

Another Indulgent Anniversary Editorial

Sally Walker*

Zoo Outreach Organisation began as a zoo organisation and gradually evolved as a more holistic conservation which spans a wide range of fields and disciplines. Most of us at ZOO have multiple interests, perhaps the primary of which we seem to have in common is simply a desire to serve ... to make the world a better place in a number of ways.

One of the ways this has manifested is that our technical staff, all of which have specific interests and expertise, will spend big chunks of their time helping others on staff with projects which might have nothing to do with their speciality. For example, Manju, who is a spider taxonomist, would stop her work and attend workshops or conferences that had nothing to do with taxonomy or arachnids ... she would help prepare and attend, simply digging in and assisting with whatever needed doing. Daniel, an entomologist who chairs the South Asian node of the IUCN SSC Invertebrate Specialist Group has put much of his time and energy into education and has, in fact, an additional speciality in this field. He also attends and assists at our other workshops, conferences, etc. Sanjay just handed in his thesis on small mammals (bats and rodents) distribution in Coorg but he set up and chairs our amphibian network (ANSA) (which represents the IUCN SSC ASG), ZOO's reptile network SARN, and along with me our South Asia Primate Network, which represents the IUCN SSC Primate Specialist Group. Marimuthu is M.Sc. in Wildlife Biology but has taken on the job of managing our extensive education activities and also does much of our zoo work as Sr. Education Officer and ZOO's Zoo Liaison. Latha began as an accountant and, as Finance Director of ZOO Trust, oversees our accounts but is also an expert typesetter, graphic designer, web designer, event planner, report writer and personal assistant to almost all of us in some way or another.

Pravin majored in Computer Science but he manages our many network directories, which is an enormous job that would drive most people to distraction. He is also an expert in graphic design and creates most of our much appreciated workshop banners, manual and report covers, nametags, and anything else requiring a creative touch. Ravi started with us as an office assistant and now is Managing Editor of Sanjay's international Journal of Threatened Taxa. And speaking of that Sanjay is Editor of ZOOS' PRINT magazine (although I do all the work as Editor Emeritus due to my status as "foreigner"). Sanjay was the brain behind the idea of peer review of ZOOS' PRINT technical articles which evolved first to a centre section of ZOOS' PRINT magazine, then (thanks to the regulations of the postal department) a separate publication ZOOS' PRINT Journal and now to a web based Journal of Threatened Taxa JoTT which is international in scope. Sanjay also edits newsletters for his networks SARN and ANSA. Daniel edits two newsletters, one for the Invertebrate Network and another for his pollinator network. Marimuthu helps

with all aspects of our publications and is about to get a lot more responsibility for ZOOS' PRINT. Almost everyone in our office has something to do with getting ZOOS' PRINT out every month.

Sanjay and Latha also helped a lot when ZOO got into trouble with FCRA ... 14 years of unreported foreign exchange! We tried to report but couldn't get the right information. When we found out what to do, we were in trouble and were afraid our accounts would be frozen. Sanjay founded a new organisation called WILD, Wildlife Information Liaison Development, to keep things going until ZOO could get out of trouble, and Latha did much of the running around for the new Society. Friends and colleagues formed the Managing Committee. After a few months of tension and a very informative visit from an FRCA inspector from New Delhi we managed to crawl out from under the cloud.

Our accounting and administrative assistants, Geeta and Radhika (is M.Com.) also type and file and help pack material for workshops and education events as well as anything else that comes along. Our office assistants, Arul and Ravindran also do a very wide variety of jobs they run around, do computer work, assist with all materials, etc. My housekeeper, Saroja, also works for the office as I do not require enough help to keep her busy. She is an immense addition to the office and does so much of our work with our publications assembly.

I put together ZOOS' PRINT magazine, run the two small mammal networks CCINSA and RILSCINSA (which are increasingly coming together since the Rodent Specialist Group of IUCN was closed) Instead of two newsletters, e.g. BAT NET and Rat-A-Tattle, I now edit one bi-annual newsletter called Small Mammal Mail. I am associated with several specialist groups ... Coordinator (now along with Sanjay) of Primate Specialist Group's South Asia network, Convenor and Administrator of the IUCN SSC Bat Specialist Group's regional network, Convenor of CBSG South Asia, of the IUCN SSC Conservation Breeding Specialist Group. Sanjay chaired the Reintroduction Specialist Group's regional network RSG South Asia but I barged in and share the work as co-chair now. I am also Founder and Director of the South Asian Zoo Association for Regional Cooperation, SAZARC and as such have some responsibilities in the World Association of Zoos and Aquariums. Until October I am Regional Rep of the International Zoo Educator Association.

That's the tip of the iceberg of our staff and their duties, talents, dedication, etc. I am enjoying this year of anniversaries because I can take all the liberties I want to blow ZOO's horn and that of the individuals who make up our team. As I have only one family member left in USA and I feel very fortunate to have an additional family in ZOO.

Founder/Hon. Director, ZOO; Editor Emeritus, ZP

Insider Perspective On Zoo Outreach Organisation

B.A. Daniel*

I never knew about Zoo Outreach Organisation until Dr. S. Paulraj, then DFO of Grizzled Giant Squirrel Wildlife Sanctuary gave me a copy of the ZOOS' PRINT magazine casually to read while I was working as an Honorary Biologist at Srivilliputhur, Tamil Nadu. The August 1994 issue of ZP was so interesting to read since the content of it was completely different from the regular wildlife biology articles that I was accustomed to. The next day I had a discussion with the DFO who encouraged me to contribute an article for the magazine on the work I was doing at the WLS and also to meet the founder of ZOO that is Sally Walker. When I called Sally's office I learned that she was getting ready to go to Philippines but gave me an appointment to meet her after her return on 20 Oct 1994.

