

STATUS OF WATERFOWL IN ASIA WITH SPECIAL REFERENCE TO INDIA

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Introduction

Wet lands are the most productive and diverse ecosystem on earth which forms integral part of the important aquatic ecosystem. It serves as a habitat for different kinds of flora and fauna. The Wet lands include diverse habitats constituted by marshes, peat land, flood plains, rivers and lakes (its tributaries and nallah etc.), coastal areas, estuaries, other marine areas (less than 16 m deep at low tide), as well as man-made wet lands such as rice fields and reservoirs.

These water bodies are usually supplied with abundant nutrients through run-off from territorial eco-system which serves as a good nutrient for the primary production of plankton, algae, grasses, bacteria and other hydrophytes. Thus it provides habitat for fresh water fauna including amphibians, reptiles, avifauna and mammals through the setting of complex food chain and food web. The aquatic eco-system so constituted represents major component of the hydrological system which has a specific role in the maintenance of hydrological cycle in the area.

Wet lands are very important for the ecological functions which they perform in maintenance of hydrological cycle as well as sustain rich flora and fauna. They also constitute resource of great economy, culture, scientific and recreational value to human life. Wet lands and people are

ultimately inter-dependent. Wet lands provide both tangible and intangible benefits to people, species and habitats through hydrological and buffering functions. They perform a specific role in purification of water by removal of pollutants. They are integral part of global cycles and exert influence on climate to varying degree. Wet lands support human economy through fishes, building materials, transport route, bio-fertilisers (blue green Algae), as irrigation of agriculture fields and provide abundant scientific, educational and recreational opportunities.

International Agencies for Conservation of Waterfowl

Many species of the waterfowl are migratory and their movements are governed by variations in the season, availability of the water bodies and food in their natural habitat. Knowledge about trends and distribution of waterfowl, its habitat (water bodies) and food availability is a fundamental tool for proper management and conservation.

Migratory waterfowl represent one of the finest examples of internationalism and do not distinguish the barriers of national and regional boundaries. Migratory animals are true international component of biodiversity and the species may be endangered if protection and conservation measures are not implemented. International regulations are required to

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be framed and implemented.

Ramsar Convention - 1971 : The Convention on Wetlands (Ramsar, Iran, 1971) was the first landmark step in the direction of conservation which provides the framework for international cooperation for conservation and wide use of wet land habitats and bio-diversity (Anon., 1997).

The loss and degradation of wet lands has caused concern at international level. Ramsar Convention provides the measures to conserve and make optimum use of wet lands through cooperative and inter-governmental action. It has identified the wet lands on the basis of categories :

- (a) Unique or representative wet land.
- (b) Floral and faunal diversity.
- (c) Waterfowl, if supports more than 20,000.
- (d) Based on criteria of fish.

The total number of Ramsar Wetlands designated were 41 covering almost 25,00,000 hectares. The waterfowl criteria is the most commonly applied criteria as evident from the fact that out of 41, 34 sites are listed in the waterfowl group constituting 83% of the area.

Conservation of Migratory Species (CMS) : Conservation of migratory species or Bonn Convention is the only global convention within the United Nations system responsible for overseeing the conservation and sustainable use of all migratory animals. The main activity in Asia is conservation of mammals, birds and the marine turtles. Conservation of Migratory Species is actively participating in the Asia-Pacific Migratory water birds conservation strategy 1996-2000 which is an important step towards conservation and has called for Regional agreement at Beidaihe, China in

March 1997. Conservation of Migratory Species has 51 members world wide and its number is increasing steadily. They support projects in field, workshop and other local activities co-ordinated at international level.

Waterland International : It is the world's leading non-profit wet land conservation organisation and was created by the integration of Asian Wetland Bureau, the International Waterfowl and Wetland Research Bureau and Wetland for the Americans. It coordinates conservation, management and project at international levels. It provides technical and financial support to national and local projects and helps them in capacity building. It organises workshops, training courses, etc.

International Waterfowl Census : It is a global effort for collection and dissemination of information on water birds and wetlands. Asian Waterfowl Census (A.W.C.) is a part of this.

Status of Waterfowl in Asia with special reference to India

The Asian Waterfowl Census 1994-96 reported 74 sites in Asia under Ramsar list of which only 6 were reported previously. In India, it reported 33 sites of which only 2 were previously reported. Thus there is a tremendous increase in the finding of the new sites and it is suggested that these sites should be protected against the specific threat.

Table 1 provides the number of wetland sites in Asia supporting more than 20,000 water birds (Lopez and Mundkar, 1997). Thus India becomes an important country in South Asia and Asia as a whole from diverse habitat view point of the wetlands.

