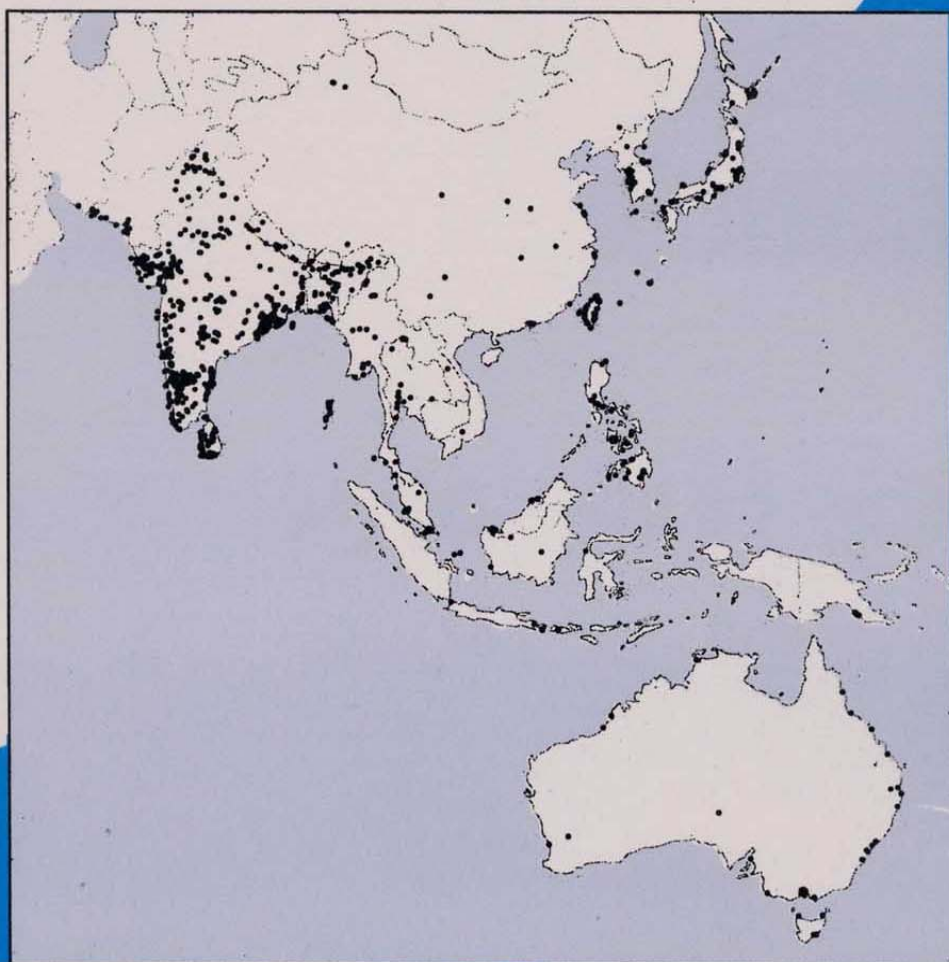


The **Asian Waterfowl Census**

1994-1996

Results of the Coordinated Waterbird Census
and an Overview of the Status of
Wetlands in Asia

Edited by
Alvin Lopez and Taej Mundkur



WETLANDS INTERNATIONAL

Conserving wetlands for people and wildlife

Wetlands International, the world's leading non-profit wetland conservation organisation, was created by the integration of the Asian Wetland Bureau, the International Waterfowl and Wetlands Research Bureau, and Wetlands for the Americas. The achievements of the founding organisations date back 40 years, and include the launch of (and support to) the Ramsar Convention, major regional surveys and conservation programmes for wetlands and wetland species, and the development of international programmes for migratory waterbird conservation.

Sound technical information is the basis for Wetlands International's work, which includes coordinating conservation, management and assessment projects at international level, providing technical and fundraising support to national and local projects, and helping to build the capacity of relevant agencies. Wetlands International produces a wide range of publications and awareness materials, and organises numerous workshops, training courses and conferences each year.

Wetlands International's global network provides rapid access to wetland conservation specialists throughout the world. Together with the staff of the organisation's 17 regional and project offices, they provide a unique force to support wetland conservation activities. Partnership is at the heart of Wetlands International, and strong links exist with other international conservation agencies such as IUCN, WWF and Birdlife International, and the secretariats of the Ramsar and Bonn Conventions. Global and regional programmes are supported by over 120 government agencies, NGOs, foundations, development agencies and private sector groups.

For further information please contact the appropriate regional office:

Wetlands International Asia Pacific

Institute of Postgraduate
Studies and Research
University of Malaya
50603 Kuala Lumpur
Malaysia
Tel: +60 3 756 66 24
Fax: +60 3 757 12 25
Email: wiap@wiap.nasionet.net
WWW: <http://ngo.asiapac.net/wetlands>

Wetlands International Africa, Europe, Middle East

11 Marijkeweg
PO Box 7002
6700 CA Wageningen
The Netherlands
Tel: +31 317 47 47 11
Fax: +31 317 47 47 12
Email: post@wetlands.agro.nl

Wetlands International The Americas

7 Hinton Avenue North
Suite 200
Ottawa, Ontario K1Y 4P1
Canada
Tel: +1 613 722 20 90
Fax: +1 613 722 33 18
Email: davidson@wetlands.org

CONVENTION ON WETLANDS (Ramsar, Iran, 1971)

The Convention on Wetlands (Ramsar, Iran, 1971) provides the framework for international cooperation for the conservation and wise use of wetland habitats and biodiversity.

As defined by the Convention, wetlands include a variety of habitats such as marshes, peatlands, floodplains, rivers and lakes, coastal areas, coral reefs and other marine areas no deeper than six metres at low tide, as well as man-made wetlands such as rice fields and reservoirs. Wetlands are very important for the ecological functions which they perform, as well as for their rich flora and fauna. They also constitute a resource of great economic, cultural, scientific and recreational value to human life. Wetlands and people are ultimately interdependent.

Adopted in 1971 in Ramsar, Iran, the Convention celebrates its 26th anniversary in 1997, with a membership of more than 100 countries. The Convention programme focuses on the conservation of more than 850 wetlands designated for the Ramsar List, and on national planning to maintain wetland values and functions and to promote wise use of wetlands resources, including water.

UNESCO is the Depository of the Convention. The Secretariat, or Bureau, is hosted by IUCN - The World Conservation Union, in Gland, Switzerland.

Ramsar Convention Bureau
Rue Mauverney 28
CH-1196 Gland, Switzerland

Tel: +41 22 999 0170; Fax: +41 22 999 0169
E-mail: ramsar@hq.iucn.org
WWW: <http://iucn.org/themes/ramsar/>

THE CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is one of a small number of intergovernmental treaties concerned with the conservation of wildlife and wildlife habitats on a global scale. Since the Convention's entry into force on 1 November 1983, its membership has grown steadily to include 51 Parties from Africa, Central and South America, Asia, Europe and Oceania.

Parties to CMS work together to conserve migratory species and their habitats by providing strict protection for the endangered migratory species listed in Appendix I of the Convention; by concluding multilateral Agreements for the conservation and management of migratory species listed in Appendix II; and by undertaking co-operative research activities.

CMS has a unique role to play in focusing attention on and addressing the conservation needs of the 76 endangered species presently listed in Appendix I - including, among others, the Siberian crane, White-tailed eagle, Hawksbill turtle, Mediterranean monk seal and Dama gazelle.

Appendix II lists migratory species that require or would benefit significantly from international co-operative Agreements under CMS. These may range from legally-binding treaties to less formal memoranda of understanding. The more formal Agreements should provide for co-ordinated species conservation and management plans; conservation and restoration of habitat; control of factors impeding migration; co-operative research and monitoring; and public education and exchange of information among Parties.

Seven Agreements have been concluded to date under the auspices of CMS. They aim to conserve: bats in Europe, cetaceans of the Mediterranean and Black Seas, small cetaceans of the Baltic and North Seas; seals in the Wadden Sea, African-Eurasian migratory waterbirds, western and central Asian populations of the Siberian crane, and the Slender-billed curlew.

Draft Agreements are currently being developed and further initiatives are envisaged for a wide range of migratory species, including Sahelo-Saharan ungulates, albatrosses of the southern hemisphere, bustards and marine turtles.

A secretariat under the auspices of the United Nations Environment Programme (UNEP) provides administrative support to the Convention. The decision-making organ of the Convention is the Conference of the Parties (COP) which held its Fifth meeting in Geneva in April 1997. A Standing Committee provides policy and administrative guidance between the regular meetings of the COP. A Scientific Council, consisting of experts appointed by individual member States and by the COP, gives advice on technical and scientific matters.

Secretariat, Convention on Migratory Species
United Nations Premises in Bonn
Martin-Luther-King-Str. 8
D-53175 Bonn, Germany

Tel: +49 228 815 2401
Fax: +49 228 815 2449
Email: dhykle@unep.de
WWW: <http://www.wcmc.org.uk/cms>

The Asian Waterfowl Census 1994-1996

Results of the Coordinated Waterbird Census and an Overview of the Status of Wetlands in Asia

Edited by
Alvin Lopez and Taej Mundkur



Wetlands International

1997

The Asian Waterfowl Census 1994-1996

Results of the Coordinated Waterbird Census and
an Overview of the Status of Wetlands in Asia

Editors

Alvin Lopez and Taej Mundkur

Editorial Assistants

Rosie Ounsted and Mui Fun Wong

Copyright

© Wetlands International, 1997

ISBN Number

983-9663-27-5

Published by

Wetlands International

Available from

Wetlands International - Asia Pacific
Institute of Postgraduate Studies and Research
University of Malaya, Lembah Pantai
50603 Kuala Lumpur, Malaysia
Tel: +60 3 756 6624
Fax: +60 3 757 1225
Email: wiap@wiap.nasionet.net
WWW: <http://ngo.asiapac.net/wetlands>

This publication should be cited as:

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.

The designations of geographical entities in this publication, and the presentation of material, do not imply the expression of any opinion whatsoever on the part of Wetlands International concerning the legal status of any country, territory, or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this publication do not necessarily reflect those of Wetlands International.

CONTENTS

ACKNOWLEDGEMENTS	v
------------------------	---

.....	vi
-------	----

Error! Reference source not found.Error! Bookmark not defined.

Error! Reference source not found.Error! Bookmark not defined.

EXECUTIVE SUMMARY	viii
-------------------------	------

Coverage and Participation..... viii

Important sites..... viii

Land ownership/ Protection status of sites..... xii

Uses of and threats to wetlands..... xii

Threatened species..... xiii

INTRODUCTION	1
--------------------	---

Background to the Asian Waterfowl Census1

Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-20001

East Asian Australasian Shorebird Reserve Network.....2

North East Asian Crane Site Network2

METHODS	3
---------------	---

Geographic coverage3

Data collection and handling3

Participants and coordinators.....3

Support for census activities3

Data checking and quality of information4

Maps of sites and species.....4

Information on uses and threats5

REGIONAL SECTIONS

SOUTH ASIA	6
OVERVIEW	6
Bangladesh.....	8
India	8
Nepal.....	11
Pakistan.....	11
Sri Lanka.....	12
SOUTH EAST ASIA	13
OVERVIEW	13
Brunei Darussalam.....	14
Indonesia.....	14
Lao People's Democratic Republic	15
Malaysia.....	15
Myanmar.....	16
Papua New Guinea.....	16
Philippines	16
Singapore	17
Thailand	17
Vietnam.....	18
EAST ASIA (EXCLUDING EASTERN RUSSIA/MONGOLIA)	18
OVERVIEW.....	18
People's Republic Of China	20
Hong Kong.....	20
Japan	21
Republic Of Korea	21
Taiwan	22
AUSTRALIA	23
REFERENCES	24

APPENDICES

Appendix I	List of participants in the Asian Waterfowl Census 1994-96.....	25
Appendix II	List of Asian Waterfowl Census Coordinators 1994-96.....	30
Appendix III	Site totals of birds and species counted during the Asian Waterfowl Census 1994-96	33
Appendix IV	Regional totals of species counted during the Asian Waterfowl Census 1994-96, their IUCN threat status and CMS listing.....	69
Appendix Va	1994-96 Asian Waterfowl Census counts in South Asia.....	78
Appendix Vb	1994-96 Asian Waterfowl Census counts in Southeast Asia.....	84
Appendix Vc	1994-96 Asian Waterfowl Census counts in East Asia.....	92
Appendix VI	1994-96 Asian Waterfowl Census counts in India.....	97
Appendix VII	Site totals of shorebirds counted in Australia 1994-96.....	112
Appendix VIII	Species totals of shorebirds counted in Australia 1994-96.....	113
Appendix IX	The Ramsar Convention: Towards A Wise Use of Wetlands - Overview of Asia and Criteria for Identifying Wetlands of International Importance	114
Appendix X	An Update on Activities of the Convention on the Conservation of Migratory Species of Wild Animals in Asia	117

TABLES

Table 1	Overview of the Asian Waterfowl Census during the period 1994-96.....	ix
Table 2	Wetlands in Asia supporting more than 20,000 waterbirds at one time.....	x
Table 3	Threatened species recorded during the Asian Waterfowl Census 1994-96.....	xiv
Table 4	Summary of coverage of the Asian Waterfowl Census 1994-96 in India.....	9

FIGURES

Figure 1	Ownership/protection status of wetland sites covered by Asian Waterfowl Census 1994-96.....	xii
Figure 2	Total number of waterbirds counted at sites in South Asia covered during the Asian Waterfowl Census 1994-96.....	6
Figure 3	Total number of species counted at sites in South Asia covered during the Asian Waterfowl Census 1994-96.....	7
Figure 4	Bangladesh - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96.....	8
Figure 5	India - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96.....	10
Figure 6	Pakistan - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96.....	12
Figure 7	Total number of waterbirds counted at sites in Southeast Asia - Australia covered during the Asian Waterfowl Census 1994-96.....	13
Figure 8	Total number of species counted at sites in Southeast Asia - Australia covered during the Asian Waterfowl Census 1994-96.....	14

Figure 9	Indonesia - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96.....	15
Figure 10	Total number of waterbirds counted at sites in East Asia (excluding eastern Russia/Mongolia) covered during the Asian Waterfowl Census 1994-96.....	19
Figure 11	Total number of species counted at sites in East Asia covered during the Asian Waterfowl Census 1994-96.....	19
Figure 12	Taiwan - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96.....	22

ACKNOWLEDGEMENTS

The census depends on the enthusiasm of hundreds of conservationists, bird watchers and government personnel for counting waterbirds; their dedication is greatly appreciated. This report could not be produced without their hard work, and Wetlands International would like to thank them profusely.

