

Gerald Durrell's Army in India: First Endangered Species Recovery Course at Darjeeling, India

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A course on "Endangered Species Recovery" was organized by Central Zoo Authority, New Delhi and Durrell Conservation Academy, Jersey, United Kingdom in collaboration with Padmaja Naidu Himalayan Zoological Park, Darjeeling from 17-21 November 2012 at Darjeeling. The programme started with the inaugural function on 17 November in which Dr. Subesh Kumar Das IAS Additional Chief Secretary (Forest) Govt. of West Bengal, Shri B.S. Bonal IFS Member Secretary, Central Zoo Authority, New Delhi, Dr. Saumitra Mohan IAS District Magistrate, Darjeeling, Mr Mark Brayshaw, Head of the Wildlife Park, Durrell Wildlife Conservation Trust and Mr. A.K. Jha IFS Director PNHZ Park on the dias. Other distinguished guests were also present in the inaugural function. Dr. Das and Dr. Mohan during their address to the gathering expressed their appreciation on the initiative taken by the Park towards conservation of wildlife. Mr. Bonal during his address highlighted the importance and the need of such a training programme and inaugurated the workshop. Mr. Brayshaw in his speech said that he was honoured to be here and thanked the organizers for the programme. A vote of thanks was proposed by Dr. Brij Kishor Gupta, Evaluating and Monitoring Officer, Central Zoo Authority.

The Course has been unique in the feature that it was attended by six friends from Bhutan, Nepal and Sri Lanka, (two persons each) and 31 Directors, Veterinarians, Assistant or deputy Directors of 31 Zoos from all part of India.

Presentations

Day 1: 17.11.2012

The evolution of Durrell by Mr. Mark Brayshaw that reflected the stages that Durrell has gone through in its evolution as a conservation organization with a zoo at its heart.

Zoo Strategy in India – Past, Present and Future by Mr. M.S. Bonal where the Central Zoo Authority Rules, Regulations and Policies were highlighted.

Endangered Species Recovery- Excellence within a modern Zoo by Dr. Tim Wright. The presentation pointed out as to how we can optimize the way in which we run our zoos, and maximize their conservation role. The objective of the course were also highlighted such as "our vision as a zoo community, vital role of leadership, keys to successful project management, understanding the needs of the species in our collection, understanding captive management population" etc.

Managing Mammalian Carnivores in Captivity- Lessons learned by Dr. Andrew Routh describing the AZA and EEP requirements such as housing, feeding, breeding and enrichment for Large Felids taking three species of genus *Panthera* (*tigris*, *uncia*, *leo*) and *Neofelis nebulosa* as examples.

From Kanchendzonga- the land of Red Panda by Mr. A.K. Jha. The presentation gave a brief overview of Darjeeling, Darjeeling Zoo, the objective of the Park including the ongoing Conservation Breeding Projects especially the Red Panda (*Ailurus fulgens*) and the Snow leopard (*Uncia uncia*) breeding projects and, its *in situ* linkages. The day ended with the participants visiting the Snow leopard Conservation Breeding centre – an off display area at Padmaja Naidu Himalayan Zoological Park.

Day 2: 18.11.2011

SWOT analysis and its feedback – The participants were divided into five groups where each group had to mention the Strength, Weakness, Opportunities and Threats to a Zoological Park. Each group shared their views where maximum agreed that policies and guidelines, management plans, funding (Government and visitors), Conservation Breeding Programmes for endemic species as strengths to zoos, while socio- political interference, uncertain tenure of managers, space constraint, inadequate staff, lack of research activities and poor record keeping were considered as weakness of a zoo. On the opportunity category the factors were – of tourism, research and education scope, scope for financial sustainability and various training programmes. Amongst the threat the highlighted ones were sustainability of management, diseases and political instability.

