Contribution of Zoological Gardens towards conservation of Wildlife and Biodiversity: Bangladesh perspective

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Introduction

All the eleven zoos of different types and status in Bangladesh, are playing their own role in conservation of wildlife as one of their main mandates to the nation. Prevailing conservation practices ultimately contribute a lot to the national biodiversity conservation efforts, but in a limited mode. Introduction of conservation education and research programmes could further expedite the scope of conservation of the rich heritage of biological diversity in Bangladesh.

The enormous number of species and populations along with that of 10 million visitors per year has generated rethinking the scope and limitations of our capacity. The formulation of national guidelines for animal release using the IUCN Reintroduction Specialist Group Guidelines may lead to very concerted effort of all concerned and proactive wildlife organizations and institutions in Bangladesh to adopt more systematic practices.

Zoos playing different roles aiding the higher goal of nature conservation depends upon refining our present conservation concept by reviewing our mission and vision. This may generate the potential to make Bangladesh zoos a knowledge generation center for conserving biodiversity. Zoos get a huge influx of visitors which need to be educated about the problems and potential of wildlife and biodiversity.

This paper will rovide a framework for of creating an action plan for setting up a conservation education center. This can be justified after achieving the goal of maintaining simproved holding facilities from the perspective of both animal welfare and scientific breeding.

The Action Plan should include the formulation of national guidelines for biodiversity conservation according to the WZACS/IUCN/SSC/CBSG/RSG experience and other reliable published guidelines.

Status of Zoological gardens in Bangladesh

Almost all visitors visit zoos for recreational purpose, not for being updated on natural history through observation and learning, except for a very few. Roughly 10 million zoo visitors to Bangladesh zoos around the year want to see attractive animals and visit them for entertainment (Table 1). "While more and more zoos and aquariums see themselves primarily as conservation institutions, the perception of the public at large is still very different. For the vast majority of the more than 600 million people visiting WAZA network institutions every year, the main or only purpose of zoos and aquariums still is leisure and entertainment" (Dollinger, 2006). As their attitude is not anti-nature, it may not be too difficult to mold them as a nature observer as well as a tourist and teach them to consider playing a role in conserving biodiversity.

There is not enough incorporation of the word "conservation" in our mandates and if it exists, it is hardly understood. Occasional practices of conservation are undertaken on *ad hoc* basis, rather than learning the skills required to maintain studbook along scientific lines. Only when scientific methodology is applied, is it possible to maintain genetic diversity and be qualified to carry out genuine conservation breeding programs in keeping with the IUCN Policy Statement on Translocation of Living Organisms. Only then, can zoos in Bangladesh consider reintroduction programs a possibility for conservation.

National biodiversity conservation initiatives may be supplemented by the activities of zoological gardens effectively only if scientific and welfare conditions are met. Without improvement and integration of these sectors, our national biodiversity conservation efforts will remain crippled.

"The World Zoo and Aquarium Conservation Strategy (WZACS) calls on institutions to pursue a strategy of integrated conservation" (WAZA 2005) i.e., to integrate all aspects of their work with conservation activities.

"No single organization, be it zoo, aquarium, conservation charity or development organization should act alone. Conservation activities should be collaborative, with all the stakeholders working towards the same need, and avoiding competition or exploitation".

Unlike many conservation organization, which are not highly visible to the general public, zoos and aquariums, because they are popular visitor attractions, have unique opportunities to introduce their visitors to a wider world and to explain the issues of international conservation" (WAZA, 2005).

"The continued existence of zoos and aquariums depends upon recognition that they are based on respect for the dignity of the animals in their care, and that they serve the higher goal of nature conservation" (WAZA, 2003).

Zoological gardens can contribute to the conservation of biodiversity by hosting training for

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their staff as well as educating the public in the conservation and animal welfare sciences such as small population biology, reproductive biology, conservation medicine, modern wild animal husbandry, environmental enrichment, animal behaviour, and research. These topics can be aimed at identifying and improving zoo and aquarium operations, such as visitor attitudes, visitor behaviour, fundraising, animal welfare, etc.