Financial support for Wetlands International's waterbird conservation programme and monitoring work, including coordination of the census, was received from the John D. and Catherine T. MacArthur Foundation, Environment Australia and Environment Agency of Japan.

A complimentary flight courtesy of British Airways made it possible to undertake the production and inclusion of maps in this report. Paul Rose and Cecilia Reyes of Wetlands International - Africa, Europe, Middle East kindly gave technical instruction and assistance in production of the maps.

At Wetlands International - Asia Pacific, Mohammad Navid Anwar greatly assisted by providing advice and assistance in computer programmes. For undertaking the painstaking task of data entry, Carol Wong, Mui Fun Wong and Rena Ooi truly deserve a big thanks. Much appreciation also goes to John Howes for his technical advice and constructive comments, Rosie Ounsted for language editing and Nelson Yeoh for the cover design.

The publication and distribution of this report has only been possible due to the kind financial contributions from the Convention on Wetlands (Ramsar Convention) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). We are most grateful to them for their support.

Alvin Lopez and Taej Mundkur
Wetlands International
April 1997



CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES
(Ramsar, Iran, 1971)

FOREWORD

Migratory waterbirds have been a concern of the Convention on Wetlands (Ramsar, Iran, 1971) since its inception. Their amazing feats of long distance, non-stop flight have captured the attention and imagination of people the world over and have helped create some of the most effective international networks for wetland conservation and sustainable use. Waterbirds are also at the base of some important economic and recreational activities that bring benefits and satisfaction to significant groups of people. In different places around the world they continue to be a source of protein in the diet of human communities.

In the 10 years since its inception, the Asian Waterfowl Census (AWC) has provided a reliable information base to be used in the identification of wetlands of international importance based in the Ramsar Criteria.

The 93 Contracting Parties to the Ramsar Convention represented at the 6th Meeting of the Conference of the Contracting Parties in March 1996, adopted Resolution VI.4 which urges "Wetlands International to continue to develop the International Waterfowl Census (of which the Asian Waterfowl Census forms a major part) and to enhance its global coverage as an important basis for the application of Ramsar Criterion 3(c)" for identifying wetlands of international importance: wetlands that regularly support 1% of the individuals in a population of one species or subspecies of waterfowl. Recommendation 6.4 of the same conference (the "Brisbane Initiative") encourages countries to implement the "Asia-Pacific Migratory Waterbird Conservation Strategy 1996-2000", which identifies the Asian Waterfowl Census as a priority tool for gathering information on important wetlands and waterbirds.

The census programme has the potential to be expanded to provide value-added benefits such as providing a vehicle to extend the World Wetlands Day initiative to the grassroots level and increasing education and awareness about the importance of conserving wetlands and their waterbirds. It can also assist in improving national capacity on wetland monitoring, through training courses, and the production of manuals and field guides.

In my opinion, by far the greatest achievement of the census lies in its network of dedicated individuals who volunteer their time and effort in January each year to count waterbirds at wetland sites throughout the Asia-Pacific region. I commend their enthusiasm and dedication, and urge greater participation through the development and strengthening of national networks in this exemplary programme.

I would like to take this opportunity to thank Wetlands International-Asia Pacific for their efforts in co-ordinating the AWC, collating, analysing, maintaining and reporting on the findings, and producing awareness materials. In future years, we hope that this responsibility will be increasingly shared by the national networks. The Ramsar Bureau will continue to support and promote the activities of the Asian Waterfowl Census.

I hope that with this publication, all regional and national co-ordinators and participants of the AWC will endeavour to disseminate this information widely and encourage its use in management planning and decision-making in and around wetland areas, so as to maintain their biodiversity and to ensure that communities continue to benefit in a sustainable manner from these resources.

After all, information is only as good its application.

Delmar Blasco
Secretary General
Convention on Wetlands
4 November 1997

BUREAU/ OFICINA: RUE MAUVERNEY 28
CH-1196 GLAND, SWITZERLAND/ SUISSE/ SUIZA
TEL: (+41) 22 / 999 01 70; TELEFAX: (+41) 22 / 999 01 69
TELEX: 41 96 24
E-mail: ramsar@hq.iucn.org
Web site: <http://iucn.org/themes/ramsar/>



Convention on the Conservation of Migratory Species of Wild Animals (CMS)

Secretariat provided by the United Nations Environment Programme (UNEP)

FOREWORD

Many species of waterbirds are migratory, their regular movements governed by the seasons and the availability of water in their natural habitats. Knowledge about their numbers, trends and distribution is a fundamental tool for their proper management and conservation. The Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) is pleased to support the Asian Waterbird Census, conscious of the importance of this regional endeavour and of the value of the data being gathered by a network of dedicated professionals and volunteers.

CMS is the only global convention dealing with the conservation of migratory species - animals which stand to gain and lose because of their itinerant habits. They can take advantage of the best resources cyclically available in habitats situated, in some cases, thousand of kilometres apart. But in order to do so, they must rely on a chain of particular habitats spreading over their extensive migratory routes. They need a suitable place for breeding and raising their young, as well as adequate resting and feeding sites.

Migratory animals are a truly international component of biodiversity. Routinely crossing national borders, they do not belong to one country in particular, but to many neighbouring countries spread over the whole range of the species. If conservation measures are not implemented effectively anywhere along the length of this chain, the species may become endangered, irrespective of the adequacy of protection measures elsewhere. Not surprisingly many migratory birds are at risk.

It is clear that, without international regulations, migratory species will continue to decline in number. Many populations are decreasing drastically and some are even facing extinction. This trend will continue unless more stringent international measures are implemented. Above all, there needs to be a clear understanding by decision-makers and ordinary people alike of the value of these species and of the shared responsibility for their sustainable management and conservation.

The Convention on Migratory Species already has 51 members worldwide, and the number of Parties is increasing steadily. Among other things, CMS develops regional agreements aimed at conserving particular groups of migratory species, and supports projects in the field, workshops and other local activities coordinated at the international level. Agreements already developed under CMS provide special protection to small cetaceans, European bats and a wide variety of African-Eurasian waterbirds. In Asia, the Siberian Crane is object of a special intergovernmental agreement that has spear-headed an international recovery plan.

The Secretariat of the Convention cooperates closely with Wetlands International - Asia Pacific, and is committed to implementation of the *Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000* through its involvement in the Migratory Waterbird Conservation Committee. Hopefully these initiatives will eventually lead to the development of a regional waterbird Agreement. CMS has also signed a memorandum of understanding with the Ramsar Convention on Wetlands, and both are planning to work together in areas of joint interest to provide synergy for their common efforts.

Data collected through the Asian Waterfowl Census clearly show the importance of the cooperative work at the international level for better management and conservation measures for migratory species. These efforts provide the basic scientific underpinning for the critical decisions that will need to be made in the years ahead, and the Convention on Migratory Species applauds this initiative.

Arnulf Müller-Helmbrecht
Executive Secretary
Secretariat, Convention on Migratory Species

EXECUTIVE SUMMARY

The Asian Waterfowl Census (AWC) is a coordinated international scheme for the collection and dissemination of information on waterbirds and wetlands. It forms a part of the International Waterfowl Census, a global effort coordinated by Wetlands International and conducted once a year, during the 2nd or 3rd week of January. Information is gathered on standardized forms by a network of national/regional coordinators and volunteer participants.

The results of the census and associated information are widely used to promote regional and national waterbird and wetland conservation initiatives. These include the identification of internationally important wetlands under the Ramsar Convention and as support for the development of a draft agreement on the conservation of migratory waterbirds. The information has also assisted in the development of the *“Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000”*, its action plans and related initiatives.

This report collates information on counts for three years, 1994 to 1996, and includes information from countries in Asia from Pakistan eastwards.

Coverage and Participation

The 1994-96 period has been challenging for the Asian Waterfowl Census. Twenty-one countries have contributed information to this report, with a total of 1,994 sites covered at least once and 376 sites covered in all 3 years. Within this period, site coverage has extended in some countries, while in others there has been a decline in the number of sites counted. East Asia is the only region where participation has increased. Table 1 shows the total number of sites covered and Appendix I gives the names of all participants.

The drop in coverage in India from 986 in 1994 to 577 in 1995 was the main change in the overall number of sites covered in 1994 and the following two years (Table 1).

Important sites

To identify wetlands of international importance the now widely accepted Ramsar criteria, which are based on, amongst other factors, the numbers of birds, presence of rare species or percentage of a particular population using the site, have been increasingly utilized (Appendix IX). Of the 1,994 sites covered at least once during the AWC 1994-96, 75 wetlands were reported to support at least 20,000 birds during one or more counts (Table 2); of these, six sites are on the Ramsar list. It is recommended that these sites be given further attention in future censuses and also at other times of the year to identify their true importance for waterbirds and potential for Ramsar nomination.

A total of 20 Ramsar sites were counted, accounting for 50% of Ramsar sites in these countries. It is recommended that, in future, coordinators and participants of the census should aim to cover all Ramsar sites in the contracting countries to ensure continuity in waterbird information collection and to monitor wetland conditions.

Table 1: Overview of the Asian Waterfowl Census during the period 1994-96

Region/Country	Number of sites counted			Number of participants ^{1,2}		
	1994	1995	1996	1994	1995	1996
South Asia						
Bangladesh	42	34	47	24	7	26
India	986	577	573	389	354	326
Nepal	7	12	4	27	31	8
Pakistan	31	32	15	10	9	3
Sri Lanka	58	53	42	18	19	20
	1,124	708	681	468	420	383
Southeast Asia						
Brunei Darussalam	4	4	4	4	3	3
Indonesia	16	18	16	10	11	6
Lao P.D.R.	1			1		
Malaysia	10	7	15	12	4	8
Myanmar	14	13	3	21	12	6
Papua New Guinea	6			5		
Philippines	51			35		
Singapore	15	15	13	14		31
Thailand	17	5	9	9	8	3
Vietnam		1	1	0	2	1
	134	63	61	111	40	58
East Asia						
China, P.R.	6	14	4	3	8	3
Hong Kong	4	5	4	29	6	24
Japan	50	44	46	22	*	*
Korea, R.	10	23	26	9	8	9
Taiwan	33	30	38	28	44	61
	103	116	118	91	66	97
Australia	21	31	27	6	15	12
Total	1,382	918	887	676	541	550

Notes: ¹ 'Numbers of participants' shows the minimum number in each country, as from some countries names of clubs or associations are provided rather than names of people.

² Names received on some forms are illegible and unfortunately cannot be included.

* A combined list of 590 participants was received for the 1995-96 census.

In some parts of Asia, populations of waterbirds are dispersed across a network of small wetlands (tanks or ponds) within a region, e.g. in Sri Lanka and South India. Individual sites may or may not hold a large population of birds at a given time, but taken together these wetlands can support large numbers. Conservation of these waterbirds therefore depends on maintaining the character of the network of small but important wetlands.

The Asian region has been characterized by wetland loss in the last few decades, as a result of which several internationally important wetlands have been destroyed, partially lost or modified, resulting in a decline in their ability to support large populations of waterbirds. For the long-term conservation of waterbirds of the region, it is important to identify all sites of international and national importance to focus monitoring and conservation efforts, and the AWC can make a substantial contribution to achieving this goal.

Table 2: Wetlands in Asia supporting more than 20,000 waterbirds at one time

Name of site ¹	Maximum Count	Year of count	Uses/ threats ²	Ownership/ Protection Status ³
Bangladesh				
Hakaluki Haor	32,145	1996	46H	4
Pasua Haor	172,093	1994	67FH	4
Sanir Haor	32,300	1996	46FH	4
Tangua Haor Complex (About 9 Bils)	60,800	1996	246F	4
China				
Dianchi	30,000	1995		1
Dongsha Islands	22,200	1995	1H	1
*East Dongting Lake	102,610	1996		1
Sheyang Salt Works	82,073	1994	4HJL	1
Yancheng Nature Reserve	114,493	1996	469CDFH	1
Hong Kong				
Deep Bay - Combined	67,910	1996		1
India				
Ambalamedu Lake	30,003	1996	F	1
Amipur Tank	47,198	1994	467F	1
Badrana (Badane) Kere	21,215	1994	FH	
Bellandur Tank	56,339	1994	58A	1
Bhitarkanika Wildlife Sanctuary	47,596	1995	6FH	1
Byramangala Reservoir	21,286	1996	568G	1
Chhari - Dhandh	50,900	1995	H	4
*Chilika Lake: Sectors 1-8	1,484,186	1996	35FH	1
Dhir Beel	26,433	1995	246FH	4
Hirakud Reservoir	44,719	1996	26FH	1
Hukitola-Backwaters	114,049	1996	25FH	1
Irai Dam	80,747	1994	0	1
Jaldapara Wildlife Sanctuary	31,200	1995		1
Jayakwadi Tank (Nath Sagar Dam) B.S.	77,212	1994	67AF	1
Kaliveli	20,117	1994	467CFHL	4
Kanewal	23,028	1994	FH	4
Kansabati Reservoir	22,274	1996		
Khirjog & Vakrio (West Banni Area)	30,286	1995	3G	4
Kole Wetlands	78,840	1996	468CDF	34
Kolleru Lake	26,062	1996	679CDF	14
Korda Sandher	33,320	1994	FH	2
Kumarkhunti Reservoir (Chandaka WS)	74,616	1995	G	1
Manjira Reservoir	24,788	1996	4	1
Nal Sarovar	116,028	1994	3GL	1
Pariej	22,492	1994	3FH	4
Pong Dam Bird Sanctuary	66,721	1994	6H	1
Pulicat Lake (Pulicat Bird Sanctuary)	47,496	1996	IL	1
Rengali	39,540	1996	2HI	1
*Sambhar Lake	31,394	1996	EK	4
Simpson Estate	20,111	1995	1	3
Tapi Barrage	37,434	1996	FK	4
Vembanad Lake	29,991	1994	46FHKL	1
Yamuna River: Okhla Barrage (New)	22,067	1995		
Indonesia				
Banyuasin Delta	76,230	1994	4FG	1
Japan⁴				
East Region of Hakata Bay	35,507	1996		1
Gyotoku	31,310	1994		
Hamana Lake	44,557	1996		0
*Izunuma	23,091	1994		2
Kahokugata (Kawakitagata) 0007	21,014	1996		

Name of site ¹	Maximum Count	Year of count	Uses/ threats ²	Ownership/ Protection Status ³
Kasumigaura	50,816	1996		1
Mouth of the Toyokawa	79,673	1994		4
Mouth of the Yahagifurukawa	25,773	1995		2
Nakaumi	76,860	1996		1
Sambanse	87,086	1996		4
Shinji Lake	20,868	1996		1
Shiokawa Tideland	170,152	1996		4
Korea				
Asan Bay	29,807	1996	AGIL	4
Chonsu Lake	171,988	1995		
Han River	23,559	1995	GI	1
Han River Estuary	26,838	1996		1
Kum River	74,720	1995	6F	4
Nakdong Estuary	32,547	1995		1
Nonsan Reservoir	21,388	1996		
Sannam, Ch'unсан, Tongp'an, Junam Reservoir	22,685	1995		4
Sapkyo Lake	27,535	1994	L	4
Taeho	24,509	1996		
Myanmar				
Mong Pai	29,313	1995	6K	1
Nepal				
*Koshi (Kosi) R. Barrage	23,709	1994		
Pakistan				
Akara Dam	23,909	1995	F	4
*Chashma Barrage Reservoir	103,751	1994	8FH	1
Gwadar Beach	24,761	1996	FH	4
Sri Lanka				
Anaiwilundawa Tanks	124,576	1995		
Thailand				
Beung Boraphet	20,060	1994		
Bung Cha-Vak	38,651	1994	2358H	1

Notes: * Indicates that the site is on the Ramsar list.