Species Talks

- Norms for establishing Conservation Breeding Programme of Central Zoo Authority funding by Dr. Brij Kishor Gupta.
- Conservation Breeding Programme in ASZBG, One-Horned Rhinoceros and Golden Langur by Mr. Utpal Bora. The presentation highlighted the Conservation breeding programme of the species at Assam State Zoo cum Botanical Garden.
- Conservation Breeding Programme for Western Tragopan by Mr. Satish Negi
- Activities on Conservation Breeding at Sepahijala Zoological Park (Clouded leopard) by Mr. A.K. Bhowmik.
- Hope for Hangul by Mr. Intesar Sohail, Jammu and Kashmir.
- Conservation Breeding of Hoolok Gibbon at Biological Park, Itanagar by Mr. Joram Dupam, Arunachal Pradesh.
- Conservation Breeding Programmes at Arignar Anna Zoological Park Chennai (Lion-tailed Macaque) by Dr. R. Thirumurugan
- Conservation Breeding Programme of Mouse Deer, Nehru Zoological Park, Hyderabad by Dr. Srinivas.
- Conservation Breeding Programmes of Indian Pangolin Nandankanan Zoological Park, Bhubaneswar by Dr. S. Panda.
- Lecture on Leadership and by Mr. Jamieson Copsey on "Leadership and Management" points highlighted were leadership experiences and preferences, X and Y Theory, dimensions to leadership, etc. The lecture concluded on the note that Leadership is a responsibility as managers. We need to remove de-motivators and encourage the inner motivation within our staff- empower them to act, as a leader you should also act on the person and on the system, approach should change and at its core conservation leaders need to inspire a long-term vision.
- This lecture was followed up by another lecture on Project Proposals and Project designing. Issues like Project structure, Impact, Design team, What makes them succeed and fail including project experiences were discussed and shared.

A summary of the Day 1 and Day 2 activities were made at the end of the day on the following topics.

- Leadership crucial for project success.
- SWOT analysis as a decision making tool

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- Preparation of project proposal- Vision, objective and goal.
- Effective management role- Situational leadership and X-Y leadership.

Day 3: 19.11.2012

- Enclosure Design – Questions we should ask: Biological and behavioural need of the species, Health Management, Keepers needs, Risk management, Location and Logistics, Visitors need and Funding.
- Enclosure Design – Principles and Practices: This lecture focused on the aspects that requires to be considered before designing enclosures for the species concerned. First and foremost we need to look into the biology of the species and then design our enclosure for which the enclosure material, gradient, Light, water quality, substrate and microhabitat should also be considered .
- Presentation by Dr. Brij Kishor Gupta on Central Zoo Authority's Guidelines, Rules and Strategies for Animal Management and Enclosure Design. The lecture laid emphasis on the Rules concerning Animal housing, display of animals and animal enclosures. The National Zoo Policy 1998, Guidelines for Scientific Management of Zoo, Guidelines for Preparation of master Plan were also discussed.
- Stud Book Management and Planning: A presentation by Dr. Tim Wright on Fundamentals of Captive Animal Population Management. This deliberation focused why captive population requires management and an overview of how zoos manage their captive population. The role of studbooks and breeding programme, the importance of zoos co-operating and exchanging animals for breeding, the value of studbooks and how studbook analysis can help to manage populations.
- Critiquing Enclosure Design Key question: A filed visit was made to the Park where the participants were divided into groups where each group had to visit different animal enclosures and observe the enclosures and take note of the advantage and disadvantage of the enclosures. The enclosures were – Royal Bengal Tiger, Asiatic Black Bear, Red Panda, Himalayan Goral and Snow leopard.