I had a strong reason for taking up the Hon. Biologist post at Srivilliputhur. After the award of the Ph.D., from University of Kerala on Vector Biology in the year 1992, I moved to my native place Rajapalayam in order to attend my mother who was suffering from throat cancer. At the same time I was also looking for a job where I could utilize my spare time after attending my mother. I approached Dr. Paulraj and expressed my interest about some field research on entomology. On hearing that I am an entomologist he asked me if I can take up entomology work related to elephants. This experience inspired me to switch my field from insect control to insect conservation. With all constraints I spent three days in the forest with some other field assistants and forest guards and took another two days to refer to literature and list down about a dozen projects that I can do linking elephants and insects. He was much impressed with one of the proposed projects entitled "Insect succession during the decomposition of the elephant dung". The outcome of the project was very interesting and got Sally's attention. With this new experience I met Sally after her return from Philippines. That was a perfect coincidence because Sally was also looking for an invertebrate specialist to manage an invertebrate special interest group and to promote invertebrate conservation in India.

When I met Sally and Sanjay Molur at the ZOO office, I did not realize that they knew about the project that I was running at Srivilliputhur. However, she wanted to know how I got involved in elephant dung related research though I am an entomologist. I took a good amount of their time to explain why I had to stay at my native place Rajapalayam and how I identified the elephant dung project. While meeting her I never thought I have a very big responsibility waiting for me and an opportunity to work with Sally and her team.

Years before I joined ZOO, one of their network activities called CBSG, India initiated a "SIG"- or special interest group for Invertebrates the same year which as 1991. However, the commitments of ZOO/

CBSG India in favour of invertebrate conservation initiatives in this region remained unsatisfactory to Sally and Sanjay until 1995. After my meeting with Sally in October 1994, she approached Zoological Society of London's Invertebrate conservation unit Mr. Paul Pearce-Kelly to provide an interim grant for three months to develop a programme which would promote conservation and education with respect to invertebrates in India. Thus I joined ZOO on 1st January 1995 as an Entomology consultant in a pilot project to promote invertebrate conservation in India, which was then a new concept for India. This was supported by Invertebrate Conservation Centre, London Zoo. Though invertebrate research on various disciplines of Conservation Biology was in practice in India there was no coordinated effort by any agent to popularize invertebrates and its conservation. This was found to be one of the major constraints to begin conservation activities. On identifying this gap, we formed a four member 'Flying squad' and took up the task to assess invertebrate conservation status in India. A survey was conducted by sending a set of questionnaires to invertebrate conservation researchers in universities, institutes, zoos, individuals and other interested people at different times with the initial coverage totaling to about 500. Through the questionnaire specific information such as areas of research and group, ongoing projects; research interests, geographic area of study, etc. were collected.

The results of the survey suggested that invertebrate conservation in India was not popular though the importance of invertebrates was well understood. So the Invertebrate Special Interest Group with the completion of that short-term project started functioning as Invertebrate Conservation Network of India with the following objectives

- to promote invertebrate conservation in India and neighboring countries
- to utilise networking, organizing workshops, publications, and education
- to support regional invertebrate biodiversity conservation programmes
- to establish and maintain close links with invertebrate specialists of IUCN SSC,
- to implement *ex situ* and *in situ* invertebrate conservation linking zoos, and
- to popularize invertebrate conservation by establishing a regional network of interested persons, also for sharing collective expertise with SSC/IUCN

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In the meantime the Zoological Society of London permitted the curator of the Invertebrate Conservation Unit Mr. Paul Pearce-Kelly to visit India and conduct a series of workshops in October 1995 on keeping invertebrates for conservation in five South Indian zoos. This initiative was in response to the interest shown by the zoo directors of India who wanted information on how to go about maintaining invertebrates in captivity. The ZSL also invited me to visit the Invertebrate Conservation Unit for a training in captive care and field conservation of invertebrates.

Apart from fulfilling the objectives of the three month project, other projects in the form of new initiatives such as popularising invertebrate species listed in Wildlife protection Act, 1972, plans to publish a handbook on the protected invertebrates, special issues of *Zoos' Print* and *ZOO ZEN* on invertebrates, plans for workshops were undertaken.

During the course of programmes of the Invertebrate Special Interest Group the need for the expansion of the network activity for the neighbouring countries of India was felt. Accordingly, in the year 1998 the Indian network activity was extended to the South Asian region and the network functioned by coordinating invertebrate specialists working in Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka. Hence the activity was renamed as "*Invertebrate Conservation and Information Network of South Asia*" (ICINSA) (pron. ick-in-sah). The purpose of ICINSA invertebrate conservation activities in South Asian countries as well as to promote interest in invertebrates. Now we have members from Afghanistan in the network as well.

During the year ICINSA published its newsletter '*Bugs R All*' (named by Sally and Sanjay) and circulated it to all the 500-plus members. ICINSA formed a regional chapter at Bangladesh in 2000 and Sri Lanka in 2003. The Bangladesh network organized an invertebrate CAMP training workshop in 2002 at the IUCN Bangladesh, Country office. However, the regional networks did not take up actions.

As part of the network activities we developed a directory of ICINSA members, conducted Conservation Assessment and Management Plan (CAMP) workshops for soil invertebrates of southern India, mangrove associated invertebrates of India and aquatic invertebrates (odonates and molluscs) of Pakistan, Training workshop in Field techniques, taxonomy and conservation of Eastern Hemisphere Tarantula, special Issue of *ZOOS' PRINT* for invertebrates, preparation and publication of education materials such as colouring books on ABC of Indian Butterflies and Insects for kids and a Handbook on Protected Invertebrates of India - Part I Butterflies was published. In addition a survey on the pet trade of Eastern Hemisphere Tarantula from southern India to markets abroad and their distribution was conducted.