¹ Australia is not included in the list as totals were received for shorebirds only; not all waterbirds.

² Uses/threats (as recorded on count forms): Blanks indicate no data; 0-Unknown; 1-None; 2-Sedimentation; 3-Excessive overgrowth of vegetation; 4-Cutting/clearance of vegetation; 5-Eutrophication; 6-Agriculture along dry margins; 7-Excessive cattle grazing; Pollution by, 8-Domestic sewage; 9-Solid waste, A-Industrial waste; B-oil; C-pesticides; D-fertilizers; E-mining; F-Hunting/trapping/poaching of birds; G-Little fishing; H-Large-scale fishing; I-Partial reclamation; J-Complete reclamation; K-Dam/barrage construction; L-Tourism/recreation.

³ Ownership/Protection status: 0-Unknown; 1-By Government; 2-By Tradition; 3-Private; 4-Unprotected

⁴ No information on uses, threats and protection status has been included from sites in Japan as the AWC count forms used there do not request this information.

Land ownership/Protection status of sites

Information on the status of land ownership of wetlands was reported for about 80% of sites covered. Of these, about 44% are owned by government, but this proportion increases to about 80% for the sites holding over 20,000 birds (Figure 1).

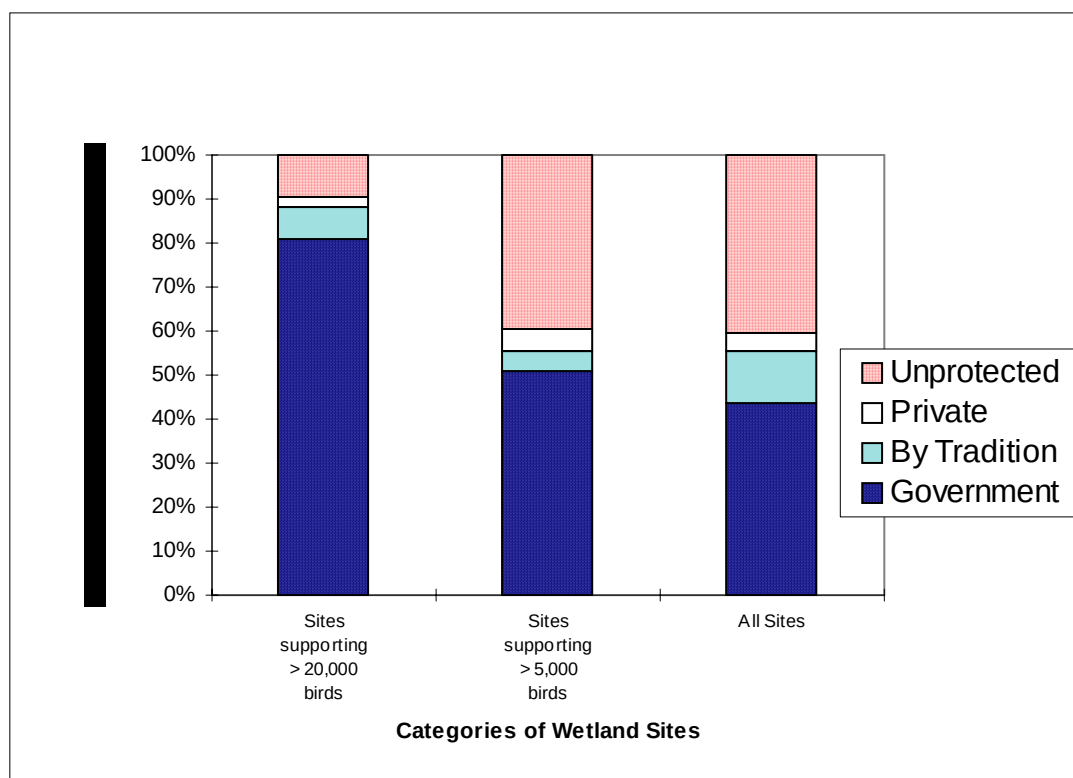


Figure 1: Ownership/protection status of wetland sites covered by the Asian Waterfowl Census 1994-96

- Notes:** ¹ The figure gives information for 1,353 of a total of 1,994 sites covered between 1994-96 for which data were provided.
² For sites covered in more than one year, the most recent information has been used.
³ Values above each bar represent the number of sites reported for the respective categories.

Ownership/protection of sites by government does not appear to guarantee their conservation, as is evident from the information reported on uses and threats to these sites (see Table 2). Threats are also reported at Ramsar sites.

Uses of and threats to wetlands

In an attempt to widen the scope of the census beyond waterbirds observed at the wetlands, preliminary information was collected during the census on wetland uses and threats. However, insufficient information was received to make it possible to provide a general overview across the region. For selected territories (Bangladesh, India, Pakistan, Indonesia and Taiwan), this information is portrayed graphically, and it is hoped that its inclusion in the report will reinforce the need for

participants to look closely at the wetlands and identify threats in order to take measures to conserve these important sites.

As the information on uses and threats reflects observations made on a single day of the year, it is at best indicative of the situation prevailing at the time and can serve as an early warning system for threats that may otherwise not be reported. It is recommended that appropriate follow-up actions be initiated at sites where serious threats are recorded.

In some cases, it is difficult to differentiate between a use and a threat. For example, fishing can be recorded as a use of a wetland, whereas heavy or overfishing can be categorized as a threat to the site and to other forms of wildlife including birds that may be disturbed by the fishing activities. From observations made on one day only, it is not possible to draw a conclusion of this sort, and it is recommended that this be followed up at other seasons to obtain a detailed understanding of the uses and threats to wetlands.

Threatened species

The results of the census provide a snapshot of the regional distribution of some threatened species occurring in Asia (categories follow Collar *et al.* 1994). A total of 31 species categorised as threatened were encountered during the census (Table 3). Significant records are discussed briefly in the relevant country reports.

Table 3: Threatened species recorded during the Asian Waterfowl Census 1994-96

Species	South Asia			South East Asia			East Asia			Status ¹
	1994	1995	1996	1994	1995	1996	1994	1995	1996	
Pelicans										
Spot-billed Pelican <i>Pelecanus philippensis</i>	2,421	1,547	2,213							
Dalmatian Pelican <i>Pelecanus crispus</i>	204	351	16				18	21	23	VU
Hérons, Egrets & Bitterns										
Imperial Heron <i>Ardea imperialis</i>	5	1	1							EN
Chinese Egret <i>Egretta eulophotes</i>				330	7	4		5	2	EN
Storks										
Milky Stork <i>Mycteria cinerea</i>				227		158				VU
Storm's Stork <i>Ciconia stormi</i>				1		8				EN
Oriental Stork <i>Ciconia boyciana</i>							151	378	248	EN
Greater Adjutant <i>Leptoptilos dubius</i>	33	14	30							EN
Lesser Adjutant <i>Leptoptilos javanicus</i>	441	229	331	113	36	8				VU
Ibises & Spoonbills										
Black-faced Spoonbill <i>Platalea minor</i>							254	338	329	CR
Swans, Geese & Ducks										
Swan Goose <i>Anser cygnoides</i>							1,840	1,247	8,047	VU
Lesser White-fronted Goose <i>Anser erythropus</i>							180	1	1,806	VU
White-winged Duck <i>Cairina scutulata</i>			23		7					EN
Baikal Teal <i>Anas formosa</i>	7	1					20,105	56,799	49,247	VU
Marbled Teal <i>Marmaronetta angustirostris</i>	4	61	93							VU
Baer's Pochard <i>Aythya baeri</i>	1,991	1,941	3,053	6	150	14	4	380	556	VU
Ferruginous Duck <i>Aythya nyroca</i>	13,710	3,841	2,663	2		10		16		VU
Scaly-sided Merganser <i>Mergus squamatus</i>									19	VU
White-headed Duck <i>Oxyura leucocephalus</i>	148	61								VU
Cranes										
Black-necked Crane <i>Grus nigricollis</i>								337		VU
Red-crowned Crane <i>Grus japonensis</i>							1,523	851	1,358	VU
White-naped Crane <i>Grus vipio</i>							2,191	2,023	2,434	VU
Siberian Crane <i>Grus leucogeranus</i>							66	1	22	EN
Rails, Gallinules & Coots										
Andaman Banded Crake <i>Rallina canningi</i>			1							VU
Masked Finfoot <i>Heliopais personata</i>				1						VU
Shorebirds										
Sociable Plover <i>Vanellus gregarius</i>	3	6	215							VU
Nordmann's Greenshank <i>Tringa guttifer</i>		1	2	10					2	EN
Wood Snipe <i>Gallinago nemoricola</i>			5							VU
Spoon-billed Sandpiper <i>Eurynorhynchus pygmaeus</i>	284	138	312					1		VU
Gulls, Terns & Skimmer										
Saunders' Gull <i>Larus saundersi</i>							1,170	1,129	2,106	EN
Black-bellied Tern <i>Sterna acuticauda</i>	278	837	237							VU
Indian Skimmer <i>Rynchops albicollis</i>	866	263	974		6					VU

¹Status of species follow Collar *et al.* (1994): CR - Critically endangered, EN - Endangered, VU - Vulnerable.

INTRODUCTION

Background to the Asian Waterfowl Census

The Asian Waterfowl Census (AWC) is a coordinated international scheme for the collection and dissemination of information on waterbirds and wetlands. The scheme has been in operation since 1987 under the coordination of Wetlands International (formerly the Asian Wetland Bureau and the International Waterfowl and Wetlands Research Bureau).

The major objectives of the Asian Waterfowl Census are:

- to obtain information on an annual basis of waterbird populations at wetlands in the region during the non-breeding period of most species (January), as a basis for evaluation of sites and monitoring of populations;
- to monitor on an annual basis the status and conditions of wetlands; and
- to encourage a greater popular interest in waterbirds and wetlands, and thereby promote their conservation.

The AWC is conducted during the 2nd or 3rd week of January across the region and undertaken by volunteer participants. Where the number of participants is limited and/or where coverage is poor, counts from December and February are included.

At a national level, the census is coordinated by one or more coordinators, with up to nine coordinators in India. The coordinators organise a network of volunteer participants from all walks of life with varying levels of skills in identification and counting of birds. In countries where the coverage is poor (e.g. Vietnam and Cambodia) and there is no coordinator, information is sent directly to Wetlands International - Asia Pacific by the counters.

All waterbird species encountered in the region are covered by the census. In addition to

waterbird species as recognised by the Ramsar Convention, counts of species of birds of prey (raptors) that are regularly encountered at wetlands have been included, as several of these species are largely dependent on the food resources of these habitats.

Information collected by the census from 1987 through to 1993 has been published in a series of annual reports (van der Van 1987, 1988; Scott and Rose 1989; Perennou *et al.* 1990; Perennou and Mundkur 1991, 1992; Mundkur and Taylor 1993). In order to provide a more complete picture of the distribution of waterbird populations in the region, counts of shorebirds from Australia and New Zealand from existing national shorebird monitoring schemes have been included. These were received in 1992 and 1993 from New Zealand and from 1992 onwards from Australia (with the exception of 1993).

In addition to these annual reports, results from the years 1987 to 1991 have been analysed to identify species distribution and identify important wetlands in a comprehensive report by Perennou *et al.* (1994). From 1994 to 1996 no annual reports were produced, primarily due to funding constraints. This report brings together the information collected during these three years.

Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000

The identification of regional priorities and actions for migratory waterbird and wetland conservation in the Asia Pacific region has been the focus of debate and discussions held over the last few years at several international workshops and conferences involving governments, international and national NGOs and technical experts. The outcome of these efforts was the production of a *Strategy* document in March 1996. The process was coordinated by Wetlands International - Asia

Pacific with financial support from the governments of Australia and Japan and many others.

The *Strategy* covers seven broad, overlapping themes: Conservation of Species; Conservation of Habitats; Research and Monitoring; Education, Information and Awareness; Training; and Policy and Legislation. These themes translate into several action points, notably the development and implementation of action plans and networks of sites of importance for three species groups (shorebirds, Anatidae and cranes), reviews of legislation and policy, training and public information, and awareness plans, as an attempt to enhance the conservation of migratory waterbirds and their habitats in the Asia-Pacific region until the end of the millennium.

The *Strategy* identifies the Asian Waterfowl Census as an important mechanism for undertaking several of these priority actions. The network of coordinators and participants involved in the census should be able to play a key role in developing and participating in a variety of associated activities. These could include extending the monitoring programme to other times of the year by focussing on wetlands of national and international importance, organizing and participating in training courses and workshops to improve census techniques, the preparation and dissemination of information on wetlands and waterbirds to increase public awareness, and strengthening of media involvement in all these conservation promotion activities.