Day 4: 20.11.2012

- Feedback on Enclosure Design: Each group was asked to present their analysis on the enclosures done on the previous day. Amongst the five enclosure that was analysed the Red panda open enclosure were found to be the most suitable one according to the species requirement.
- Managing animal health: Food preparation/presentation: Dr. Tim Routh in his presentation discussed about the Secretary of State's Standard of Modern Zoo Practice Sanitization and control of disease guidelines, what are the sources of diseases, vaccination against diseases, Type of disinfectants, choosing an ideal disinfectant, ways of sterilization, Hygiene. Assessing and controlling the risk, Waste management. In his next presentation "Managing Animal Health in Transit" discussed about the issues concerning animals health during Transit. He pointed out that we should be aware of the unknown unknowns followed by BIAZA Animal Transactions Policy, Risk assessment, Pre-move screening, Post-move quarantine, Pre exit health check up, post release monitoring as zoological collections often comprise of numerous species, non sympatric from diverse sources.

Species Talk

- Conservation Breeding of King Cobra at Pilikula Biological Park, Mangalore by Mr. Jerald Vikram Lobo.
- Vulture Conservation Breeding Programme, BNHS by Mr. Rohan N. Shringarpure.

What Data Should we Record?

Before the presentation an interaction with the participants on what kind of records needs to be maintained in which they felt that record on Health information, unusual behaviour, Pedigree data, Identification, Sex, age, Immobilisation, Diet changes, Reproductive data, Events-transfer etc, Death data, parental care data should be recorded and maintained. This was followed by a presentation on "Animal Record Keeping" by Dr. Tim Wright. This session discussed on why keep records? The value of animal records data, Daily recording, Data storage-Role of ISIS and Identification of individual.

B. S. Bonal, Member Secretary, Central Zoo Authority with resource persons from Durrell Wildlife Conservation Trust, Jersey and participants from SAARC Countries (Sri Lanka, Nepal and Bhutan) at Tiger Hill, Darjeeling.



Principles on Enrichment: (Presentation)

- Enrichment Activities in Arignar Anna Zoological Park Vandalur, Chennai by Dr. R. Thirumurugan.
- Enrichment in Animal Enclosure, Shri Chamarajendra Zoological Park, Mysore by Dr. C. Suresh Kumar.
- Importance of Enrichment in Breeding Pygmy Hog by Dr. Parag J Deka.

Day 5: 21.11.2012

- Making the Link: A lecture on the review of zoos globally and their contribution to species recovery efforts with a focus on reintroduction. A point was made where when zoos have the potential to play a significant role but in reality their contribution till date has been limited.
- Case Study: Red Panda where it was seen that the Red Panda was the pulse of the Himalayas hence it should be conserved. Survival of the Red Panda in its habitat will ensure vibrancy of the Himalayan ecosystem, Viable population of Red Panda will ensure the sustainability of the ecosystem, Survival of Red Panda means conservation of mega biodiversity of the country and its conservation means the preservation of nation's beautiful animal.
- Conveying a Conservation Message: In this brief discussion, approach towards our conservation education programmes within zoos and other larger targeted areas were highlighted. During framing our conservation education plan we should be well equipped among ourselves. We would require research personnels, our target (students /adults/ all ages) and media, training programmes, workshops, Interpretation centres, signages, souvenirs, publications, A.V. aids would be the best medium to reach out to the mass.

Species talks

- Captive breeding programme of Dhole (Indian Wild Dog). Indira Gandhi Zoological Park, Visakhapatnam.
- Disease outbreak in Western Tragopan
- Conservation Breeding and Reintroduction (Managers Perspective): A deliberation highlighting Conservation breeding and the importance of reintroduction. Zoos have the ability for growth towards the transference of skills in intensive species management from zoos to dedicated breeding facilities and species recovery efforts in the wild. A presentation by Mr. A.K. Jha, Director PNHZ Park, on the Conservation Breeding and Reintroduction of Red Pandas at Padmaja Naidu Himalayan Zoological Park further added to the lecture and justified the purpose of Conservation Breeding and reintroduction.

Feedback: A form was distributed to participants for comment. They opined the course was informative, interactive, very "hands on" information given, sharing experiences, more field visits. They want the programme again to take place on a regular basis.