Integrated conservation as defined by WAZA is a broad attempt to link up every action with best practice of conservation principles. This is not only to include the systematic maintenance of studbooks and practice of scientific breeding, etc., but also to cover operating their institutions in an environmentally friendly manner. Every act of this nature (fixing leaky faucets, refraining from inappropriate captures or releases of wildlife, utilising zoo space wisely for conservation, adopting effective waste management practices, etc. aids in small parts to global conservation of natural resources.

"Zoos and aquariums will make further contributions to conservation in the wild by providing knowledge, skills and resources through initiations in zoo breeding, translocations and reintroduction, wildlife health, research, training, education and by funding field activities.

"In appropriate circumstance, zoos can provide the necessary animals, skills and knowledge for breeding: identifying breeding stocks (through genetic analysis when necessary); establishing appropriate social units for successful breeding and rearing attending to behavioral needs; determining diet and welfare standards" (WAZA, 2005).

Human Resource Development

In order to progress towards world class wild animal facilities, zoological gardens in Bangladesh will have to refresh their human resource management practices. Managing wild animals in captivity is very difficult and knowledge dependent. To be effective and successful, all levels of staff should possess a wide range of skills to undertake tasks promoting wildlife health and welfare. Managing an institution with visitors also requires expert knowledge. The activities of animal, visitor and infrastructure management must include science as well as arts and technology. Despite all, it is the individual and his intent, combined with technology, that can achieve high standards and success.

"It is a matter to understand the depth and importance of skilled manpower, which can help zoos to avoid or reduce criticism and accidents in zoos. Zoos need freedom from the stifling influences of State Government and the Municipal Corporation bureaucracy, and red tapism which will allow the modern zoo to recruit and hire skilled personnel, remove unproductive personnel and thus speed up decision making" (Kaginkar, 2007).

"But incase of Dhaka Zoo, HR recruitment and selection, it is not as such described above rather difference and bears some peculiarities, but according to setout rules and quotas. Zoo and wild animal fields are highly technical, dynamic and manual labor oriented intensive job field where HR recruitment and selection should take place keeping in mind of specific scientific technical qualification as prerequisite and other in-service courses to shape them up. Dhaka Zoo is getting its HR readymade recruited and selected by higher authority, those are not specific in terms of quality selection for zoo" (Sultana, 2007).

"Five million visitors figure each year is amazing, no doubt. During 3-4 occasions round the year, about 65,000 visitors per day visit Dhaka Zoo resulting such a gathering that it becomes zero distance between one visitor to another, traffic jams become intolerable, whole zoo becomes dusty, all sorts of movement become restricted, law enforcing agencies rushed into, and so froth. No where these happens so far. So, including the compact internal works, visitors control also become emergency. All these things made the HRM practice with effective, dynamic, modern and appropriate modality an essence" (Sultana, 2007).

Zoo Management Software

New generation web-based software such as Zoological Information Management System (ZIMS) developed by the International Species Information System (ISIS) can insure that sharing standards and information of zoological specimens of different taxa is possible as well as maintaining accurate and up to date animal records, studbooks, etc. It is best practice to adopt ZIMS as a primary management tool in the modern zoo scenario.

"At the same time, adopting ICTS and related software use is thought to be another obligatory activities in achieving quality operation & standard management procedures" (Sultana, 2007).

"All zoos and aquariums therefore, will be primary centers of expertise in small population management and will be involved in global or regional cooperative breeding program. All such program will be based on sound knowledge using the latest available data on population management, reproductive biology, gene-tics, behavior, physiology, nutrition, veterinary care and husbandry" (WAZA, 2005).

Preconditions of managing a population should be based on databases of ISIS ZIMS which will include all appropriate software.

Animal Welfare
All zoo activities should adhere to an animals welfare code of ethics avoiding cruelties to animal in Bangladesh where there is no animal welfare legislation.

"In many countries historical and social perceptions of zoos an entertainment menageries still persist, and in some cases are justified. A sector frequently hostile to zoos is the growing animal-rights and animal-welfare lobby, which emphasizes the interest of individual animals, rather than the conservation of species or eco-systems; further opposition comes from that part of the conservation movements which doubts the justification for removing animals from the wild. If zoos and aquariums are to play an active part in conservation they must face opposition head-on, by understanding criticisms, adapting where necessary and explaining their actions in a way that gains public that their mission is one of conservation, which is conducted in tandem with highest welfare standards" (WAZA, 2005).