In view of ICINSA's manifold activities and large membership, Sally approached the Species Survival Commission to initiate the South Asian Invertebrate Specialist Group following recommendations of the SSC Scoping workshop, which was held in November 2001 at Washington DC attended by Sanjay. The SSC Chairman, Dr. David Brackett and the committee accepted the request and invited to form a specialist group for South Asian region. The SAISG was co chaired by Prof. T.N. Ananthakrishnan and myself and hosted by Zoo Outreach Organisation. In 2004 the SG was dissolved by a new Chair, however, early this year the South Asian Invertebrate Specialist Group was reinstated with a new outlook chaired by me and co chaired by Dr. Ather Rafi, National Agricultural Research Center, Islamabad, Pakistan. The Specialist group has various subgroups such as Invertebrate Pollinator Network, Aquatic Invertebrate Network, Terrestrial invertebrate Network, Agro-diversity Network and others pending.

Though I am an entomologist by profession, my other interests such as teaching, coordination etc., did not fade. When I joined ZOO, though I know typing, I had very little experience in computer operations. Now I am well versed with all the basic computer applications and editing tools like Page Maker and also advanced applications like GIS mapping, VORTEX modeling, SIS database entry and a few other conservation related softwares. ZOO also helped me to develop my organizational skills by coordinating or assisting workshops, training programmes, and annual meetings at local, national and International level.

Education is one of the main activities of ZOO. When Sally asked me to help with some of her education programmes during my time at ZOO, I did not hesitate to go to schools to test some of the education materials developed by her and the education team and to get feedback about it before sending it to press for printing. This experience helped me to develop my skills in creating education modules for a wider audience for different species such as Hoolock gibbons, bears, and also to address issues such as human elephant conflict and to promote Human elephant Co-existence. During these years I visited 17 countries, most of them several times.

I also got opportunities to extend my service as assistant editor of ZP magazine, and also the ZP journal which is now Journal of Threatened Taxa. Apart from this I also edited the Invertebrate news letter and assisted in the publication of other network news letters.

I take this opportunity to thank Sally Walker for providing this platform for me to contribute something to wildlife conservation and also all ZOO staff who helped me directly or indirectly in the growth of my career. My wife Rebecca and son Josh who is now doing his first year engineering also join me to thank all at ZOO. I am proud to be part of ZOO family.

Your Turn

From a former Secretary

R. Rajamani*

As for Zoo Outreach and Zoos' Print, I can say with all sincerity that these are outstanding efforts in the field of Conservation. Much as I value insitu conservation, I have never balked at attaching great importance to *ex situ* efforts including captive breeding and re-introduction of threatened taxa. The significance of your effort through these two ventures is that you cover a wide variety of biodiversity from the large mammals to the small ones and the amphibians, birds, reptilians and so on. The web of life is inclusive of a number of elements and can be easily broken with the disappearance of species and non recognition of the fact that human beings are important but cannot survive without their fellow living beings like fauna and flora.

Luckily we have communities and remnants of conservation action and experts who recognise this link. The recognition comes in different ways. The experts dig deep into the science of conservation. The activists are propelled by basic altruism and a desire to ensure we do not get carried away in the name of economic development. The communities have a 'feel' for conservation based on tradition and observation, like a community I read about in a recent issue of "Protected Areas Update", which considers otters 'sacred' and that eating them will lead to distress!

The zoos are places where peoples beliefs are reinforced if there is proper display and emphasis on Conservation Education. The role of entertainment should be marginal and I am glad that Zoo Outreach and Zooprint are doing all this and much more in our efforts to keep the Noah's Ark going!

With all good wishes

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"YOUR TURN" is a column developed for readers to comment on the performance of ZOO over the last quarter century.

From a vet in wild

Mir Gowher Ali Khan*

I remember well that once a little late in the night the Late Mr. Pushp Kumar (LATE) informed me that Ms.Sally Walker is already in the Guest house of Nehru Zoological Park, and arranging for her break fast was my duty. As the bakery and food stores of my locality were closed long back, I sent my son to city in the shivering cold to fetch these.... This must have been still in the 1980's.

Our first meeting was in the Zoo Guest house at the breakfast table. Strange! Ms.Sally did not touch butter and jam, but took a few pieces of bread with Omelet and gulped down a cup of hot tea. Back home when my wife saw the Butter and Jam bottle untouched, she smiled and said, "The lady seems to be much conscious of her health."

"Yes," I said, "she is not only of her health but also of the health and management of the captive wild animals housed in various zoo parks of India and South East Asian countries."

Soon she started publication of "ZOO'S PRINT" in order to disseminate the knowledge of wildlife management and Zoo medicines amongst the Zoo managers and Zoo Vets. This Journal was the need of the hour. It was welcomed by one and all, and is still being appreciated and read widely. When she could not get any serious article from me, she complained and asked me to write "ANYTHING". The result was that I sent her many humorous articles that still gave an insight into the problems faced by Zoo Vets and their solutions.

In June 2001, these funny articles took the shape of a book, 'A VET IN WILDERNESS', due to her encouragement as an old man now turning eighty. I pray ALLAH, THE ALMIGHTY to give Ms. Sally Walker a long and healthy life so that she can go ahead with her ambition and task of enriching the zoo management with her vast experience and knowledge AMEN. I also send my hearty congratulation and best wishes to her, her colleagues and staff on the completion of twenty-five years of ZOO, ZOO PRINT, AND ZOOZEN.