Topics and Content

The course introduction explained the main aims and highlighting mix of skills and understanding. The key focus is on developing the skills of participants as leaders within their zoos, able to ask the critical questions necessary to achieve excellence. Also the evolution of the Durrell Institute reflect on the stages it has gone its evolution as a conservation organisation with a zoo at its heart!

The strategy for Indian zoos will begin with a SWOT analysis of our zoos and conservation breeding programmes. Everyone will reflect on our own strengths and weaknesses within Indian zoos. Where are the opportunities for us to become more effective? What are the threats that could undermine our effectiveness? The zoos we will be

considering include Guwahati, Vandalur, Junagarh, Sepahijala, Hyderabad, Tirupati, Kohima, Aizwal, Itanagar, Manipur and Vishakhapatnam

What makes wildlife projects succeed or fail? In this day's discussion we reflect on our own experiences of working within *ex-situ* or *in-situ* species-based projects (e.g. the creation of a new enclosure; the development of a breeding programme etc.). We focus on the common themes behind those projects that worked well and those that didn't.

Discussion on leadership and the modern zoo. As senior managers, vets and directors of Indian zoos we are all in leadership roles. In this lecture we take the opportunity to reflect on leadership style and how we use this understanding to influence how effectively our zoos function.

Looking back on yesterday and the reading from last night we consider what our views are on leadership and whether or not we feel we have particular strengths and weaknesses in certain areas which will impact the effectiveness of our zoos.

In determining our vision we consider what is the world we're trying to create? Before we can develop our collection plan or conservation plan we need to be clear about what we're trying to achieve. In this session we consider what we mean by vision, purpose, goal and critique some existing vision statements. We then spend some time considering what our own vision, goals or purpose is for our own zoos.

In trying to understand the global zoo context we outline the international zoo landscape, highlighting the structures and associations in place, the global and regional vision and strategic direction. We also consider examples of partnerships between zoos and how to develop effective links.

What criteria to choose in collection planning. The most significant criteria that help us to achieve our institutional goals and vision. Criteria should be applied to our collection to determine whether or not it is enabling us to achieve our goals. A discussion on Guidelines for Conservation Breeding Management Plan of Central Zoo Authority.

Examples of collection planning from our zoos will help provide examples of how collections can be categorised and subsequently modified to achieve our institutional goals.

Fundamentals of genetic management. In this lecture we run through the core principles of small population biology and genetics that any senior manager within a modern zoo should understand in order develop a genetically healthy captive collection, contributing to the conservation of the species.

The role of the studbook keeper: what should it involve? A discussion on the role of the studbook keeper will provide you with some practical experience of using studbook data to plan for the improved genetic health of a given population.

Having feedback and discussion on the problem-solving activity just completed will aid in understanding. Also a case study will fill in many gaps, e.g., planning for the *ex-situ* conservation of the Indian pangolin. We explain the thinking behind the conservation plan developed for the species and discuss recommendations for success within the project



Jamie Copsey, Head of the Durrell Conservation Academy at a class



Jamie Copsey, DWCT during in interview to press and print media.



ESR Course participants group photo at the course venue, on chair Founder Member Secretary Shri S. C. Sharma and present Member Secretary, B. S. Bonal, Dr. Brij Kishor Gupta, EMO, CZA and Directors of Nandankanan Zoo, Bhubaneswar, Director, Van Vihar National Park Zoo & Director, Padmaja Naidu Himalayan Zoological Park, Darjeeling are seen.

Member Secretary, Central Zoo Authority addressing the participants during inaugural ceremony.





CZA officials and Guest Faculty Members from DWCT with participants from SAARC Countries.

Enclosure design. Today we discuss how participants are designing the enclosure and management around the species and encourage them to share their views. How we should approach animal management and enclosure design needs is a crucial lesson. We focus in particular on where we should turn to for information to help us plan successfully.