The nodal authority of wild flora and fauna should interact with the zoological and botanical gardens for further research achievements in the field of biodiversity conservation.

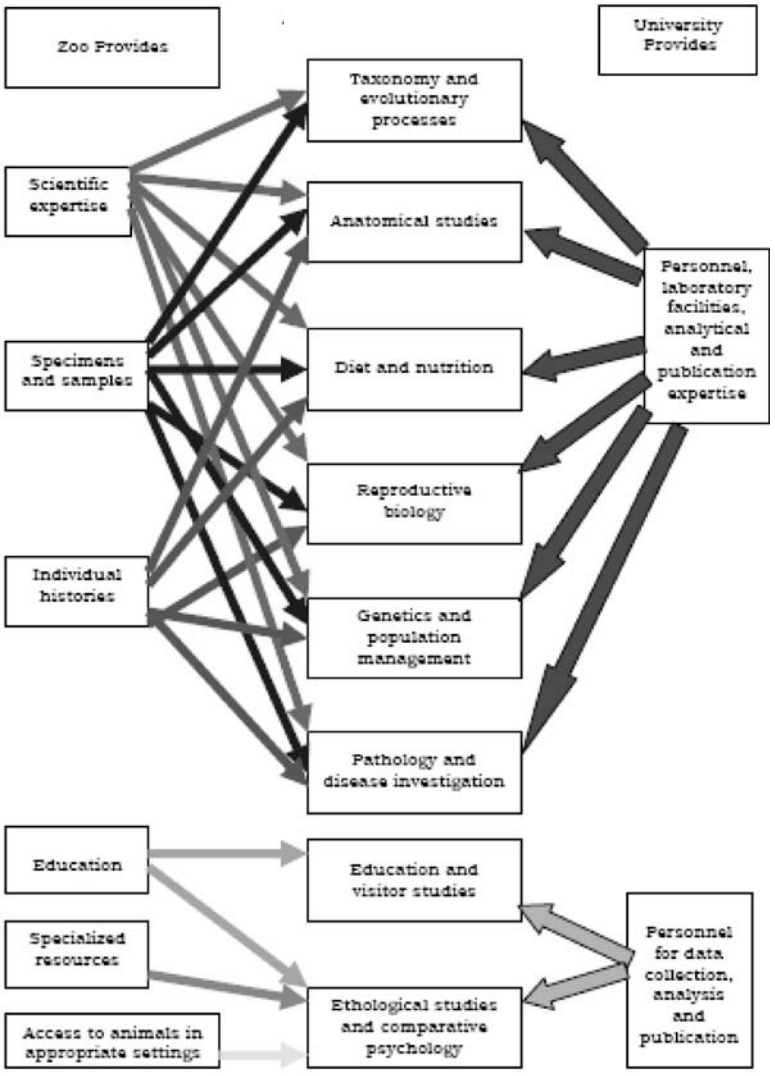
Patterns of cooperative effort should be developed between zoos, universities and research organizations (WAZA, 2005).

Ecotourism
Recreational concept of zoo mandate is to switch over to ecological tourism. "The main objective of ecotourism is to teach people to use natural resources sustainable, to create awareness about importance of forests and wildlife and tune people towards conservation. Ecotourism is a process, not a concept" (Kumar, 2003). Zoological Gardens at the same time can be transformed as ecotourism hotspots with the attitude of conservation.

Strengths and opportunities of ensuring contribution to biodiversity
• Heritage of a wide range of species diversity along with magnificent natural landscape
• Remarkable heritage of natural habitats
• Significant numbers of visitors
• Large number of pro-active persons and institutions with respect to biodiversity.
• Significant number of interested researchers
• Adequate number of universities and colleges along with research fellows

Limitations and lacunaes
• Heterogeneous administration
• Absence of nationally coordinated organization
• Lack of concerted programs and effort
• Lack of capacity
• Reluctance to evolve mandates towards conservation
• Absence of coordinated and official conservation education program
• Red tapism, ownership conflict, socio-economic conditions, fragmentation/deforestation
• adequate wild spaces - healthy habitat.
• Lack of adequate sanitary and phytosanitary measures, waste management, health screening and public health safety measures etc.
• Unsystematic breeding and inbred captive populations

Patterns of cooperative effort between zoos, universities and research organizations (figure from WAZA, 2005)



Threats

- Inbreeding
- Uncoordinated health management
- Ignorance ref. research, education and disease diagnosis
- Emerging diseases
- Lack of capacity in species level management etc.