Information collected during the AWC and associated programmes has been valuable in developing plans for the networks of sites of importance for species (shorebirds, cranes and Anatidae) and in identifying important sites and priority actions. Two of these networks have already been launched, as outlined below. Network sites will encourage a range of activities including public awareness and promotional activities, promotion of sustainable wetland management, research, monitoring and training. The AWC network would be able to

make a useful contribution to these activities and is encouraged to participate.

East Asian Australasian Shorebird Reserve Network

The first species-oriented conservation network to be developed under the *Strategy* was launched at the 6th Meeting of the Conference of Contracting Parties of the Ramsar Convention in Brisbane, Australia, on 26 March 1996. Ten countries across the flyway from Russia to New Zealand have nominated 24 sites to the network, including Ramsar sites, to promote the cause of shorebird and habitat conservation.

The 1996 Ramsar Meeting of the Conference of Parties, in recognising the value of the *Strategy* and the Shorebird Network and the role that they can play in promotion of wetland conservation and public awareness, adopted a recommendation called the *Brisbane Initiative*. The Initiative calls on countries and territories in the region to participate and support its implementation.

North East Asian Crane Site Network

The second network was launched on 7 March 1997 at the International Workshop on Wetland and Waterbird Conservation in North East Asia in Beidaihe, People's Republic of China. Sixteen sites, including several Ramsar sites and two transboundary reserves, were nominated and these provide a link between important breeding, staging and non-breeding areas for cranes in the region

Significantly, some of these sites support more than half the global population of some crane species. For example, during the non-breeding period, 95% of Siberian Cranes depend on Poyang Lake in China, more than 60% of Red-crowned Cranes on Yancheng Biosphere Reserve in China and more than 60% of White-naped Cranes on Arasaki in Japan.

METHODS

Geographic coverage

For the purposes of the report, countries and territories providing information are divided into three main regions: South Asia (Bangladesh, India, Nepal, Pakistan and Sri Lanka), Southeast Asia (Brunei Darussalam, Indonesia, Lao P.D.R., Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand and Vietnam) and East Asia (China, Hong Kong, Japan, Republic of Korea and Taiwan). Information on shorebirds is included from Australia.

Southwest Asia, covering the Arabian Peninsula, Central Asian Republics and Iran, lies on the crossroads of two flyways: the East African-Eurasian Flyway and the Central Asian- Indian Flyway. Information from these countries was included in the annual reports of the Asian Waterfowl Census up to 1993. This region is now covered under the African-Eurasian Waterbird Agreement (AEWA). Since 1994, these countries have been included in the annual reports of the Western Palearctic and South-West Asia Waterfowl Census (Rose 1994, 1995).

Data collection and handling

The annual waterbird count data and site information are recorded on standardized census forms by a network of participants. Single counts are made at each site. The information is sent to the coordinators and, after checking, collation and preparation of an annual country report, is forwarded to Wetlands International.

This information is entered into standard databases using customized dBASE IV programmes at the Wetlands International - Asia Pacific office in Malaysia. Processing of the data is in dBASE IV™ and Microsoft Access™ and Excel™. In 1993-94, the database and programmes were provided on a trial basis to national coordinators to enter the

data themselves. As a result, over the last three years, some coordinators have started to provide count and site information using these databases. However, some coordinators have also provided information in other formats without including all the necessary data and by using different software packages. To incorporate these data, it has been necessary to convert them to the standard formats, a task that has been quite difficult, resulting in the loss of some counts as the count and site forms were not provided.

Participants and coordinators

The census continues to draw on participants from a range of backgrounds, all with a common interest in contributing their time and energies to the counting of waterbirds.

Coordination of the census is undertaken largely on a voluntary basis, and there have been some changes in responsibilities. The following changes in national and regional coordinators occurred during the last three years: in Brunei Darussalam, Victor Stanger took over from Mary Seal Coon; Prof Lu Jianjian passed on the torch to the Environmental and Wildlife Monitoring Centre of the Ministry of Forestry in China; Siraj Taher was the successor of Aasheesh Pittie as regional coordinator for Andhra Pradesh; M. Raghuraman took over from the late V.J. Rajan in Tamil Nadu, India; Prof. Akira Uritani succeeded Y. Natori in Japan; and Phil Round coordinated the census along with Bubphar Amget in Thailand. The major change from 1997 onwards is the nomination of the Bombay Natural History Society as the national coordinator for the census in India.

A list of participants and coordinators is provided in Appendices 1 and II respectively.

Support for census activities

In some countries (e.g. India and Bangladesh), bird watching clubs, nature groups and individual participants have been able to collaborate successfully with one or more state/provincial forestry, environment and other government departments and obtain logistical support (vehicles, boats and accommodation in the field) to undertake counts of large/inaccessible wetlands.

A few coordinators (in Bangladesh and Sri Lanka) have reported successful attempts to raise funds from a variety of sources including the corporate sector and international aid agencies. These funds have helped to sustain and boost the census, associated training and public awareness activities in these countries.

The cooperation and fund raising efforts mentioned above not only provide the basis to undertake counts but also serve to promote wetland and waterbird conservation to these agencies. It is recommended that other coordinators and participants also develop such links to promote the census in their countries.

Data checking and quality of information

The census depends on accurate reporting of species and numbers by the participants. As the information is being collected by a variety of volunteers with different levels of skills in identifying species and making counts, it is likely that there are some errors in the data supplied. As the coordinators are aware of local conditions, they need to check and to request additional verification where counts of birds appear unusually large, threatened species are reported in greater numbers than published information indicates are likely, or species are reported outside their normal range.

In the collation of the report, the authors have attempted to verify the data received from coordinators and participants and referred back to coordinators on the validity of some information. In some cases, where unusual records have been received (threatened species, vagrants or large numbers) and where no supporting information was forthcoming from coordinators or participants, the authors have made a judgement on whether the record could

be attributed to be a transcribing error on the form or other reasons and these records are either included in the unidentified waterbird category or deleted.

The inclusion of records of species in the report, however, does not attest their authentication by Wetlands International. It is urged that all new or unusual observations made during the census be authenticated by relevant national organizations and be published in appropriate national and/or regional journals.

The total number of sites included in the report is fewer than the overall number of sites from which information was received from coordinators and participants because:

- Where large sites are divided into more than one count unit, separate count forms are submitted, for e.g. Inner Deep Bay in Hong Kong and Chilika Lake in India. For these sites, all the count unit forms are combined into a single count for the purpose of reporting.
- A few count forms were received without any site names or other essential details or with no indication of numbers of birds, and these cannot be used.

Maps of sites and species

Site and species maps have been generated using Maptitude™, a simple mapping programme. Information on the precise location of sites has been taken from the site forms submitted by participants. As it has not been feasible to countercheck the accuracy of all information, an attempt has been made to check locations at least of sites known to be important. By running checks, it was possible to correct locations of some sites that had been plotted outside the boundaries of a country.

A limitation of the mapping software, base maps and the scale of presentation of the maps has resulted in count sites on small islands or on some coasts not being precisely located on the maps.

Sites located on the maps account for only about 60% of the 1,994 sites covered during the 1994-96 census. For the remainder of the sites,

no locational information has been provided. There was a considerable difference in the provision of this information from different countries; locations of all sites in Brunei Darussalam and Nepal were provided, whereas the reporting rate was much lower for sites in Bangladesh (39%), Indonesia (51%) and India (70%).

However, irrespective of whether information on site location has been provided, count and species information on all sites is included in the text, tables and appendices.

Information on uses and threats

From 1993 onwards, count forms provided for the census have requested information, in a simple format, on the uses and threats observed at the wetland. A complete list of these has been provided in Table 2 and Appendix III. Analysis of responses to this information has varied between countries and years. For countries where information has been provided for a sufficient number of sites to permit discussion, figures depicting proportions of sites reporting uses and threats are provided in the national sections.

REGIONAL SECTIONS

South Asia

OVERVIEW

Initiated in 1987, the AWC has been active for 10 years in the South Asia region. The Maldives, at the terminus of the flyway for several species of waterbirds, is the only country that has not participated in the census.

Figures 2 and 3 provide an overview of the numbers of birds and species respectively

counted at sites in the region (note: only sites for which locations were provided are depicted). During the 1994-96 period, India continued to be the main contributor to the census (with over 70% of sites counted). Although the total number of sites covered declined, coverage generally increased and the first ever counts were received from the Andaman Islands. Declines were also observed in other countries, most notably in Pakistan.

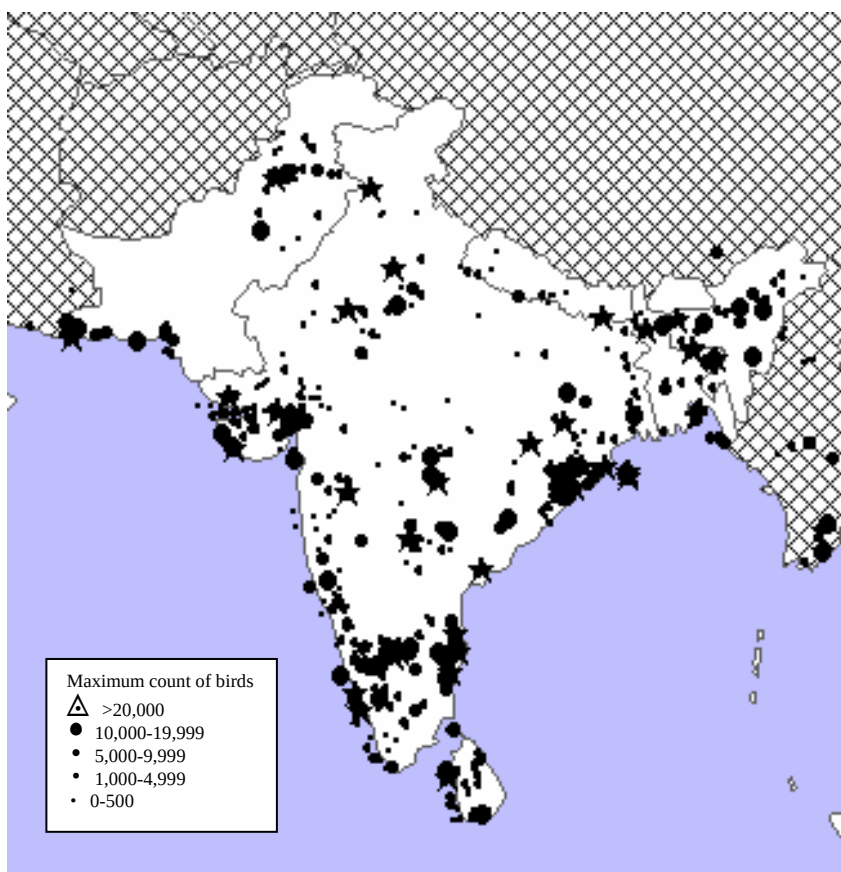


Figure 2: Total number of waterbirds counted at sites in South Asia covered during the Asian Waterfowl Census 1994-96

A total of 164 of the 1,641 sites in South Asia covered in the census during 1994-96 recorded over 5,000 waterbirds. Of these, 45 each held at least 20,000 birds (Table 2) and fulfilled the Ramsar criteria. The Ramsar sites of Chilika Lake in India, Kosi Barrage in Nepal and Chashma Barrage in Pakistan reported the maximum numbers of birds from these countries in one or more years.

As there has been a considerable difference in the coverage of the census each year, it is difficult to draw conclusions on changes in populations of any species. The most abundant species recorded in the region during this period remain Common Coot, Northern Pintail and Lesser Whistling Duck (Appendix IV), in keeping with general trends of previous years.

There has been a decline in the number of White-headed Duck reported over the last three years, although this is linked to the lack of counts at the appropriate sites, whereas increasing numbers of Marbled Teal were recorded each year. Numbers of Indian Skimmer recorded during these three years was lower than in the 1993 AWC (Mundkur & Taylor 1993).

Sightings of unusual species made during the census include Goliath and Imperial Herons in India and Goliath Heron in Bangladesh, and Baikal Teal in India and Bangladesh (Appendix IV).

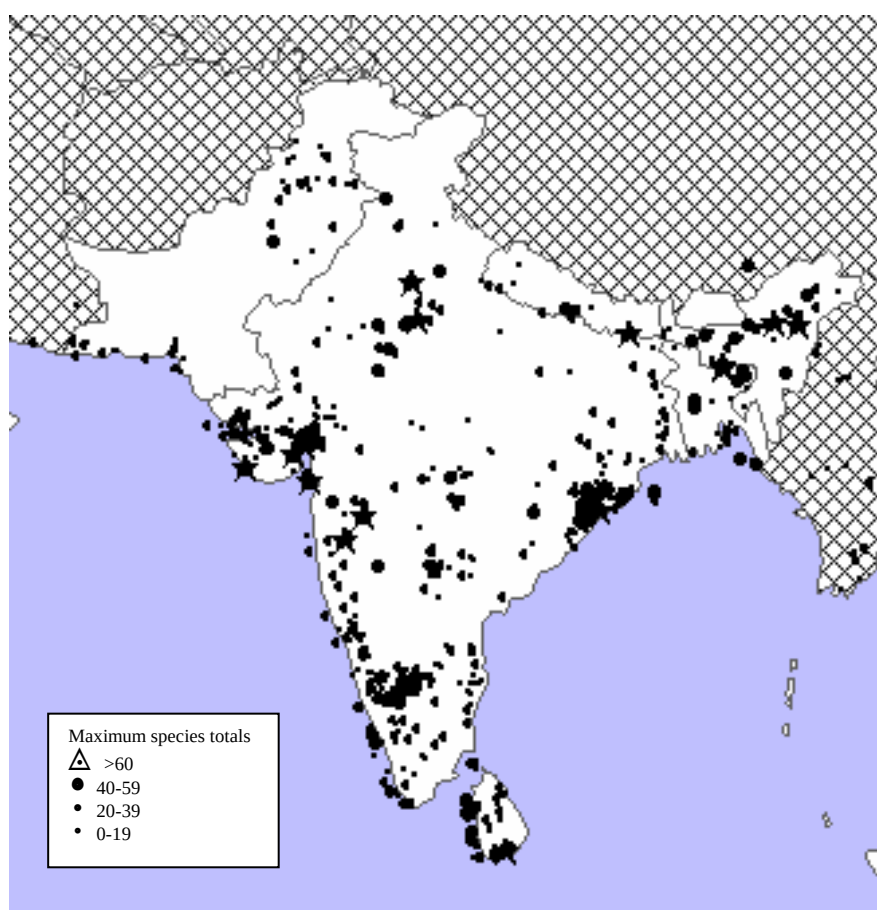


Figure 3: Total number of species counted at sites in South Asia covered during the Asian Waterfowl Census 1994-96

BANGLADESH

The 1996 census marked a decade since the initiation of the AWC in Bangladesh. From 1994 to 1996, coverage varied: 42 sites in 1994, 34 sites in 1995 and a high of 47 sites in 1996. A total of 11 sites were covered in all three years. To encourage participation and improve skills of participants, a pre-census training workshop for government and NGO volunteers was organized in 1994 and 1996.