Evolution of enclosure design principles and practice.

In this lecture we think of how our understanding of enclosure design has evolved over time, considering its impact on the visitor experience and in particular the animals housed within. We end with some key take-home messages to consider when critiquing ones own enclosures or considering the design of a new one.

Central Zoo Authority: Legislation, Policy, Guidelines, and Rules. The presentation shall describe the Central Zoo Authority's norms and guidelines related to animal management and enclosure design.

Strategies for animal management

Managing mammalian carnivores in captivity: lessons learnt
Carnivores are one group of mammals that the many zoos house within their collections. However, successfully managing this group in captivity is no easy task. Here we reflect on current 'best practice' with regards to enclosure design and management, focusing in on the care of big cats.

Managing the needs of ectotherms in captivity: What should we know about reptiles and amphibians? Beginning with a discussion on the key elements to take into account when developing enclosures and management regimes for amphibians and reptiles, we then go on to see an example of good practice from Indian zoos. A case study will be helpful, e.g. a chance to critique an enclosure within the zoo. We can begin with a brainstorm to create a template of questions we should ask in order to determine whether or not we could improve the enclosure or management of a given species in captivity. We then go into the zoo to see a relevant enclosure and conduct our own 'audit' of enclosure design suitability. We then collate our thoughts as a group.

Managing birds in captivity: a focus on pheasants. We will review current best practice in the management and enclosure design needs of birds, with a particular focus on pheasants. We conclude this session with a talk from one of

the participants concerning the successful management of Western tragopan in captivity.

In this final session we distill the key take-home messages that we can apply to any species, regardless of its status, providing the opportunity to pool our combined knowledge on different aspects of animal health we should be concerned with and why.

Managing animal health: what do we need to consider?

We are concerned with fundamental needs of our animals. We want to get the balance right between managing infection risk and providing overly sterile conditions which can compromise the animals' psychological health (e.g. substrate choice). We consider the need for systems in place to ensure food storage and preparation and animal waste movements are managed in a way to reduce contamination risks. We also consider the zoonotic risks between our animals and humans and how we should be managing this risk. We look at the systems in place in the zoo to manage risks of food contamination and waste and consider how these systems relate to our own zoos.

Recording Data. Our keepers should play a critical role in collecting information on their animals in order to help us monitor and manage their health. We look at the key information that should be collected, by whom, how and when so we can act in a timely manner to manage health. What reporting systems do we have in place and how could we improve them? Some talks will illustrate how different zoos are collecting, analyzing and using data on their animals to help inform management decisions.

Principles of animal enrichment: what should all senior managers and directors know? We outline the principles of enrichment, which also considers how we can modify our food presentation to encourage natural behaviours- we go on to develop a series of enrichment devices for particular species within the zoo. Afterwards we see what the animals make of our creations! We also consider what information we should be recording to determine whether or not the enrichment has the desired effect. Enrichment played an important role in conservation breeding of Pigmy Hogs, a case study from Vasistha, Guwahati, providing details on the usage of environmental enrichment activity for the animal housed at conservation breeding centres.

Zoos role in reintroduction projects to date: Managing animal health in transit. Increasingly we have to move animals between collections and sometimes between captivity and the wild. We consider best practice within this field and, drawing on lessons learnt, present some recommendations of how such movements should be planned.

Today we review zoos globally and their contribution to species recovery efforts with a focus on reintroduction. We make the point that while zoos have the potential to play a significant role, in reality their contribution to date has been limited. Where there is opportunity for growth is in the transference of skills in intensive species management from zoos to dedicated breeding facilities and species recovery efforts in the wild.

Conservation Breeding for Reintroduction. This presentation will focus upon the Indian context of conservation breeding, collection planning, scientific management of species and other issues with its ultimate goal of reintroduction. The Red panda and Pygmy hog reintroduction project provide good examples and lessons learnt. Following

summarization of the planning behind the Red panda and Pygmy hog conservation project participants will visit the enclosure to learn about how the species is managed to ensure the animals are fit for reintroduction. A review of success to date in terms of establishing captive-bred animals in the wild will put the topic in perspective.