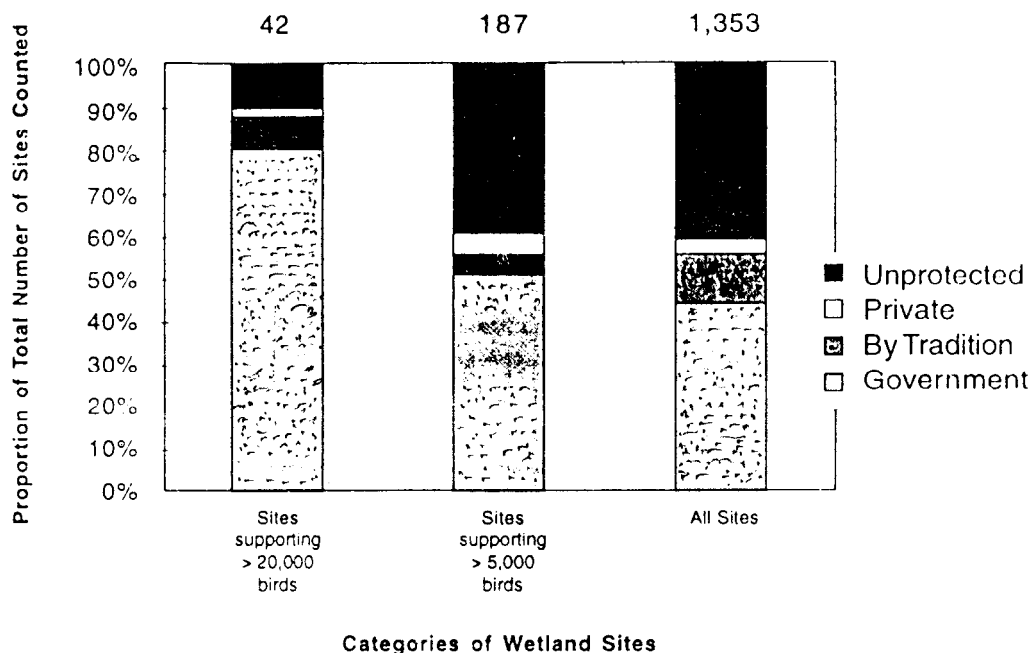
Table 1

Number of Wetland sites in Asia supporting more than 20,000 water birds

Name of Country	No. of sites on Ramsar list	No. of sites as Asian Waterfowl Census 1994-96
Bangladesh	-	4
China	1	5
Hong Kong	-	1
India	2	33
Indonesia	-	1
Japan	1	12
Korea	-	10
Myanmar	-	1
Nepal	1	1
Pakistan	1	3
Sri Lanka	-	1
Thailand	-	2
	6	74

Census : Table 2 provides an overview of Asian Waterfowl Census 1994-96 (Lopez and Mundkur, 1997). The maximum water birds were counted during the year 1996 in Asia of which South Asia has maximum no. of counts of water birds i.e. 3,337,324 (65.1%). Maximum count of water birds reported in India during 1996 (2,830,081) which represents 55.2% of South Asia in the same year. This speaks of maximum diversity of wetlands in India making it more significant from social economic and ecological view point.

Table 3 provides the information about the sites in India supporting more than 10,000 water birds at one time (Lopez and Mundkur, 1997). The total number of sites supporting more than 10,000 birds are 65.

Fig. 1

Ownership/Protection status of wetland sites covered by the Asia Waterfowl Census 1994-96

Table 2
Overview of the Asian Waterfowl Census 1994-96

Region/Country	No. of sites			Number of water birds			Number of birds of Prey		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
India	986	577	573	2,659,275	2,468,656	2,830,0881	366	848	671
Bangladesh	42	34	47	350,390	169,702	348,932	-	271	-
Nepal	7	12	4	26,556	34,557	25,618	-	11	-
Pakistan	31	32	15	181,032	172,392	65,672	30	20	35
Sri Lanka	58	53	42	76,496	234,883	67,021	145	63	124
South Asia (Total)	1124	708	681	3,293,749	3,080,190	3,337,324	541	1213	830
South-East Asia	134	63	61	326,128	117,324	53,043	137	65	10
East Asia	103	116	118	782,948	1,079,736	1,421,552	87	16	-
Australia	21	31	27	200,501	251,482	311,747	-	-	-
Total	1382	918	887	4,603,326	4,528,732	5,123,666	765	1294	840

Table 3
Wetlands in India supporting more than 10,000 water birds at one time

States/Sites	Maximum Count	Year of Count	No. of Species
1	2	3	4
Andhra Pradesh :			
Coringa Wildlife Sanctuary	16,975	1996	53
Jahnadara (Krishna delta mangroves)	15,525	1994	21
Madannapet Cheruvu	17,967	1994	12
Manjira Reservoir*	24,787	1996	34
Pulicat Lake (Sanctuary)*	47,496	1996	31
Kolleru Lake*	26,062	1996	28
Assam :			
Beepor Beel	18,343	1994	41
Dhir Beel*	26,433	1995	43
Digholi Beel	11,234	1994	42
Kaziranga National Park	12,518	1996	67
Misamari Beel	16,045	1994	50
Pabitara Wildlife Sanctuary	19,361	1995	67
Sareswar Beel	10,087	1996	40

Contd...