Recommendations

- Bring all biodiversity agents, administration and proactive forces under a viable discussion forum
- Formulate national guidelines based on tested scientific protocols
- Transform zoological gardens in their ability to communicate effective conservation message
- Establish basic standards of care and for captive wild animals and evolve toward scientific breeding
- All zoo exhibits should be modified keeping in mind first the welfare of animals, i.e. their behavioural and biological needs
- Zoo design should mimic to the extent possible the natural habitat of the animals, while keeping in mind behavioural and biological needs.
- Permanent identification of animals and adoption of ZIMS (Zoological Information Management) software
- Establish animal welfare and zoo legislation with individual species standards for animal management
- Establish human resource management, waste management, public health safety management program in zoos
- Establish standards for attractive, accurate, engaging signage with focus on conservation of wildlife information
- Establish field based conservation education and awareness development

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References

Dollinger, P. (2006). Marketing the conservation role of zoos and aquariums: *Zoos' Print Magazine.* 21(11):17

Kaginkar, Y.R. (2007). Role and importance of Human Resource Management in Modernization of zoos in India. *Zoos' Print Magazine.* 22(2):14

Kumar, B.V. (2003). Opinion Understanding "Eco-tourism". *Zoos' Print Magazine.* 18(12): 6

SAZARC (2002). Zoo Management for conservation and welfare of wildlife --Briefing Book 3rd Annual Meeting, Dhaka Zoo, 6-11 October, Section. 2.

Sultana, M. (2007). Human Resource Management Practices in Dhaka Zoo, MBA (Management) Thesis, IBAIS University, Dhaka, Bangladesh.

WAZA (2005). *Building a Future for Wildlife-The World zoo and Aquarium Conservation Strategy*, Pp. 74

WAZA (2003). Code of Ethics and Animal welfare. Proceeding of the 58th Annual Meeting, San Jos'e. 139-142. WAZA Executive Office, Berne.

Table 1. Animals and Visitor status of different Zoos Safari Park in Bangladesh

Name of the Zoos	Mammals Groups			Reptiles Groups			Birds Groups			Aquariumfish Groups			Grand Total		
	Species	Total Animal	Visitor/year (M)	Species	Total Animal	Visitor/Year (M)	Species	Total Animal	Visitor/Year (M)	Species	Total Animal	Visitor/Year (M)	Species	Total Animal	Visitor/Year (M)
Dhaka Zoo	58	449	NK	12	50	NK	70	1236	NK	30	562	NK	170	2297	4.5
Dulahazra Safari Park	38	2000	NK	12	880, Star tartle 800	NK	90 captive +50 free	481	NK	NK	NK	NK	250	3361	0.4
Rangpur Zoo	17	148	NK	3	6	NK	24	275	NK	NK	NK	NK	44	429	1.5
Chittagong Zoo	28	165	NK	3	21	NK	27	141	NK	NK	NK	NK	58	327	1
RajshaHI Zoo	17	256	NK	2	3	NK	21	274	NK	NK	NK	NK	40	533	0.7
Comilla Zoo	10	60	NK	NK	NK	NK	4	5	NK	NK	NK	NK	14	65	0.35
Kumitolla Golf club Zoo	1	42	0.0365	NK	NK	NK	11	70	0.007	NK	NK	NK	12	112	0.1065
Khulna Zoo (Barabilash)	11	13	NK	2	6	NK	7	10	NK	NK	NK	NK	20	29	0.5
Aranyak Zoo (Saver)	7	32	NK	2	11	NK	11	41	NK	NK	NK	NK	20	84	0.12
Shitesh Ranjan Zoo	8	22	NK	2	4	NK	8	42	NK	NK	NK	NK	18	68	0.1
Barishal Zoo	2	3	NK	1	1	NK	2	4	NK	NK	NK	NK	5	8	0.02
	68	3190	-	15	982	-	99	2579	-	23+7	562	-	212	7318	9.2965