Case study in international collaboration: the Asian vulture conservation project. The on-going project to recover Asian vulture populations provides a valuable example of how zoos working across international boundaries can work together to manage a multispecies recovery programme. We learn how the project was planned and is currently being managed. Lessons learned will be helpful for developing future conservation projects involving an *ex-situ* component.

Conveying a conservation message to our visiting public. A critical role for zoos is in raising awareness about and changing behaviours towards wildlife and the natural world. Our discussion will provide information on how we should be approaching our conservation education programmes within zoos and go on to summarise a more targeted approach to conservation education that we will need to adopt if we want to achieve change.

Developing the perfect sign: An example of connecting with our public. In order to engage our public we need to move beyond a focus on conveying large amounts of factual information towards a greater emotional connection between people and the animals. A range of alternative signs will provide a model for what works and what doesn't. The aim is to develop your ability to challenge your education departments to think more creatively about their interpretation.

In the course summary and wrap-up we think back on the course and the key learning points to inform our leadership practice. How can we improve this course for the future?



Jamie Copsey, Head of Durrell Conservation Academy on heritage train ride on the way to Darjeeling



Mark Brayshaw, Head Animal Conservation DWCT delivering keynote address during inaugural ceremony



Participants gathered in front of Himalayan black bear exhibit at Padmaja Naidu Himalayan Zoological Park, Darjeeling.



All photo credit : PNHZP/CZA

List of Resource Persons and Participants

Mr. Utpal Bora Director Assam Stat Zoo-cum- Botanical Garden, Guwahati Assam	Mr. Intesar Suhail Wildlife Warden Conservation Breeding Center, Shikargah, Tral Distt. Pulwama, Jammu & Kashmir	Dr. Parag J. Deka Resource Person Project Manager Pygmy Hog Conservation Pgm, Basistha, Guwahati Assam	Dr. Manish Kumar, IFS Field Director, MC Zoological Park, Chhatbir, Punjab
Dr. Rajkumar V. Jadhav Director and Dy. Garden Suptdn., Rajiv Gandhi Zoological Park, Pune Maharashtra	Dr. Abdul Majid, V.A.S. Conservator of Forest WL Jammu & Kashmir	Dr. Utkarsh Shukla Dy. Director Lucknow Zoological Garden Uttar Pradesh	Mr. Choki Dorji Forestry Officer Jigme Singye Wangchuk National Park, Bhutan
Mr. Joram Dopum, Director Biological Park, Itanagar Arunachal Pradesh	Dr. Sarat Kumar Sahu Veterinary Officer Nandankanan Zoo, Orissa	Mr. Ashok Pratap Singh Divisional Forest Officer Choradhara, Jhargram West Bengal	Dr. Sandeep Rattan Sr. Veterinary Officer Wildlife Wing, HPFD, Talland Shimla, HP
Mr. Ajit Kumar Bhowmik Director, Sepahijala Zoo Tripura	Mr. Cheku, Forest Ranger Jigme Singye Wangchuk National Park, Bhutan	Mr. Jerlad Vikram Lobo Scientific Officer Pilukula Biological Park Mangalore, Karnataka	Dr. K.L. Ghosh Director Zoological Garden, Alipore Kolkata, West Bengal
Mr. Rohan Narendra Shringarpure, Curator Vulture Conservation Breeding Programme Pinjore, Haryana	Meetu Gupta, Member State Wildlife Board Bilaspur, Chhattisgarh	Mr. Jamie Copsey Resource Person Hd Learning & Development Durrell Wildlife Conservation Trust, Channel Islands, UK	Mr. V. J. Rana, Director Sakkarbaug Zoo, Junagarh Gujarat
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