JAI HO

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My Experience with Zoo Outreach Family

Dr. N. Krishna Kumar*

During the past one decade and over, the issue of zoo management has assumed increasing prominence at the national and international level. This is a welcome development very much wanted particularly in Indian zoo scenario. The establishment of Central Zoo Authority (CZA) in India and the zoo policies and rules brought out by them, have given new dimensions to zoo management. Recognizing the importance of zoological parks particularly with reference to its role in ex situ conservation of endangered species, almost all zoo management responded significantly to improve the standards. In the recent years, through good governance, effective monitoring, rules, policies and technologies, all facets of zoo management have seen constructive changes. However, the problem that zoo management faced before the establishment of Central Zoo Authority and immediately after, were too many. Zoos did not want to change readily and allergic to new ideas. Such challenges and problems exist even today. However the zoo management and the forest department run zoos that responded to the demanding changes have emerged as successful zoological parks in the country today.

The role of Zoo Outreach Organisation, which started in areas of zoo management and education, has been commendable for more than two decades. The initiatives taken by the ZOO team under the able leadership and team-work of Ms. Sally Walker needs recognition and appreciation. The Zoo Outreach family have today spread their activities into many facets of zoo management and conservation. Best practice in zoo management all over the world were constantly projected by them through scientific articles published in Zoos Print, which remain good reference material for zoo managers, zoo veterinarian and zoo educators. Their role in organizing zoo-keeper training, visitor management, and endangered species conservation programs needs appreciation.

Some of the best years of my service had been in Arignar Anna Zoological Park (AAZP), Vandalur. Wildlife management, particularly, *in situ* conservation is an area of interest that I had pursued as a student and after entering the forest service. *Ex situ* conservation of wildlife in zoos was a new area that I got introduced to in AAZP. Though I had seen zoos and botanical gardens as a student, zoo administration and management were areas in which I required expertise. I took an in depth look at the collections of books and journals in AAZP. The zoo library had many collections of Zoos Print, the magazine of Zoo Outreach Organization which came very handy for my understanding. Ms. Sally had maintained good rapport with Vandalur zoo since its inception. She was appreciative of the zoo, as this was the only large zoological park in the country with three zoo educators doing commendable work in zoo education and awareness.

During my stint in the zoo from 1997 to 2001 as a Deputy Director and later as a Director, we ran many workshops, trainings and awareness programs with Zoo Outreach Organization. Our efforts and innovations in zoo education, enrichment of animal enclosures, initiatives in small mammal, amphibians and invertebrate diversity exhibition and conservation were earnestly appreciated by Zoo Outreach. We also obtained good literature, especially with reference to best practices in maintenance of zoos which became source of guidelines for practice. We frequently exchanged views with Zoo Outreach in areas of zoo management. I still remember Sally's participation in the India's Zoo Vision Plan 2010 organized by CZA. My experience with ZOO, particularly after my visits to few zoos abroad in Hungary, Paris, Germany and Slovakia enabled incorporation of new initiatives for the first time in Vandalur Zoo, like the zoo classroom, zoo school, zoo volunteer programs. These initiatives brought a drastic change in the performance of the zoological park in the area of zoo education and awareness. Such efforts were not only welcomed by the public but also drew overwhelming response from the zoo visitors. My experience in zoo education and awareness were frequently shared in the Zoo's Print Magazine.

The Zoo Outreach Organization has made a mark in the various areas of zoo management. They have immense resource and potential and in the days to come will continue to render valuable support for Indian zoos. I wish all their effort in the Zoo business and conservation a big success and am confident that their service will gain greater recognition.

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Announcement

Reinstatement of IUCN / SSC South Asian Invertebrate Specialist Group

We are happy to inform that Dr. Simon Stuart, the present chairman of IUCN SSC supported the recommendations of Invertebrate Conservation Sub-Committee lead by Prof. Michael Samways to re-instate the South Asian Invertebrate Specialist Group with effect from 28th January 2010. The re-instated South Asian Invertebrate Specialist Group SAsISG will run in association with *Invertebrate Conservation and Information Network of South Asia* (ICINSA) hosted by Zoo Outreach Organisation (ZOO) / Wildlife Information Liaison Development (WILD) Society / CBSG, South Asia based at Coimbatore, Tamil Nadu, India. Dr. B.A. Daniel, ZOO, Coimbatore, India is the chair and Dr. Ather Rafi, National Agricultural Research Center, Islamabad, Pakistan is the co-chair of the SAsISG.

The Zoo Outreach Organisation which has been working for zoos and wildlife conservation since 1986, initiated Indian regional Invertebrate Specialist Interest Group under Conservation Breeding Specialist Group, India (now South Asia) in the year 1991. In the year 1995, the Indian Invertebrate Conservation Network was formed with the support of Invertebrate Conservation Centre, Zoological Survey of London. In the year 2000, the network was expanded to all south Asian countries (Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka) and is now called the Invertebrate Conservation and Information Network of South Asia (ICINSA). The objective of the network is to promote invertebrate conservation in South Asia.

In November 2001, IUCN SSC organized a scoping workshop at Washington DC and as per the recommendations of the workshop a request was made by ZOO to SSC to initiate a Specialist Group for the South Asian region considering the difficulties in forming taxon based Specialist groups for invertebrates. Crediting the manifold activities of ICINSA and its large membership, Dr. David Brackett and the committee approved the formation of region based Specialist Group for Invertebrates in December 2002. It had a total of 25 invited members in the group. However, that SG was dissolved in August 2005 along with many other SG of IUCN SSC since the new SSC Chairman after Dr. David Brackett wanted to bring in some change in the existing activities of IUCN SSC.

