an awareness programme for the public to improve their knowledge about the value of the census and the importance of conservation of wetlands and their biodiversity, particularly waterbirds. **[H]**

[Wetlands International, AWC International coordinator, AWC National and Sub-national Coordinators]

Action 18: Regularly update the AWC website and produce the biannual regional newsletters to enhance the communication and public awareness.

[Wetlands International, AWC International coordinator]

Objective 5: To develop a fundraising strategy for the AWC and seek funding opportunities to support its development.

Action 19: Develop and implement a fundraising strategy, based on a review of the critical funding requirements for its maintenance and development. **[H]**

[Wetlands International, AWC International coordinator, with AWC National and Sub-national Coordinators]

Action 20: Identify funding opportunities and resources for fundraising for priority actions based on the fundraising strategy at the regional/national/local level to strengthen national networks to implement the AWC. **[H]**

[AWC National and Sub-national Coordinators, AWC International coordinator, Wetlands International]

Objective 6: To support improved decision making on waterbird and wetland conservation at international and national levels through enhanced use of AWC data

Action 21: Produce triennial AWC international report for distribution to key government agencies, international conventions, development and funding agencies etc. to promote waterbird and wetland conservation and as feed back to the AWC volunteers. **[H]**

[Wetlands International, AWC International coordinator]

Action 22: National coordinators report proactively on the status of waterbirds and wetlands in the country to national conservation and development agencies, national Ramsar committees and other data users to ensure that priorities and needs for waterbirds can be given priority within national development plans and site development projects that may impact on wetlands of importance for waterbirds. **[H]**

[AWC National and Sub-national Coordinators]

Action 23: Report on the status of waterbirds and wetlands in the Asia-Pacific region to the Ramsar Convention, Convention on Migratory Species, Convention on Biological Diversity and other international initiatives/organisations including the Asia-Pacific Migratory Waterbird Conservation Committee and BirdLife International.

[Wetlands International, AWC International coordinator]

Action 24: 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* updates and Globally Threatened Birds Update.

[Wetlands International, AWC International coordinator, AWC National and Sub-national Coordinators]

Objective 7: To develop a coordination mechanism for the AWC

Wetlands International is proposing the establishment of a global waterbird advisory committee that will provide overall strategic direction to the work on waterbirds (to be developed in 2004 at the Global Flyway Conference). In addition to this, regional mechanisms have been established, e.g. the African Waterbird Census has a regional Steering Committee that helps to guide the development of the census.

Action 25: Plan to establish a regular mechanism to oversee the development of the AWC.

[Wetlands International, AWC International coordinator]

Action 26: A Task Force is to be established to design strategic ways to build capacity of governments and NGO's for implementing AWC in each country through identification of resources and mechanisms. **[H]**

[Wetlands International, AWC International coordinator]

Action 27: Review implementation of the strategy in 2006 and to develop a new strategy for the next period.

[Wetlands International, AWC International coordinator, AWC National and Sub-national Coordinators]

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