In the 1994-1996 period, the maximum number of birds was recorded in 1994 (350,390 birds) with 169,973 and 348,932 birds being counted in 1995 and 1996 respectively (Appendix Va). The maximum number (103) of species of waterbirds was recorded in 1996.

Twenty sites recorded over 5,000 birds, with wetlands of the Haor Basin in the north east, Hakaluki Haor, Pashua Haor, Sanir Haor and Tangua Haor, holding more than 20,000 birds each (Table 2). A complete coverage of Pasua Haor in 1994 revealed the importance of the site, with a total of 172,093 birds of 53 species counted.

The most abundant species counted were Northern Pintail, Lesser Whistling Duck, Fulvous Whistling Duck and Gadwall. The numbers of Great Crested Grebe recorded

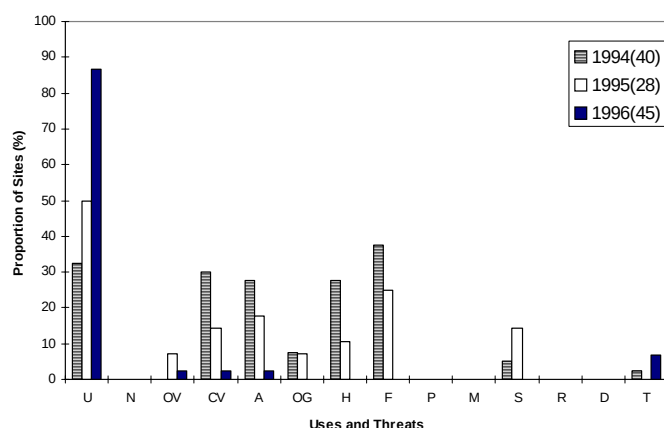
exhibited a steady increase from 233 in 1994, 855 in 1995 to 2,240 in 1996 (from only three in 1990: Perennou *et al.*, 1990).

Of the threatened species, Spoon-billed Sandpiper recorded a total of 130 in 1996 compared to four in 1994 and five in 1995. This species was recorded in all three years at Char Bahauddin with the highest count of 120 in 1996. Nordmann's Greenshank was recorded both in 1995 (1 bird at Char Bahauddin) and 1996 (2 birds at Nijhum Dweep-Char Osman). Goliath Heron was recorded twice; two at Char Jamir in 1996 and a single bird at Char Bahauddin in 1995.

Unusual records include the sighting of a single Great White Pelican at Pasua Haor in 1994 and a single Smew and single Greater Scaup in Halir Haor in 1995.

In 1994, the main uses and threats reported at wetlands were cutting/clearance of vegetation, agriculture along dry margins, hunting of birds, and fishing (Figure 4). Due to a poor reporting of threats and uses in 1995 and 1996, few conclusions could be drawn as to the main threats and uses at the sites.

Based on reports by: Anisuzzaman Khan (National Coordinator), Department of Forests and Dhaka Zoo Authority.



Key to uses and threats:

U-unknown; N-None; OV-Overgrowth of vegetation; CV-Cutting and clearance of vegetation; A-Agriculture along dry margins; OG-Overgrazing; H-Hunting/ poaching of birds; F-Fishing; P-Pollution; M-Mining; S-Sedimentation; R-Reclamation; D-Dam/Barrage construction; T-Tourism.

Note: Numbers in brackets refer to number of sites reporting threats in the respective years.

Figure 4: Bangladesh - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96

INDIA

Of the total of 1,994 sites covered for the AWC between 1994-96, more than 70% are in India.

However, there was notable decline in the number of sites covered (Table 4): from 986 in 1994 to 573 in 1996. A total of 237 sites were covered in all three years. In 1996, the total of 2,830,754 birds counted was the maximum number for the

three years. In Orissa and West Bengal, there was a significant increase in number of sites covered from 1994-96. Karnataka remained the top contributor to the number of sites surveyed, with a maximum of 436 sites in 1994, followed by Gujarat and Orissa. The first counts from the Andaman Islands were conducted in 1996. The numbers of birds and species recorded from different parts of the country was dependent on the number of sites counted in the state; a breakdown of this information is provided in Appendix VI.

Of the 1,421 sites counted in India, 34 sites

covered during the AWC 94-96 (Table 2) qualify as sites of international importance on application of the Ramsar criteria (for more details see Appendix IX). These sites are in the states of Andhra Pradesh (3), Assam (1), Delhi (1), Gujarat (8), Himachal Pradesh (1), Karnataka (3), Kerala (3), Maharashtra (2), Orissa (6), Pondicherry (1), Rajasthan (1), Tamil Nadu (1) and West Bengal (2). Of these sites, only 17 have been reported to be under legal protection. Chhari-Dhandh, a seasonally inundated wetland in Gujarat that was reported to support 50,900 waterbirds in 1995, is among the wetlands that is still not afforded any legal protection.

Chilika Lake, the largest brackishwater body in India, reported a total of 1,484,186 waterbirds of 85 species in 1996, and topped the national list. Although this enormous waterbody has been declared a sanctuary and a Ramsar site, it is being threatened by aquaculture and other land-use changes, while waterbirds are reportedly being poached in large numbers.

Table 4: Summary of coverage of the Asian Waterfowl Census 1994-96 in India

Region	Number of sites covered		
	1994	1995	1996
Andaman Islands			8
Andhra Pradesh	41	48	37
Arunachal Pradesh	2		
Assam	30	6	35
Bihar	4		9
Delhi	1	1	
Goa	1		
Gujarat	163	113	86
Haryana		1	
Himachal Pradesh	1	1	
Karnataka	436	178	167
Kerala	23	21	14
Madhya Pradesh	12		
Maharashtra	97		
Manipur	1		
Orissa	107	120	162
Pondicherry	3	3	3
Punjab	2		
Rajasthan	28	18	10
Tamil Nadu	5	41	12
Tripura	3		1
Uttar Pradesh	7	5	
West Bengal	19	20	29
Total Sites Counted	986	577	573

As in previous years, Northern Pintail and Common Coot remained the most abundant species recorded in all three years. Among the shorebirds, Black-tailed Godwit (73,491 in 1996) was the most abundant species reported.

A small number of Goliath Heron were reported each year from Orissa and Gujarat (Appendix V). As the status of this mainly African species is little known in India, further confirmation of these records is urgently needed, especially as the species has previously been misidentified as the smaller Purple Heron.

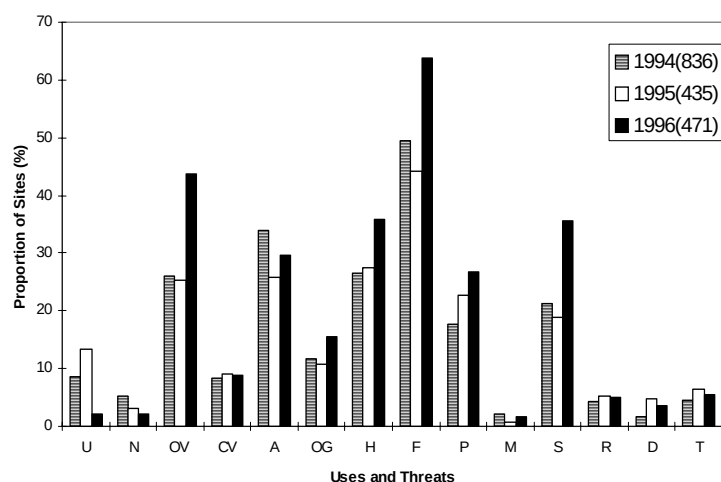
The little known and endangered Imperial Heron was first reported in the 1993 AWC from Assam (3 birds) and Arunachal Pradesh (1), see Mundkur & Taylor (1993). In 1994 five birds were reported in Assam: from Koabari Doloni Abhayaranya (2), Kaziranga National Park (2) and Sareswar Beel (1). However, although these sites were covered in the two following years, there were no sightings of the species.

After an absence of two years, the endangered Siberian Crane (4 individuals) was reported in February 1996 from its traditional site at Keoladeo National Park (a Ramsar site) near Bharatpur, Rajasthan (Meine and Archibald

1996). The Park was not covered by the census in 1995 and 1996. With no records in 1994, a total of 23 White-winged Duck were recorded at Nameri Wildlife Sanctuary in 1996, a site not covered in 1995. Seven Baikal Teal were recorded in 1994 at the Patratur Thermal Water Reservoir in Bihar. This species is rare in India and this is the first record during the AWC.

Numbers of stork species recorded have fluctuated, with an overall decline in records of White, Black-necked, Woolly-necked Storks and Greater and Lesser Adjutant, while records of Painted and Black Storks have increased.

Australian (White-headed) Stilt from Orissa was reported in all three years, with photographic evidence provided for one bird in the first year. Sonobe & Usui (1993) and Perennou *et al.* (1994) distinguished Australian (White-headed) Stilt *Himantopus leucocephalus* from Black-winged Stilt *Himantopus himantopus*, although most other authors, e.g. Marchant & Higgins (1993), treat *leucocephalus* as a sub-species of *Himantopus himantopus*. More information of the distribution of this sub-species (or species) is required before any firm conclusions can be made regarding its range.



Key to uses and threats:

U-unknown; N-None; OV-Overgrowth of vegetation; CV-Cutting and clearance of vegetation; A-Agriculture along dry margins; OG-Overgrazing; H-Hunting/ poaching of birds; F-Fishing; P-Pollution; M-Mining; S-Sedimentation; R-Reclamation; D-Dam/Barrage construction; T-Tourism.

Note: Numbers in brackets refer to number of sites reporting threats in the respective years.

Figure 5: India - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96

Differing numbers of Asian Dowitcher and Spoonbilled Sandpiper were recorded from various sites in Orissa each year. Additional information is needed for the verification of the status of these species in the state.

Many important wetlands in India continue to be subject to various uses and threats (Table 2). As a result of fairly comprehensive coverage of wetlands in India, it has become possible to describe the main uses and threats to Indian wetlands (Figure 5). Fishing and agriculture were reported to be two of the main activities at the water bodies surveyed. Hunting of waterbirds, pollution and excessive growth of vegetation are among the main threats reported at these wetlands.

Based on regional coordinator reports by P.O. Nameer, U.N. Dev, Rishad Pravez, Aasheesh Pittie (1994, 1995), Siraj Taher (1996).

NEPAL

Although Nepal participated in the census each year, coverage fluctuated from seven sites in 1994, 12 in 1995 to four sites in 1996. Overall 14 sites were counted at least once in the three years (Appendix III) with three sites being covered in all three years. The maximum count (34,568) was recorded in 1996. Almost 70% of this total was recorded at Koshi Barrage (Nepal's only Ramsar site). In all three years, total counts at Koshi Barrage were quite consistent, with over 20,000 birds being recorded and a maximum number of species (80) in 1995.

Northern Pintail, Gadwall and Lesser Whistling Duck were the most abundant species (Appendix Va).

Among the threatened species, Baer's Pochard (3) was recorded in 1994 only, at Koshi Barrage. Maximum counts of other threatened species counted during the 3-year period include Lesser Adjutant (24), Ferruginous Duck (458), and Black-bellied Tern (68).

Reports received indicate that wetlands, mainly around the area of Koshi Barrage, are being reclaimed for cultivation, cattle grazing and

commercial harvesting of reeds.

Based on a report by Rabindra Manandhar (National Coordinator)

PAKISTAN

The last three years (1994-96) witnessed a steep decline in the number of wetlands covered in comparison to 1993 when information was received from 269 sites, primarily due to the efforts of the Sindh Wildlife Management Board. Only 31 sites were covered in 1994, 32 in 1995 and 15 in 1996 with 10 sites covered in all three years. In the period of the census, a maximum of 181,032 waterbirds were recorded (1994) and a maximum of 101 species (1995).

A total of three sites supported more than 20,000 birds (Table 2). In Punjab, the Chasma Barrage Reservoir (a Ramsar site) recorded a total 103,751 birds of 25 species, the highest count in the country in 1994. This remarkable increase in numbers in contrast to previous years (9,774 in 1992 & 29,005 in 1993) highlights its importance for waterbirds, approximately 60,000 Common Coot and 30,000 unidentified ducks contributing to this count. With only partial coverage the following year, a much lower count of 13,717 birds was recorded. The apparent intermittent usage of this site by waterbirds may be due to the occurrence of other activities including poaching of birds and large-scale fishing (Table 2). The site was, however, not covered in 1996.

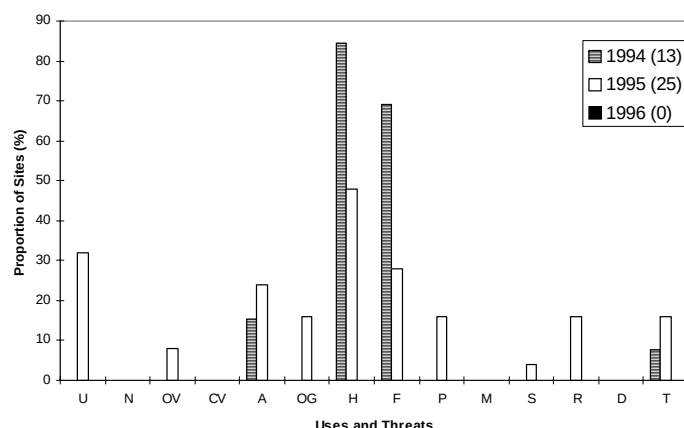
Common Coot was the most numerous species counted in 1994 and 1995, with Lesser Black-backed Gull topping the list in 1996 (Appendix 4). Maximum counts of all species including those on the threatened list were generally much lower than in previous years due to poor coverage. Only seven records (in 1995) of Dalmatian Pelican were received (against 3,654 in 1993), 61 Marbled Teal, 148 White-headed Duck and 10 Black-bellied Tern. However, the number of Ferruginous Duck (440 in 1995) was much higher than in previous years.