The reinstated South Asian Invertebrate Specialist Group will cover the following 8 countries: Afghanistan, Bangladesh, Bhutan, India, Pakistan, Maldives, Nepal and Sri Lanka. The objectives of the SG is to assist individuals, institutions and agencies in South Asia to conserve invertebrates. Invitations for the membership are being sent out and the membership will be on invitation basis.

Some of our future activities of the Specialist Group will include:

- Identification of invertebrate specialists and interested people, networking, publication of newsletter and training.
- To strengthen the existing network activities of Invertebrate pollinator and aquatic invertebrate conservation through networking, capacity building, publication and education in South Asia
- To work on the tarantula trade issue and on the taxonomy and status of mygalomorph spiders in south Asia.
- To assess freshwater species in Eastern Himalaya and Western Ghats with IUCN freshwater Biodiversity Assessment Unit.
- To host / organise training programmes and symposium on selected invertebrates.
- To compile data for assessments on several groups of invertebrates for global, regional and national assessments in South Asia involving network members.
- To develop education manual and packets for South Asian audience on climate change and species.
- Publication of invited and special articles on themes related to invertebrate conservation and taxonomy particularly from South Asia utilizing the on-line open access peer-reviewed global journal on conservation and taxonomy, Journal of Threatened Taxa.
- To develop some action plans for select groups of invertebrates.
- To develop education materials to popularize invertebrate conservation.

For more information contact Dr. B.A. Daniel (badaniel@zooreach.org) or Dr. Ather Rafi (a_rafiyam@yahoo.com) or write to South Asian Invertebrate Specialist Group, IUCN SSC C/o Zoo Outreach Organisation P.O. Box 1683, Peelamedu, Coimbatore 641004, Tamil Nadu, India Phone: +91 422 2561087; Fax: +91 422 2563269



25 years ago in ZPt, April 1986. Vol. 1, Issue 4, 1986

This section of ZOOS' PRINT was suggested by our long term friend, Manoj Mishra who thought younger readers might like to know what people were writing about 25 years ago.

The first article is by my mentor, Shri C.D. Krishne Gowda who was very much interested in breeding the Hunting Cheetah. Krishne Gowda had procured what might have been the last and surely one of the last Indian cheetahs in captivity. When I joined the Mysore Zoo as a volunteer and a loyal student and fan of Krishne Gowda, I tried hard to get a mate for this cheetah, not even understanding maybe that there was some dispute about the taxonomy and origin of cheetahs. Anyway I could not succeed but later KG got two African hunting cheetahs which were released into the three acre area which KG lovingly designed for a cheetah breeding programme. In no time, the healthy imports had climbed up on the wall of the enclosure, something the old Indian cheetah had not figured out or physically could not manage. This article was reprinted in ZPt 1986 with KG's permission from the Proceedings of the prestigious Conference on Endangered Species sponsored by JWPT to which KG had been invited but could not go for want of permission and funds - Sally Walker, Founder & Editor Emeritus

A Breeding Programme For Hunting Cheetah

By C.D. Krishne Gowda, 1970

Reprinted from BREEDING ENDANGERED SPECIES IN CAPTIVITY, Proceedings of the Conference on Endangered Species sponsored by Jersey Wildlife Preservation Trust, London 1972. This article was written over 15 years ago by the Curator now Director of Mysore Zoo. In the present plans for releasing cheetahs, why are the old zoo directors not being consulted?

The famous Indian hunting cheetah (a subspecies of ACINONYX JUBATUS) once reigned over the plains and hills of Northern and Central India, and their geographical range extended up to the Deccan Plateau and to Mysore. But the present picture of the status of this famous animal is a distressing one. For example, not a single cheetah has been sighted in the forests of India over the last few decades. It would seem that the species is extinct or almost extinct in India, and it is necessary to start at once on a programme for captive maintenance, breeding and reintroduction to suitable habitat areas. The only solution would seem to be the introduction of wild or captive-bred specimens of the African subspecies.

The cheetah, being an animal which moves very swiftly, requires a considerable area for the performance of its natural activities, preferably a flat forest area containing many rodents and birds. A suitable forest zone could be located in one of the

two districts of Bellary and Tumkur in Karnataka State.

At this point, it should be emphasized that hunting cheetah have been bred only very rarely in captivity. Only two zoos, namely Whipsnade Park and Montpellier Zoo, claim the distinction of having bred the African subspecies of this animal in captivity.

Thus, it would seem that the most promising strategy for re-establishment of the cheetah lies in protection of a colony in a natural forest area. For this purpose, it is necessary to select and fence off about 100-200 acres to serve as a breeding area.

The area would have to be stocked with various ungulates, birds and rodents before the cheetahs are introduced. After the prey species have settled down well, a foundation breeding stock of two male and four female hunting cheetahs could be introduced into the fenced area and provided with complete protection against external intervention of any kind. Even the officials involved in the breeding programme for these animals should reduce their visits to a minimum in order to avoid frightening the animals. The original foundation stock of the African subspecies of the cheetah could be obtained from the Mysore Zoo or directly from Africa, Given scope for unlimited movement and full protection against disturbance from outside, it is quite possible that the cheetah would breed well in the fenced area. Any offspring could subsequently be moved into the larger surrounding forest area to live in complete freedom, though protection against poaching would be essential.

This project could be supervised by the Forest Range Officers with the guidance and cooperation of the Mysore Zoo authorities. Needless to say, all such projects depend on full and wholehearted cooperation from the Karnataka State Forest Department to ensure their success.