1	2	3	4
Bihar :			
Kusheswarsthan Bird Sanctuary	11,453	1996	17
Patratu Thermal Power Reservoir	12,067	1994	23
Delhi :			
Yamuna river - (Okhla barrage New)	22,067	1995	61
Gujarat :			
Amipur tank*	47,198	1994	16
Bigri mud flats	11,990	1995	56
Chhari Dhandh*	50,900	1995	35
Kanewal*	23,088	1994	48
Khirjog and Vakrio* (West Banni area)	30,286	1995	22
Korda Sandher*	33,320	1994	23
Nal Sarovar*	1,16,028	1994	32
Nava Talao (Village - Savada)	17,602	1994	69
Pariej*	22,492	1994	53
Rann	10,263	1995	13
Ratanpara Dam (Vaghania)	12,227	1994	8
Tapi Barrage*	37,434	1996	20
Veri Dam	15,642	1996	62
Himachal Pradesh :			
Pong Dam Bird Sanctuary*	66,721	1994	35
Karnataka :			
Badrana (Badane) Kere*	21,215	1994	21
Bellandur Tank*	56,339	1994	21
Byramangala Reservoir*	21,286	1996	25
Hidkal Reservoir	10,914	1996	23
Kolar Ammanikere	15,481	1994	29
Kerala :			
Ambala Medu Lake*	30,003	1996	6
Kattanpally	14,729	1995	24
Kole Wet lands*	78,840	1996	57
Vemband Lake*	29,991	1994	27
Maharashtra :			
Chargaon Lake	18,477	1994	30

Contd...

1	2	3	4
Irai Dam*	80,747	1994	22
Jayakwadi Tank* (Nathsagar Dam) B.S.	77,212	1994	60
Wuna Reservoir	13,369	1994	23
Manipur :			
Loktak Lake	10,975	1994	41
Orissa :			
Ansupa Lake	11,860	1996	42
Bhitar Kanika Wildlife Sanctuary*	47,596	1995	63
Chilika Lake*	14,84,186	1996	85**
Hirakud Reservoir*	44,719	1996	39
Hukitola Beack waters*	1,14,049	1996	39
Kumarkhunti Reservoir			
(Chandaka Wildlife Sanctuary)*	74,616	1995	25
Machkund	18,755	1996	16
Rengali*	39,540	1996	22
Salt fields, Huma	14,225	1996	14
Pondichery :			
Kaliveli*	20,117	1994	10
Ousteri Tank	10,388	1994	20
Rajasthan :			
Keoladeo Ghana National Park	13,842	1994	68
Sambhar Lake*	31,394	1996	12**
Tamil Nadu :			
Chembarambakkam Tank	12,075	1995	8
Kaveripakkam Tank	11,694	1995	7
Mamandur Tank	16,688	1995	8
Simson Estate*	20,211	1995	13
West Bengal :			
Bagadevi Tola	10,055	1994	31
Jaldapara Wildlife Sanctuary*	31,200	1995	17
Kanasbati Reservoir*	22,274	1996	14
Santragachi Railway Jheels	12,567	1996	15

No of sites supporting more than 10,000 birds at one time are 65.

* Sites supporting more than 20,000 water birds at one time (33 nos).

** Sites on the Ramsar list (2 nos.)

The total number of sites supporting more than 20,000 birds at one time are 33. These sites have been reported after Asian Waterfowl Census 1994-96.

Analysis of Waterfowl Census : A comparative analysis of the report of the States of India, makes Orissa most significant for existence of wetlands supporting maximum number of waterbirds. Though there is a decline in the number of sites counted from 986 (1994) to 573 (1996), but these sites represent 70% of waterfowl sites in India and the waterfowl count has increased, maximum being during 1996 (2,830,081). There is a significant increase in the number of sites in Orissa and West Bengal but Karnataka remained as top contributor to the number of sites surveyed (436 in 1994 and 167 in 1996), which indicate the awareness of conservation movement in these States. The States like Maharashtra and Madhya Pradesh did not contribute in the Waterfowl Census during 1995 and 1996. Some States like Tripura, Uttar Pradesh, Bihar and Himachal Pradesh also indicated non-consistent approach. The 33 sites qualified as sites of international importance as per Ramsar criteria belonging to separate States are as shown in Table 4.

Of the 33 sites, 17 are under legal protection. Gujarat and Orissa are States of special significance in providing sites as per Ramsar convention.