Clifton Beach and the Karachi coast continue to be destroyed due to recreation and construction activities. Other reported wetland uses and

threats for these important sites include hunting and fishing and agriculture along dry margins. There is a need to ensure continuous proper management of these wetlands to prevent socio-economic uses from evolving into threats to waterbirds and other wetland flora and fauna.

Figure 6 provides a summary of the main uses and threats reported from wetlands in Pakistan.

Based on reports by Syed Ali Ghalib & Syed Ali Hasnain of the Zoological Survey Department.



Key to uses and threats:

U-unknown; N-None; OV-Overgrowth of vegetation; CV-Cutting and clearance of vegetation; A-Agriculture along dry margins; OG-Overgrazing; H-Hunting/poaching of birds; F-Fishing; P-Pollution; M-Mining; S-Sedimentation; R-Reclamation; D-Dam/Barrage construction; T-Tourism.

Note: Numbers in brackets refer to number of sites reporting threats in the respective years.

Figure 6: Pakistan - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96

SRI LANKA

There was a gradual decline in coverage in Sri Lanka from a total of 58 sites counted in 1994 to 42 sites in 1996 (Appendix III). The drop in coverage was reported to be due mainly to lack of volunteers and various security restrictions that hampered counting. However, a reasonable number of 26 sites were covered in all three years. The total number of waterbirds counted (234,883) was at its highest in 1995.

The Anaiwilundawa cluster of tanks topped the list with a remarkable total of almost 125,000 waterbirds of 36 species recorded in 1995 (2,577 in 1994 and 2,712 in 1996). Over 90% of these birds were ducks: Lesser Whistling Duck, Garganey and Northern Shoveler. Recognising its importance for waterbirds, the Ceylon Bird Club has urged the authorities to declare this invaluable wetland area as a Sanctuary under the Fauna & Flora Protection Ordinance.

Bundala, the country's only Ramsar site, was covered in all three years, with a maximum count of 12,086 birds of 62 species recorded in 1995.

Uncontrolled aquaculture projects (i.e. hundreds of prawn farms in all available wetlands from Chilaw northward) pose a severe threat to the

northwestern coastal wetlands. Puttalam Lagoon, a large brackish to saline lagoon (10,112 waterbirds in 1995) has been subject to these activities and a low count (2,050 waterbirds) in 1996 may be indicative of the problems. Immediate conservation measures/ enforcement are vital in order to avoid further degradation of these important coastal wetlands. With the widespread destruction of waterbird habitats along the northwestern coast, it is perhaps not surprising that the January 1996 count produced the lowest total number of waterbirds in the 13 year history of the census in Sri Lanka, about 67,000 birds.

Among the threatened species reported were Spot-billed Pelican (751 in 1994), Lesser Adjutant (up to 15 in 1994) and 456 Black-necked Stork (1 each year); further details in Appendix Va.

Based on reports by Thilo Hoffmann, National Coordinator.

Southeast Asia

OVERVIEW

During the 1994-96 census, counts were received from Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. Counts were received from Laos (one site), Papua New Guinea and the Philippines in 1994 only. No counts were received from Cambodia.

Annual coverage in Brunei Darussalam, Indonesia and Singapore was consistent with previous years, while coverage in Myanmar, Malaysia and Thailand declined.

Figures 7 and 8 provide an overview of the numbers of birds and species respectively counted at sites in the region (note: only sites for which locations were provided are

depicted). During the 1994-96 period, Indonesia was the main contributor to the census, followed closely by Singapore.

Of a total of 195 sites covered in the census in Southeast Asia during 1994-96, 18 recorded over 5,000 waterbirds. Of these, Banyuasin Delta in Indonesia, Mong Pai in Myanmar and Beung Boraphet and Bung Cha-Vak in Thailand held at least 20,000 birds (Table 2) and fulfilled the Ramsar criteria. The Banyuasin Delta in southeast Sumatra, with an estimated 76,230 birds, held the maximum count for the region, including those for two threatened species - Milky Stork (220) and Lesser Adjutant (93). As in previous years, the most abundant species recorded in the region during this period were Lesser Whistling Duck, Garganey and Common Coot (Appendix IV).

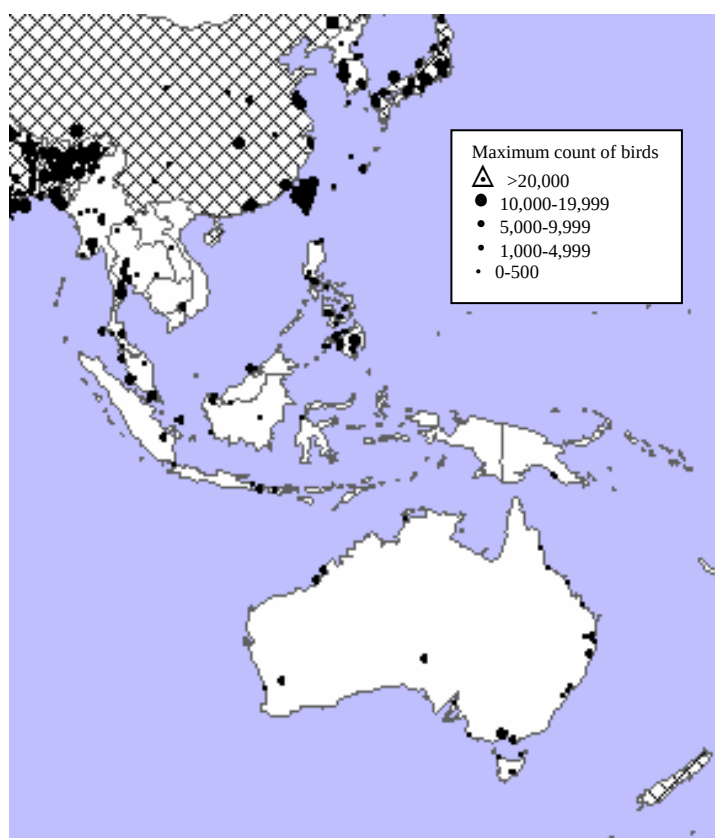


Figure 7: Total number of waterbirds counted at sites in Southeast Asia - Australia covered during the Asian Waterfowl Census 1994-96.

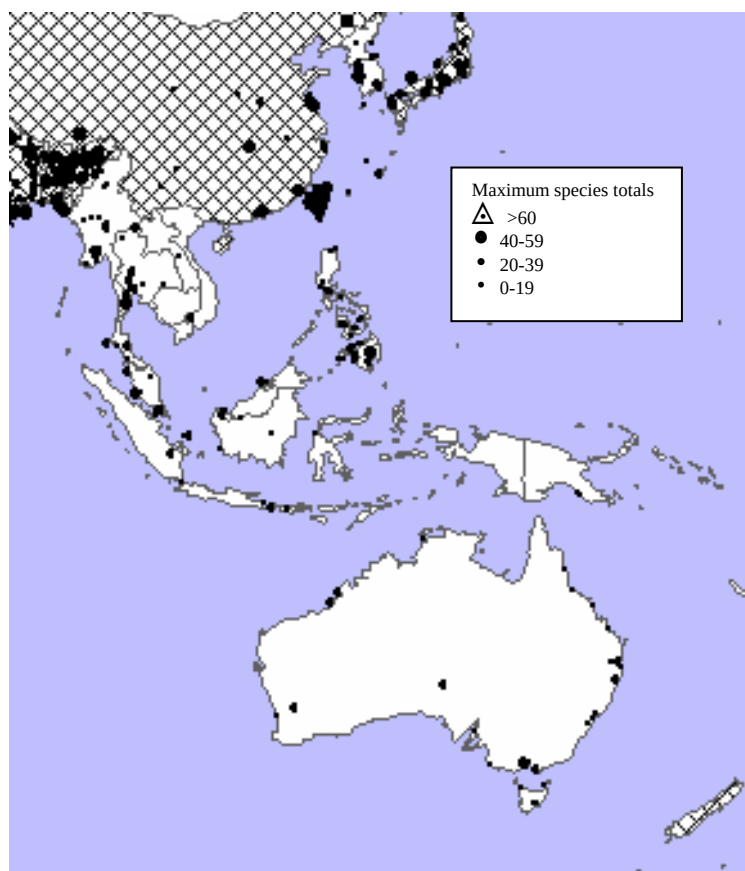


Figure 8: Total number of species counted at sites in Southeast Asia-Australia covered during the Asian Waterfowl Census 1994-96

BRUNEI DARUSSALAM

Coverage in the past three years has been quite consistent in Brunei with the same four sites being counted in all years. Total counts were 610, 448 and 710 birds respectively in 1994, 1995 and 1996, with a maximum 29 species recorded in 1996.

Of the sites counted, Wasan recorded the highest number of birds, i.e. 453 in 1994 but a decline to 241 in 1995 and 162 in 1996 (Appendix III). A factor that may contribute to this decline is the change in the habitat from actively managed to abandoned rice fields, which used to support a wide variety of waterbirds. In addition, the tall vegetation at Wasan, both in the cultivated and non-cultivated areas, restricted viewing and thus complete coverage.

Pacific Golden Plover remained the most abundant species followed by Lesser Sand Plover and Wood Sandpiper (Appendix Vb).

Pollution (3 sites), fishing (2 sites) and excessive growth of vegetation (2 sites) were listed as the main uses and threats reported at these wetlands.

Based on reports by: Mary Seal Coon (coordinator in 1994, 1995) and Victor Stanger (coordinator in 1996).

INDONESIA

A total of 43 different sites were covered in Indonesia during the AWC 1994-96; 16 counted in 1994 and 1996 and 18 in 1995. However, only three sites were covered in all three years.

The maximum number of birds was recorded in 1994 (86,261). Of these, over 88% (76,230 birds) were counted at a single site - Banyuasin Delta, a

very large delta system of the Banyuasin and Musi rivers, which has the most extensive mangrove forest in Sumatra (Scott 1989) and qualifies as a Ramsar site. Hunting of birds and cutting/clearance of vegetation continue to be reported as the principal threats to the Banyuasin Delta and it is recommended that this site be given special protection. However, the site was not covered in the following two years, leading to a drop in the numbers of birds reported in Indonesia: 16,557 in 1995 and 11,631 in 1996.

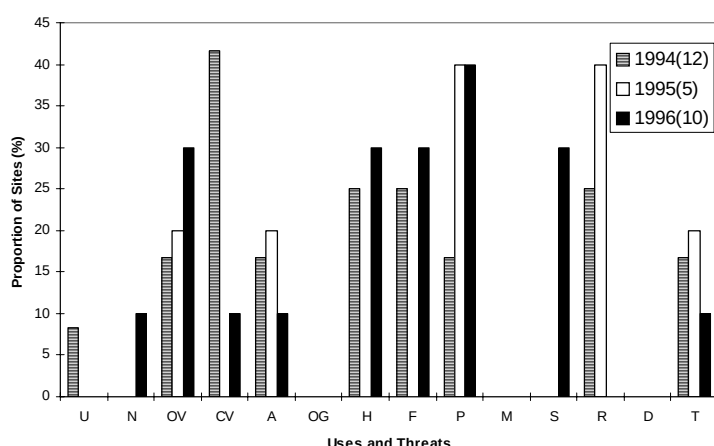
Lesser Sand Plover, Cattle Egret and Crested Tern were the most numerous species counted (Appendix Vb).

A total of eight Storm's Stork were recorded in 1996 from the Danau Sentarum Ramsar site in West Kalimantan, a habitat dominated by freshwater- and peat swamp forest. This is also the first record of this endangered species for the AWC. Of the other threatened storks, a maximum total of 106 Lesser Adjutant were recorded in 1994 while 220 Milky Stork were recorded from their stronghold in the Banyuasin Delta and three other sites in Sumatra and Java.

Pollution, cutting/clearing of vegetation, sedimentation and reclamation were reported to be the major threats (Figure 9). Fishing and hunting of birds were reported to be important activities at 30% of the wetlands.

Based on reports by Yus Rusila Noor, National Coordinator.

Figure 9: Indonesia - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96



Key to uses and threats:

U-unknown; N-None; OV-Overgrowth of vegetation; CV-Cutting and clearance of vegetation; A-Agriculture along dry margins; OG-Overgrazing; H-Hunting/poaching of birds; F-Fishing; P-Pollution; M-Mining; S-Sedimentation; R-Reclamation; D-Dam/Barrage construction; T-Tourism.

Note: Numbers in brackets refer to number of sites reporting threats in the respective years.

LAO PEOPLE'S DEMOCRATIC REPUBLIC

The Nakai Plateau was the only site in the Lao P.D.R. covered during the AWC in 1994; the count was made by T. Evans. No sites were counted in the following two years due to the absence of participants. A total of 416 waterbirds of 15 species were recorded from this freshwater habitat. Twenty Grey-headed Lapwing, a near-threatened species (Collar *et al.* 1994), were recorded at this site.

The census was coordinated by Klaus Berkemüller.

MALAYSIA

A total of 25 sites were covered at least once in Malaysia from 1994-96 (Appendix III), with seven sites being covered in at least two years. However, none of the sites was covered in all three years. The maximum number of waterbirds (30,751) was recorded in 1994. Of this total, over 95% were recorded at two sites: Pulau Tengah (15,949 birds of 27 species) and Kapar Power Station (13,384 birds of 27 species) on the west coast of Peninsular Malaysia. Counts were received for the first time from Sarawak (East Malaysia), with a total of seven sites counted in 1995 and 1996.

The ash ponds of Kapar Power Station are a privately protected area that have become an important high tide roost for waterbirds feeding at Pulau Tengah, therefore the counts from these two sites may be referring to the same group of birds. From 1996 onwards, the cessation of pumping of water into the ponds and construction works at the Station have resulted in a sharp decline in numbers of birds frequenting the site, raising the question of its viability in the future.

The most numerous species counted was Bar-tailed Godwit (4,536), see Appendix Vb. Over 90% of this number was recorded at Pulau Tengah (2,474) and Kapar Power Station (2,042).