The Brow-antlered Deer Its status in the wild and in captivity

J. H. Desai

Director, National Zoological Park, New Delhi

Like many other threatened species, all three subspecies of races of the Brow-antlered deer are in serious danger of extinction in their natural habitat. The three races are confined to South-east Asia from Manipur to Burma, Thailand, Kampuchea through Laos and Vietnam. The Burmese race (*Cervus eldi thamin*) is still believed to occur in small numbers in parts of Burma and Western Thailand. The Thailand race (*Cervus eldi siamensis*) was previously widespread in Thailand, Kampuchea, Southern Laos and Vietnam but habitat destruction

and over hunting have resulted in its almost total disappearance. It is considered to be extinct in the wild since 1972.

The Manipur race, locally called Sangai-meaning "the one who looks at you" was always confined to the valley of Manipur. For many years the Manipur deer had been hunted relentlessly and their decline has been compounded by ruthless poaching. In fact at one stage the sub-species was considered extinct but in 1950 a small herd was discovered in the Keibul Lamjao region at south eastern corner of the Loktak Lake. This led to the creation of a sanctuary 50 sq. km. in extent in 1966. The status of the sanctuary was raised to that of a National Park in 1977 after an aerial survey revealed that only 14 Sangai were left in the area. The protection measures in the newly constituted Keibul Lamja National Park improved the situation. The results of another aerial census conducted in March 1979 indicated that there were 30 Sangai comprising of 9 stags, 23 hinds and 8 fawns. According to a ground survey carried out in 1985, it is estimated that there are 50 specimens in the Keibul Lamjao Park. Situated at an altitude ranging from 850 to 950 meters, the Keibul Lamjao National Park covers 40 sq. kms. of swampy area surrounded by small villages. It forms a part of Loktak Lake which is the largest natural lake in the eastern region of the Indian sub-continent. The unique feature of the lake are the floating swamps called the 'phumdis' which are formed due to accumulation of soil, dead and decaying vegetation and organic matter as a result of run-offs from the catchment hills on which tall reeds and grasses grow up to three meters or more. Phumdi varies in thickness from 15 cms to 142 cms, the mat actually floats on the lake with one-fifth of it above the surface and four-fifth of it below. The Sangai and a variety of other species such as Hog deer, common otter, civets, wild boar etc. inhabit such floating islands which cover one third of the area of the National Park.

The Manipur deer breeds only once in a year. At the National Zoological Park, New Delhi, the rutting season is from March to April, the stags shed their antlers in late June. Out of seventy four births, sixty (81%) fawns were born during October-November. There was no instance of twins. The gestation period varied from 236 to 244 days with an average of 240.4 days. Newly born fawns weigh four to six kilograms; they are weaned in three months and attain sexual maturity at the age of three to four years. The average life span is about fifteen years.

The results of the captive breeding programme are so far encouraging. However, in captivity populations tend to remain small due to limited resources. Such small populations are vulnerable to both demographic and genetic problems. The best known of the genetic problems in captive populations is inbreeding which is the loss of diversity resulting from breeding animals that are related to each other. Inbreeding can also affect vitality, survival of newborn and fertility of

individual animals. The herds at Delhi and Calcutta have been inbred for a number of years and though the ill-effects of inbreeding have not manifested as yet in either herd, it is desirable to add a few unrelated individuals to the stock to maintain their genetic vitality.

While admittedly, zoos cannot be considered the last alternative for survival of the species, they can help in reviving the population above the critical level and serve as repositories until they can be introduced in the wild. However, any attempt to reintroduce the Manipur deer into the wild at present is neither practicable nor would it be conducive to the overall welfare of the subspecies. Reintroduction must depend on the development of a proper management plan in confirmation with a parallel programme of rehabilitation of the present habitat or creation of an alternative habitat. A first step in such a strategy is to acquire more detailed information on the habitat analysis and related aspects. Meanwhile, it is most important to preserve each and every captive individual in zoos, particularly since the chance of adding animals from the wild are remote. To maintain the highest genetic diversity, cooperation among zoos is indispensable.

If the conflict between man's continuing demands and needs is not to result in the tragic and unjustifiable extinction of the Manipur deer, we have to act fast to save its present natural habitat so as to make it possible for the existing herd to thrive and simultaneously continue the captive breeding programme.

This article was a presentation in the Zoo Management Symposium 1985, National Zoological Park, New Delhi.

Note on Breeding of Silver Pheasants at Jodhpur Zoo

By V.K. Bissa

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Cock: Silver pheasant is the largest and whitest pheasant of its many sub-species. Central body is white but three or four black lines run across each feather in vermicular form. Red velvet skin on both sides of the eyes adds significant beauty to the bird. The neck and the breast of the pheasant is dark shining black while legs are of rose colour.

Hen: These are mainly olive brown with more or less inconspicuous black vermiculation and crest is tipped with black.

Behaviour of pheasant at breeding time: I have noticed that during breeding season, which falls in

January first week every year, the cock becomes active and it also shows enlargement of its red velvet spots. It runs after the hen to make it sit. When the hen goes on running then it runs faster than hen and attacks her with its beak and spurs. After chasing for one or two days it ultimately makes hen to sit. As soon as hen sits the cock furiously bites her cheeks to bleeding point and coition is completed ultimately. After first coition the hen takes 7 days to lay eggs. Eggs are reddish brown in colour and the size is equivalent to the size of common hen's eggs. Successful coition may go on every day but the hen lays eggs on alternate days till 12-15 eggs are accumulated in the nest installed by keeper of the cage.

Incubation: As soon as ovulation is completed the hen incubates its eggs exactly for 24 days and leaves the nest with 3 or 4 chickens out of such a large stock of eggs. Remaining eggs have been either rotten or unfertilized.