Chilika lake, which supports maximum waterbirds (1,484,186 during 1996), represents unique brackish water body and wetlands supporting 85 species. The Hukitolla and Bhitar Kanika Wildlife Sanctuary come next to it, which suggests that the estuaries and brackish water bodies have the maximum productive capacity.

Table 4

Number of sites qualifying as sites of international importance as per Ramsar criteria (State-wise)

State	No. of sites
Andhra Pradesh	3
Assam	1
Delhi	1
Gujarat	8
Himachal Pradesh	1
Karnataka	3
Kerala	3
Maharashtra	2
Orissa	6
Pondichery	1
Rajasthan	1
Tamil Nadu	1
West Bengal	2
Total	33

In Orissa, the Kumarkhunti (under Chandaka-Dampara Wildlife Sanctuary) having an area about 10 ha recorded 74,616 (1995) waterbirds with interesting population density. This is mainly due to better protected habitat, proximity of paddy crops, bamboo and other vegetation for paching and better nutrient and organic matter percolating into the water body from the nearby forest.

The most abundant species in India are Northern Pintail and Common Coot. Black-tailed Godwit is reported as the most abundant of shore birds. Report of Goliath Heron from Orissa and Gujarat is matter of great significance as the status of this African species is little known in India.

The Waterfowl Census 1994-96 reported 31 threatened species during 1994-

96 among which 18 were reported from South Asia. Endangered species recorded from India are given below (based on Collar *et al.*, 1994) :

Species	Place
Imperial Heron	Assam (1993-94). Arunachal Pradesh (1993)
Siberian Crane	Keoladeo National Park, Bharatpur (1996)
White winged Duck	Nameri Wildlife Sanctuary (1996)
Baikal Teal	Patratu Thermal Power, Bihar (1994)
Australian (White-headed) stilt	Orissa (1994-96)
Asian Dowitcher	Orissa (1994-96)
Spoonbilled Sandpiper	Orissa (1994-96)

Protection status : Fig. 1 provides information about ownership/protection status of wasteland sites covered by Asian Waterfowl Census 1994-96. Of the total sites reported, 44% are owned by the Government but it is significant to note that sites holding over 20,000 birds are mostly owned by the Government (80%). In India 50% of such sites (17) are under legal protection. This indicates that the legal protection of Govt. ownership does not appear to be a guarantee for their conservation. However legal protection if given, it will be further step towards

protection and conservation measures.

Uses of and threats to Wet Lands : Fishing and agriculture are the main activities in the water bodies. The waterfowl are subjected to further threat from hunting, pollution, absence of vegetation or excess growth of vegetation, siltation etc. Excessive and indiscriminate use of the water bodies are the major causes of threat.

Conclusion

India has richest productive and diverse wet land ecosystem not only in South Asia but Asia as a whole. The brackish water wet lands of Chilika and estuarine aquatic eco-system of Bhitar Kanika and Hukitola represent the unique habitat of the waterfowl with maximum number of species. Existence of waterfowl is a bio-indicator for the existence of diverse and productive wet land ecosystem, which is essential from ecological and economical view points as the wet lands and people are ultimately interdependent. Though Government ownership does not guarantee conservation of wet land area but it is suggested that the areas qualifying as Ramsar sites should be protected by declaring these as Sanctuary under Wildlife (Protection) Act, 1972, so that the waterfowl and their habitat can be protected against excessive use of water bodies, hunting, pollution and other disturbance of the habitat.

SUMMARY

Many species of waterfowl are migratory and their movements are governed by variations in the season, availability of water bodies and food in their natural habitat. Their habitats can be protected against excessive use of water bodies, hunting and disturbance.

भारत के विशेष संदर्भ में एशिया के जल कुक्कुटों की स्थिति

के०आर० सिंह

सारांश

जल कुक्कुटों की बहुत सी जातियाँ प्रजनन करने वाली हैं और उनकी गतिविधियाँ मौसम में होने वाले परिवर्तनों, जल सरोवरों की उपलब्धता और उनके प्राकृतावास में मिलने वाले भोजन से शासित होती हैं। उनके प्राकृतावासों का संरक्षण जल सरोवरों का अति प्रयोग, शिकार और विघ्न पड़ना बंद करके किया जा सकता है।

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Snippets

ATTRACTING TERMITES

Termites are attracted to a 1 percent concentration level of carbon dioxide, similar to what is emitted by rotting wood and by termite colonies. Dr. Lou Bjostad, an entomologist at Colorado State University, suggests that a carbon dioxide attractant could be combined with a small amount of insecticide to make chemical control of termites very localized. Another strategy might be to place carbon dioxide bait around the perimeter of a house, directing termites away from the structure. Many types of foam insulation panels emit carbon dioxide in the range attractive to termites and could actually be attracting termites.

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