Significant records include the sighting of Asian Dowitcher (3) at Buntal Bay and Asajaya/Pendam mudflats in Sarawak in 1995.

The census was coordinated by the Wildlife Department and Wetlands International.

MYANMAR

Coverage in Myanmar exhibited a steep decline in the three years from a total of 14 sites counted in 1994 to three in 1996, due mainly to financial constraints. The three sites covered in 1996 were also covered in 1994 and 1995.

Mong Pai, a large hydroelectric and irrigation reservoir, topped the list in numbers of waterbirds, with 29,313 birds of 30 species reported in 1995 (the only year this site was covered), see Appendix Vb. Moyingyi, a freshwater lake, which frequently supported more than 10,000 waterbirds in the past, supported 7,936 birds in 1994 and 11,466 in 1995 (with coverage of 50-75% in both years). In 1996, a count of 19,534 birds was recorded when more than 75% of the wetland was covered. These two wetlands at least qualify for nomination under the Ramsar listing if Myanmar ratifies the Convention.

Lesser Whistling Duck (17,652) was the most numerous species recorded whereas Ruddy Shelduck (12,708) topped the list in 1994.

The small population of the threatened subspecies of Eastern Sarus Crane *Grus antigone sharpii* continues to survive (nine at Inle Lake in 1994 and three at Moyingyi in 1996) in

Myanmar. Further information on its status and conservation needs is required.

Seven endangered White-winged Duck were recorded from Naung Maw Lake in 1995, the first time the species has been reported from Myanmar in several years. With an estimated global population of only 336 individuals and believed to be declining (Collar *et al.* 1994), immediate efforts are needed to assess the size and conservation measures required for this population. Numerous threats have been reported at this site, notably hunting and poaching of birds.

Among other threatened species, Baer's Pochard recorded a low 150 (all at Mong Pai) compared to over 400 birds recorded in the AWC 1992 & 1993. There were no records of this species in 1994 and 1996, as this site was not counted.

The counts were undertaken by staff of the Wildlife and Sanctuaries Division of the Forestry Department (as listed in Appendix I).

Based on reports by U Saw Han and U Thein Lwin (National Coordinators).

PAPUA NEW GUINEA

Having last participated in the census in 1992, counts were received from Papua New Guinea in 1994 only. Public security prevented field visits in 1995 and 1996.

Six sites were covered (Appendix III) and Lea Lea Salt Flats recorded 333 birds of 10 species. Tonda Wildlife Management Area, the only Ramsar site, is not easily accessible and was not covered by the census. Red-necked Stint, Cattle Egret and Purple Swamphen were the three most numerous species counted.

The census was coordinated by Will Glynn and undertaken by members of the Papua New Guinea Bird Society (Appendix I).

PHILIPPINES

The total number of sites covered in the Philippines continued to increase, with 51 counted in 1994 (44 in 1993); see Appendix III. However no data were received from the Philippines in 1995 and 1996.

A total of 59,861 waterbirds of 75 species were recorded (Appendix Vb). With less than 50% coverage, Manila Bay (Cavite Area) recorded the highest count with a total of 10,152 birds. Olango Island, the only Ramsar site, recorded an all time low of only 724 birds.

Kentish Plover and Red-necked Stint were the most abundant species recorded (Appendix Vb). Records of threatened species reported from the Philippines include six endangered Nordmann's Greenshank: five at the Carigan Bay Wetlands and one at Palau Island in Luzon. A total of 329 Chinese Egret were reported from 12 sites, with a maximum of 80 birds counted at Layasan in the Visayas.

One record worth mentioning is a low count of 54 Asian Dowitcher at Brgy, La Paz, Carmen, Davao (172 in 1993).

Of the 51 wetlands covered, data on the main uses and activities were received from eight sites only. This small sample identified two threats: hunting at more than 70% of sites followed by cutting of vegetation at 37%.

The counts were conducted primarily by staff of the Department of Environment and Natural Resources and members of the Junior Ecologist Movement - Ateneo Birders, a complete listing of whom is included in Appendix I.

Based on a report by Carlo Custodio, National Coordinator.

SINGAPORE

Coverage was quite consistent over the three years: 15 sites covered in both 1994 and 1995 and 13 in 1996. During the period of the census, a total of 20 different sites were covered, with eight sites being covered in all three years (Appendix III).

Sungei Mandai and Sungei Pansua Mudflats reported the highest count for all three years, with a maximum of 2,662 waterbirds of 20 species in 1994.

Pacific Golden Plover, Marsh Sandpiper and Redshank were the most abundant species recorded in the census (Appendix Vb).

Pulau Sakijang Bendera (St John's Island) remained the only site for Sumatran Heron, with three counted in 1995 (previous record of two in 1992), the only year the site was counted.

Information on uses and threats was received in 1994. Several of the important coastal and inland wetland sites are showing the adverse effects of development projects in progress. Sungei Buloh Nature Park is the only site currently protected, and because of its relatively small size can support only roosting birds and a small heronry.

Counts were made by members of the Nature Society (Singapore) Bird Group (Appendix I).

Based on reports by Lim Kim Keang, National Coordinator.

THAILAND

Freshwater wetlands were the focus of the 1994-96 census. Coverage fluctuated from 17 sites in 1994 to a low of five in 1995 (Appendix III). Only one site (Bung Cha-Vak) was covered in all three years.

Two sites, Beung Boraphet and Bung Cha-Vak, recorded >20,000 birds each (Table 2). The highest count of the three years (38,651 birds) was from Bung Cha-Vak in 1994. The important coastal site of Khao Sam Roi Yot National Park consistently reported the highest number of species, although numbers of birds counted declined through the period. This site, among others, is threatened with clearance of vegetation, cattle grazing and trapping of birds.

Lesser Whistling Duck and Northern Pintail remained the most abundant species (Appendix Vb). Two threatened species, Masked Finfoot (1) and Nordmann's Greenshank (4), were recorded at Pak Nam Mangroves in southwest Thailand in 1994. Other interesting species include 10 Ferruginous Duck and 14 Baer's Pochard in 1996.

The counts were undertaken by volunteers (see Appendix 1) and coordinated by the Royal Forest Department and Phil Round of the Bird Conservation Society of Thailand.

VIETNAM

Counts of two sites were received from Vietnam: Nam Cat-Tien National Park (1,229 birds of 29 species) in 1995 by Nguyen Tran Vy and Truong Quang Tam, and Cam Ranh Bay (1,485 waterbirds of 16 species) in 1996 by Richard Gregory-Smith.

The report of Woolly-necked Stork (40) and Lesser Adjutant (34) from the Nam Cat-Tien National Park is indicative of the importance of the park for threatened species.

There is a need to encourage further participation in the AWC from Vietnam.

East Asia (excluding eastern Russia/Mongolia)

OVERVIEW

All the countries in East Asia undertook the census during the 1994-96 with the exception of the Democratic People's Republic of Korea and Mongolia, which has not participated since 1990.

Coverage in the Republic of Korea and Taiwan increased while in Hong Kong it remained stable. Japan was the main contributor to the census. Figures 10 and 11 provide an overview of the numbers of birds and species respectively counted at sites in the region (note: only sites for which locations were provided are depicted).

Of a total of 159 sites covered in the census in East Asia during 1994-96, 67 recorded over 5,000 waterbirds. Of these, 29 held at least 20,000 birds (Table 2) and fulfilled the Ramsar criteria, with East Dongting Lake in China and Izunuma in Japan being the only two Ramsar sites to be included in this list. The maximum numbers of birds were at Shiokawa Tideland in Japan and Yancheng Nature Reserve in China.

The most abundant species recorded in the region during this period were Pochard, Greater Scaup and Mallard (Appendix IV).

The fish ponds and wetlands of Tseng-Wen Chi in Taiwan remain the major site in the region for the critically threatened Black-faced Spoonbill. Development plans have been proposed for the area and are being opposed by local and national conservation groups. Other conservation priorities for the species in Taiwan and the remainder of its range have been included in the recent action plan (Severinghaus *et al.* 1996).

Annual counts of the endangered Saunders' Gull continue to increase across the range with a maximum of 2,106 birds recorded in 1996 (Appendix IV). A separate census of the species in early 1996 recorded 4,387 individuals (Anon, 1997); this represents a substantial increase in the estimated population of 3,000 (Collar *et al.* 1994).

The annual increase in Baikal Teal numbers counted in the Republic of Korea indicate that previously unrecorded populations are now being censused. Thus it is possible that the species is not as threatened as was once believed. However, the future of the Baikal Teal is closely linked to the conservation of the few sites at which it is recorded during the non-breeding period (and breeding and staging areas) and on a steady food source, which depends on continued rice production.

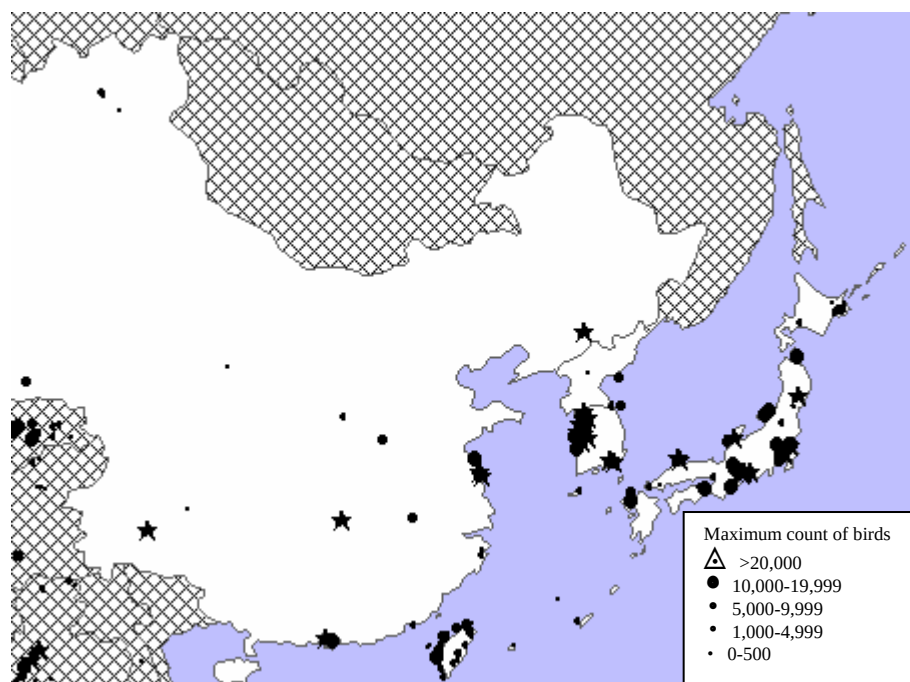


Figure 10: Total number of waterbirds counted at sites in East Asia (excluding eastern Russia/Mongolia) covered during the Asian Waterfowl Census 1994-96

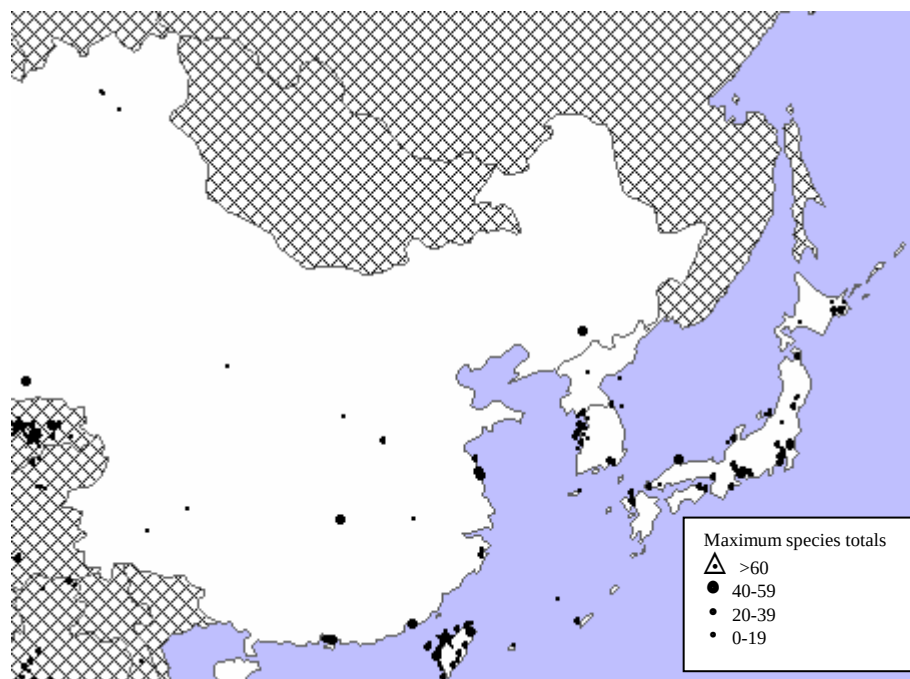


Figure 11: Total number of species counted at sites in East Asia (excluding eastern Russia/Mongolia) covered during the Asian Waterfowl Census 1994-96

PEOPLE'S REPUBLIC OF CHINA

Census coverage in China fluctuated between six sites in 1994, 14 in 1995 and only four in 1996. Only one site (Yancheng Nature Reserve) was covered in all three years. The highest count was recorded in 1996, with a total of 229,812 waterbirds of 83 species. The main contributor to this large count was Yancheng Nature Reserve, which recorded a total of 114,493 waterbirds of 59 species in 1996 followed by East Dongting Lakes (a Ramsar Site), with a total of 102,610 birds of 53 species.

Common Coot remained the most numerous species counted - 45,438 birds in 1994 (Appendix Vc). Of the 45,438 birds counted in 1994, 44,380 were recorded at Sheyang Salt Works in Jiangsu Province. In 1995, Black-headed Gull was the most abundant species with 34,377 individuals, of which 30,000 were reported at Dianchi in Yunnan.

The highest count for the threatened Black-faced Spoonbill was 39, recorded in 1994. Of this total, 26 were recorded from the Futien Reserve, its main wintering area in China. This site was not covered in 1995 and 1996. Records from the Jiangsu coast, 15 at the Dongsha Islands and 22 at the Sheyang Salt Works in 1995, serve to confirm the area as a regular wintering site.