Experiment conducted: In 1983 the process of egg laying went on for 24 days and the hen sat for incubation instinctively but I had seen that only two chicks out of 14 eggs hatched. Next year i.e. in 1984 I allowed only 7 eggs under the common hen as a foster mother. I was able to get 2 chicks from the foster mother out of 4 eggs and two from the hen by its own eggs.

This article was a presentation in the Zoo Management Symposium 1985, National Zoological Park, New Delhi

Development of Zoos and their Role in Conservation

By M. Kamal Naidu, I. F. S.

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Historical Development of Zoo Concept

Man has been associated with animals from the dawn of civilization as seen from the drawings of the ancient cave dwellers. He was first associated with them as a hunter, thereafter in the act of domestication of a few animals and birds as pets for utility reasons. Thereafter with the progress of man and his economic development he has become a threat to the very existence of animal life on earth and now even to himself. Now in the context of the conservation movement, zoos have realised their role as of equally great importance for saving the threatened and vanishing species.

The earliest concept of zoos can be said to have originated some 4,500 years ago when the first elephants were domesticated in India. About the same time as evidenced from pictures in the Egyptian tombs are seen animals like Ibex, Oryx and Gazelle with collars around their necks, indicative of them being kept as pets. In ancient Mesopotamia pigeons have been reared as pets. Thus it has been established that keeping of wild animals and birds as pets and their care has originated in ages long past.

In later years in China, Empress Tanki built a marble palace in 1150 B.C. called the "House of Deer", but the credit of establishing a Zoological Garden goes to the Chinese Emperor Wen Wang for his "Intelligence Park" set up at a little later period over 1,500 acres for the amusement of the Emperor and his court. About the same time in the West, Queen Hatsheput of Egypt kept monkeys, leopards and giraffes as pets in her palace. Much later in the 4th century B.C. Alexander the Great, a great collector of strange wild animals during his expedition requested Aristotle to organise and study the behaviour of captive animals in his menagerie and thus the beginning of education aspect of the zoo began. The Romans however maintained animals more for their entertainment especially in the arenas till about 300 A.D. Nero, noted for playing music while Rome burned is said to have kept a pet tiger named 'Phoebe' which took food at his table with him. Thus the animals came to be kept as pets for entertainment and also for study. However the first recorded attempt at conservation of animals is recorded in the old Testament with reference to Noah's Ark when it was proposed to take on board 7 pairs of each species to save them for posterity by tiding over the devastating fury of the storm.

Coming to more recent years it was reported by Marco Polo in the 13th century of having seen a zoo at Xanadu belonging to Kubla Khan. Later the Spanish traveller Hernado Cortez in 1519 reported having seen animals in captivity in Mexico and maintained by a large staff. About this time or a little later in India, Jahangir had kept exotic animals and even hired painters to paint their portraits.

Concept of Modern Zoo

The concept of Modern Zoo as understood today dates/back to 1752 with the establishment of the Imperial Menagerie at Schonbrun Palace at Vienna. Then, in Paris, the first Zoological Garden opened to public in 1793 by Louis XIV, the famous "Jardon des Plantes". The first zoo in USA was opened at Philadelphia in 1874. Therefore by the middle of the nineteenth century the importance of zoos was established all over the world.

The first zoo in India was established at Madras in 1855 followed by Calcutta in 1875, and Trivandrum in 1877. Many zoos came up in India under the patronage of the Maharajas and Rajas in the princely

states like those at Mysore, Jaipur, Udaipur, Baroda, Bikaner, Hyderabad, etc.

In the early years of this century, Sir Peter Chalmer Mitchell, Secretary of London Zoological Society suggested the need of fresh air and open enclosures by panoramic display rather than closed cages for animals. This concept resulted in a new era in Zoo Management when Carl Hagenbeck opened his zoo in 1907 at Stellingen with open enclosures and several animals left loose instead of solitary animals in confinement, followed by the famous "Mappin Terraces" in 1913 providing rocky ledges and heights for goats and open dens for bears. In 1931 was established the first complete open zoo in the world at Whipsnade where animals were kept in open paddocks. In India, the old Hyderabad Zoo built during the Nizam period can boast of moated enclosure for the tiger as early as 1930. The Indian Board for Wildlife in its first meeting had recommended the setting up of zoos with a conservation orientation primarily giving importance to research and education. This had resulted in the establishment of the National Zoological Park at Delhi with large open enclosures for the free movement of animals, expanse of water interspersed for the resting of migratory water birds and indigenous species, large gardens having lawns for people to relax when tired in moving about the vast spread-out area. The zoo was followed up by the Nehru Zoological Park at Hyderabad which had the advantage of improving on the shortcomings of the zoo at Delhi. Now the latest trend has become, in zoo management, the safari concept having enclosures of 5-15 Ha. in extent enclosed with a group of animals in the natural surroundings, having a network of roads, often called as "Zoo in reverse" as the spectators go about in enclosed vehicles. Now many zoo are coining up in the country being established by the several states with yet larger areas and larger enclosures, the notable among them being in Nandankanan, Bhopal, Kanpur, Chandigarh, Madras, etc.

Zoos role in Conservation

Zoos have become concerned with conservation effort from the sixties. In 1964 under the auspices of IUCN a symposium was held at London on the subject "Zoo and Conservation". It is not that prior to that zoos

were not concerned with it. Modern Zoos have always been very proud of their breeding records and always made efforts to minimise their mortality rate. This very aim may be viewed as a major contribution towards conservation effort. However the earlier zoo policy had not envisioned zoos as potential saviors of whole species. Otherwise probably species like the Passenger pigeon, Quagga, and Indian Cheetah could have been saved. The history of wildlife conservation really started in 1931 when J.C. Phillip founded the American Committee for International Wildlife protection and launched a project for comprehensive study of mammals which had recently become extinct or were vanishing.