Of the cranes, a maximum count (66) of the threatened Siberian Crane recorded in 1994 can be considered low (1,567 in 1990 and 636 in 1992). All were recorded at Shengjin Lake, a site adjacent to Poyang Lake, which is the main wintering area for 98% of the population (2,900-3,000 birds - Meine and Archibald, 1996) and which was not covered by the AWC 94-96. Caohai Reserve, one of the main wintering areas of the threatened Black-necked Crane, recorded a total of 337 in 1995, the only year the site was counted.

Among other threatened species, a total of 803 Saunders' Gull were counted in 1996, (all at Yancheng Nature Reserve), compared to 634 and 654 in 1995 and 1994 respectively.

Maximum counts of other threatened species during the 1994-96 census were 18 Scaly-sided Merganser, 7,956 Swan Goose, 1,806 Lesser White-fronted Goose, 3 Dalmatian Pelican, 553

Baer's Pochard, 53 Baikal Teal, 369 Oriental Stork, two Chinese Egret and four Mandarin Duck.

Although most of the important sites for waterbirds are under government protection, numerous threats still prevail. Fishing, hunting of birds, pollution and clearance of vegetation were the most frequently reported uses and threats to wetlands in 1995, and were considered to be a serious problem at the Yancheng Biosphere Reserve. Little information was received for other years.

The census was coordinated by Dr Lu Jian Jian in 1994 and the Wetlands Resources Monitoring Centre of the Ministry of Forestry in 1996.

HONG KONG

Census coverage in Hong Kong was quite consistent (Appendix III). A total of five sites were covered at least once and three sites were covered in all three years. A maximum total of 69,328 waterbirds (in 1996) and 66 species were recorded. Deep Bay remained the most important site in all three years, with a maximum count of 67,910 waterbirds in 1996. The results are discussed for Deep Bay - combined, by consolidating the 15 or more sub-sections of the Deep Bay area that were counted separately.

Black-headed Gull and Green-winged Teal were the most abundant species (Appendix Vc). Among other species, there was a continued increase in the number of Great Cormorant from 3,820 in 1994 to 8,079 in 1996.

Maximum counts of threatened waterbirds recorded during the 1994-96 census include 23 Dalmatian Pelican, one Baer's Pochard, one Spoon-billed Sandpiper, one Baikal Teal, 82 Saunders' Gull, four Oriental Stork and 72 Black-faced Spoonbill.

The Mai Po Marshes and Inner Deep Bay were declared a Ramsar site in 1995 in recognition of their value for waterbirds. All the habitat surrounding Deep Bay was reported to be under pressure from development and pollution. Fish ponds are being filled and housing developments proposed or built; planned training of the Shenzhen River may directly affect the ecology

of Deep Bay. Cooperation between Mai Po and Fu Tian Reserve, People's Republic of China, continues to strengthen, and even closer ties are hoped for in the future.

The counts were undertaken by members of the Hong Kong Bird Watchers' Society (Appendix I).

Based on reports by G.J. Carey, National Coordinator.

JAPAN

AWC coverage in Japan has been fairly consistent with 50 sites in 1994, 44 in 1995 and 46 in 1996. Forty sites were covered in all three years.

Shiokawa tideland recorded a total of 170,152 birds of 41 species in 1996 (Appendix III), which was the highest count in Japan for the three years (1995 - 6,725; 1994 - 6,879). Seven of Japan's 10 Ramsar sites were covered in one or more years; Sagata held the highest number of birds (14,644 in 1994).

Greater Scaup was the most abundant species counted in 1996 (305,642, of which 16,000 were recorded at Shiokawa tideland), and 1994 (151,628); see Appendix Vc for details. A total of 88,449 Common Pochard were counted, making it the most abundant species in 1995.

Among the threatened species, numbers of Red-crowned Crane recorded in Hokkaido during the census declined from a maximum of 340 in 1994 to 328 in 1995 and 301 in 1996. However, this apparent decline is due to count incomplete coverage, as the population is on the increase (H. Masatomi pers. comm.). The population of White-naped Crane remained quite consistent, with 1,852 birds reported in 1994, 1,927 in 1995 and 1,892 in 1996. The only record of the endangered Siberian Crane was received in 1995, with a sighting of a single bird at Izumi. Black-faced Spoonbill exhibited an increasing trend, from two individuals recorded in 1994 to 11 in 1995 and 19 in 1996. A total of 53 Saunders' Gull were recorded in 1996 compared to 22 in 1995 and 33 in 1994.

The count forms used in Japan do not request information on uses and threats therefore no data are available.

The census was undertaken by members of the Japan Wetlands Network (Jawan)-(Appendix I).

Prof. Akira Uritani coordinated the census in all three years.

REPUBLIC OF KOREA

Census coverage in Korea increased from 10 sites in 1994 and 23 in 1995 to 26 sites in 1996; three sites were covered in all three years. The highest count was recorded in 1995, with 405,039 birds of 59 species. A list of participants is provided in Appendix I.

Chonsu Lake recorded a total of 171,988 birds of 33 species in 1995 making it the site supporting the highest number of waterbirds overall (Appendix III). The Kum River recorded a total of 74,120 birds of 24 species in 1995. However, this important wetland is also reported to be threatened by poaching.

Sapkyo Lake, discovered as an important site for Baikal Teal in 1993 (Mundkur & Taylor, 1993), recorded a total of 20,000 of this species in 1994. However, no records of Baikal Teal were obtained from this site in the following two years. In 1995, more than 60% of the 55,000 Baikal Teal recorded were at Chonsu Lake, with the remaining counted at the Kum River. In 1996 Chonsu Lake and Nonsan Reservoir recorded the maximum numbers of Baikal Teal.

The numbers of threatened Red-crowned Crane totalled 339 in 1994 (Appendix Vc), 338 of which occurred at the Ch'olwon Basin. Counts in subsequent years, however, were much lower at this site; 20 in 1995 and 269 in 1996. The number of White-naped Crane (530) in 1996 was the highest ever recorded in South Korea for the AWC. Of this total, 367 were sighted at Ch'olwon Basin and 155 at the Han River Estuary.

Among other threatened species, Swan Goose numbers varied considerably between years (Appendix Vc). In 1995, 589 Swan Goose were recorded, of which 533 were at the Han River Estuary. The 1996 total dropped to 89, with only 23 at the Han River Estuary (even though total numbers of birds had increased). The sites that held the species in 1995 and 1996 were not covered in 1994.

Little useful information on uses and threats to sites can be identified as very few forms were completed each year.

Prof. Won Pyong Oh coordinated the census in all three years.

TAIWAN

AWC coverage in Taiwan remained broadly consistent: 33 sites in 1994, 30 in 1995 and a high of 38 sites in 1996. A total of 23 wetlands were covered in all three years. The maximum number (102,776) of waterbirds was recorded in 1996.

Szu-tsao, a coastal mudflat on the southwest of Taiwan, recorded the highest count with 16,681 birds of 48 species in 1996 over the 3-year period. A total of 249 Black-faced Spoonbill were counted in 1996. Of this total, 246 were recorded at Tseng-wen Chi, the single most important site of this species. Due to the efforts of the Chinese Wild Bird Federation (formerly Wild Bird Society - ROC) and other conservation

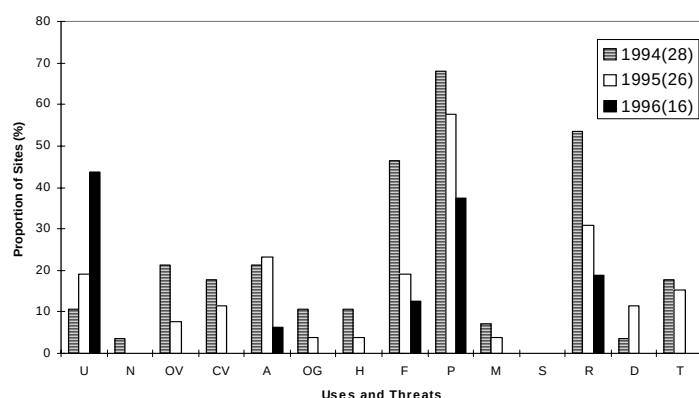
groups, the plan to develop an industrial area at this site is being reviewed. Currently, all the conservation groups are trying to establish a sanctuary for this critical species through legislation.

A substantial proportion of the threatened Saunders' Gull population were reported in Taiwan (world population is estimated at 3,000, Collar *et al.* 1994). In 1996, of the 1,052 individuals reported from Taiwan, 600 birds were counted at Han Pao, a mudflat on the west coast (while only 16 were counted here in 1995). Ta-tu Hsi also held significant numbers of Saunders' Gull each year (385 in 1994, 316 in 1995 and 182 in 1996). Other threatened species recorded during the census include Nordmann's Greenshank, Oriental Stork, Chinese Egret, Scaly-sided Merganser, Baer's Pochard, Baikal Teal and Swan Goose (details in Appendix Vc).

Fishing, pollution and reclamation were identified as the main uses and threats at wetlands in Taiwan (Figure 12). Important wetlands (Table 2) such as She-tzu, Ku-liao and Ta-tu-hsi were reported to be subject to pollution by domestic sewage and solid waste.

The counts were undertaken by members of the Chinese Wild Bird Federation and local Wild Bird societies (Appendix I).

Based on reports by Dr Woei-horng Fang, Coordinator.



Key to uses and threats:

U-unknown; N-None; OV-Overgrowth of vegetation; CV-Cutting and clearance of vegetation; A- Agriculture along dry margins; OG-Overgrazing; H-Hunting/poaching of birds; F-Fishing; P-Pollution; M-Mining; S-Sedimentation; R-Reclamation; D-Dam/Barrage construction; T-Tourism.

Note: Numbers in brackets refer to number of sites reporting threats in the respective years.

Figure 12: Taiwan - Uses and threats at wetlands covered during the Asian Waterfowl Census 1994-96

Australia

As in previous years, only shorebird counts were received from Australia. The numbers of sites surveyed varied: 21 in 1994, 31 in 1995 and 28 in 1996 (Appendix VII). An increase in the number of sites being covered and improved coverage have been made possible by the appointment of regional coordinators to coordinate counts.

Eighty-mile Beach in Northwestern Australia recorded the highest count, with a total of 141,340 birds in 1996, a marked increase from 43,260 shorebirds in 1995 and 38,508 in 1994.

This dramatic increase has been attributed to a greater coverage and additional, more experienced counters taking part.

The most abundant species recorded in Australia varied in the three years, with Bar-tailed Godwit, Red-necked Stint and Great Knot topping the lists (see Appendix VIII).

Based on reports by Ken Harris, Coordinator of the Australasian Wader Studies Group Shorebird Monitoring Project.

REFERENCES

- Anonymous. 1996. *Asia-Pacific Migratory Waterbird Conservation Strategy: 1996-2000*. Wetlands International - Asia Pacific, Kuala Lumpur and Wetlands International - Japan, Tokyo.
- Anonymous 1997. A census of Saunder's Gulls. In: In brief. *World Birdwatch* 19(1): 5.
- Collar, N.J., Crosby, M.J. & Stattersfield, A.J. 1994. *Birds to Watch 2 : The World List of Threatened Birds*. BirdLife International, Cambridge.
- Davies, T.J. (ed.) 1994. *The Ramsar Convention Manual: A Guide to the Convention on Wetlands of International Importance especially as Waterfowl Habitat*. Ramsar Convention Bureau, Gland.
- Hancock, J. & Kushlan, J. 1984. *The Herons Handbook*. Croom Helm, London.
- Inskipp, T., Lindsey, N. & Duckworth, W. 1996. *An Annotated Checklist of the Birds of the Oriental Region*. Oriental Bird Club, Sandy.
- Kennerly, P.R., Leader, P.J. & Leven, M.R. 1993. Aleutian Tern: the first records for Hong Kong. *Hong Kong Bird Report* 1992: 107-113.
- Marchant, S. & Higgins, P.J. (eds.) 1993. *Handbook of Australian, New Zealand and Antarctic Birds*. Volume 2: Raptors to Lapwings. Oxford University Press, Melbourne.
- Meine, C.D. & Archibald, G.W. (eds.) 1996. *The Cranes:- Status survey and Conservation Action Plan*. IUCN, Gland and Cambridge.
- Mundkur, T. & Taylor, V. 1993. *Asian Waterfowl Census 1993*. AWB, Kuala Lumpur and IWRB, Slimbridge.
- Ramsar Convention Bureau. 1997. *The Ramsar Convention Manual: a Guide to the Convention on Wetlands (Ramsar, Iran, 1971)*. 2nd ed. Ramsar Convention Bureau, Gland.
- Perennou, C., Rose, P. & Poole, C. 1990. *Asian Waterfowl Census 1990*. IWRB, Slimbridge.
- Perennou, C. & Mundkur, T. 1991. *Asian Waterfowl Census 1991*. IWRB, Slimbridge.
- Perennou, C. & Mundkur, T. 1992. *Asian Waterfowl Census 1992*. IWRB, Slimbridge.
- Perennou, C., Mundkur, T., Scott, D. A., Follestad, A. & Kvenild, L. 1994. *The Asian Waterfowl Census 1987-91: Distribution and Status of Asian Waterfowl*. AWB Publication No. 86. AWB, Kuala Lumpur.
- Scott, D.A. (ed.) 1989. *A Directory of Asian Wetlands*. IUCN, Gland and Cambridge.
- Scott, D.A. and Rose, P. 1989. *Asian Waterfowl Census 1989*. IWRB, Slimbridge.
- Severinghaus, L.L., Brouwer, K., Chan, S., Chong, J.R., Coulter, M.C., Poorter, E.P.R. and Wang, Y. 1995. *Action Plan for the Black-faced Spoonbill Platalea minor*. Published by the Wild Bird Society of ROC, Taipei, Taiwan. ROC. "Task Force to Develop an Action Plan for the Preservation of the Black-faced Spoonbill" Taipei, Taiwan, ROC January 16-22, 1995.
- Sibley, C.G. & Monroe, B.L. 1990. *Distribution and Taxonomy of Birds of the World*. Yale University Press, New Haven and London.
- Sonobe, K. & Usui, S. (eds.) 1993. *A Field Guide to the Waterbirds of Asia*. Wild Bird Society of Japan, Tokyo.
- van der Van, J. 1987. *Asian Waterfowl 1987. Midwinter bird observations in some Asian countries*. IWRB, Slimbridge.
- van der Van, J. 1988. *Asian Waterfowl 1988. Midwinter bird observations in most Asian countries*. IWRB, Slimbridge.