Zoos have been blamed for depletion of rare species in the cause of collecting animals for display. It is said that several specimens are killed to get a few live specimens to adjust to their new environment. This supposition has been belied as a result of the recent survey conducted by the American Association of Zoological Parks and Aquariums which stated that the capture of animals from the wild for zoos is only 1% while the balance 99% goes for skin, fur, food, and horn trade, medicinal research and as pets.

Species of birds and mammals are getting extinct by several artificial factors. The greatest factor contributing towards the decline of the species is habitat destruction due to increasing population and attendant economic development. Warner King has estimated in case of birds that 65.9% of causes of endangerment are due to habitat destruction, 24.9% due to hunting and 10.6% as due to human molestation of young and eggs.

Thus it can be seen that zoos have not been the major contributors to the disappearance of species but there are many other factors. The species that have generally become vulnerable for destruction are those requiring large home ranges, species resident of very fragile ecosystems, those having traditional breeding places, these with poor dispersal capabilities and having a small geographical distribution.

A study of the data from 1962-76 obtained from the International Zoo Year Book made by Pendor &

Table: A Study of the data from 1962-76

IUCN Category	No. of species listed	No. of species exhibited	No. of species bred	No. of species studied
E	132	82 (62.12%)	53 (29.12%)	24 (18.18)
V	64	52 (82.81)	41 (64.04)	20 (31.25)
R	56	27 (48.21)	13 (23.21)	2 (3.57)
O	7	5 (71.43)	4 (57.14)	3 (42.86)
I	15	8 (53.33)	4 (26.27)	1 (6.67)
X	*	54	46	11
Total	274	228	161	6%
		175 (63.89)	115 (41.97)	50 (18.25)

*Here the species are not currently listed. Figures in brackets are percentages.

Borkham indicate the significant effort made by zoos of the world towards conservation success:- It is seen that only 63.87% of the listed species are exhibited in the zoos. Among the exhibited species 70.31 % have bred and 22.20% have been studied. In 1909 it was reported by Beebo and Crondall that only 82 species of wild birds bred at least once in American zoos or by private aviarists, but in 1972 it is reported that 820 species and sub-species have bred throughout the world signifying a great achievement towards the conservation efforts of the zoos.

Thus it can be said that since such a high percentage of the species are breeding, endangered species can be, rather should be actively considered for captive breeding unless the natural habitat can be securely guarded against the adverse factors contributing towards the decline of the species. In this regard it should be constantly remembered that conservation effort by captive breeding should be initiated before the wild population drops to too low a level as to make the gene pool deficient.

Some of the outstanding successes of captive breeding achieved in the zoos in India and abroad are noteworthy:

National Zoological Park, Delhi has a proud record of breeding the Manipur deer starting from a pair presented to it in 1962. Between 1962 to 1985 there have been 74 births. The present population is 18. In the meanwhile breeding pairs were also given to other zoos where also they are breeding. In contrast, in the wild the species has further dwindled to 15 owing to the destruction of its habitat. Similar success has been achieved with the Lion tailed Macaque starting with a pair in 1959 and has now 21 after gifting away a number of them to other zoos.

The Nehru Zoological Park at Hyderabad has successfully bred the spotted deer, mugger crocodiles in the zoo and released them in their natural habitat at several places. The other species which have successfully bred in the zoo are tiger, gaur, nilgai, Indian rhino, black-buck, sacred baboon etc. Gir lion and the Asiatic wild ass of Gujarat have also been successfully bred in Junagadh. Those species are vulnerable in their natural habitat. In many other zoos of India like Mysore, Trivandrum, Calcutta, Lucknow, Ahmedabad, Jaipur etc., successful breeding of many species have been achieved both of indigenous and exotic ones.

Internationally the Prezwalski's horse is a very good example of the preservation of a species which could have been extinct but for their presence in zoos. There were only 56 specimen in zoos in 1959 and had increased to 150 by 1966. Then there is the Pere David's deer, European and Arabian oryx and the Nanegoose and Laysan teal, which have been successfully saved from extinction.

It is also a well known fact that chances of survival are greater in many cases of a species in captivity than in nature. In zoos the stress factor is less for the animals are free from competition, from predators and other enemies. The chance of survival is greater for young and aged of a species because of an assured medical care, food and shelter. It has been established by studies that early mortality is higher in the wild than in captivity and so also that animals live longer. Again, even in wild the population may reduce to a state of isolation of specimens and thus preventing breeding which could be overcome in captive breeding.

Thus it can be said that zoos of the present day a hand-maiden to the conservation movement and not a drain on the declining resources.

Suggestions for contribution towards conservation:

1. Number of species should not be a criteria for the importance of a zoo but it's breeding success.
2. Detailed study of a species, its behaviour and natural habitat should be made to provide adequate simulated conditions to give the species an opportunity for adaptation.
3. Conservation effort should start while there are adequate numbers still left in the wild population so that a gene pool deficiency does not occur. The breeding group of such species should be established as soon as possible.
4. There should be a systematised data available of all zoos having such of the species to facilitate a breeding programme as regards the sex, age, number available, nature of origin, etc.
5. Zoo should preferably specialize only in such of the species that are climatically within the range rather than subject the species to drastically altered environmental stress factors.
6. In some cases it must be realised that captive colonies of a species is an end in itself with no further scope of re-introduction back to nature nor is there an alternative area. e.g. Manipur deer are species of very specialised requirements.
7. A great stress should be paid to hygienic factors in captive breeding to guard against diseases, pests and parasites.

This article was a presentation in the Zoo Management Symposium 1985, National Zoological Park, New Delhi.