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Breeding Himalayan Fauna in Himachal Pradesh

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Himachal Pradesh covers a large number of varied eco-systems and typical biomes, ranging from flora and fauna of the plains (Spotted Deer, Nilgai and Wild Boar), merging into outer Shiwaliks in the belt of mixed broad-leaved trees to Chir pine zones, (Barking Deer, Sambhar, Goral and common Leopard). Bird species (Kalij and Chir, Partridge, Common Hill Partridges, Black Partridges, and Chukor). This zone further merges into the outer Himalayan Zone with Koklas and Monal pheasants, Goral, Black Bear, Pine, Boral and Barking Deer. The inner Himalayan evergreen forests provide shelter to a Serow, Thar, Himalayan Ibex, Musk Deer, Brown Bear, Monal and Tragopan pheasants. It is the most sensitive zone where most fauna are classified in Schedule I, WL(P)A. Thus special attention for protection, captive breeding and rehabilitation, and proper wild life management to the area.

Another typical alpine dry biome exists in the state bordering the Tibet plateau and Ladakh area which attracts migrating species like Tibetan Gazelle, Kiang and Tibetan Wolves and offers habitat for lower range migrating animals like Snow Leopard, Bharal, Markhor and Himalayan Ibex. Marmot naturally occurs in this area throughout the year. This zone is also not less important as compared to the evergreen inner Himalayan zone as the species found here are also classified under Schedule I. Thus Himachal Pradesh has greater responsibility to preserve the endangered species of fauna by all possible means whether breeding in Zoos or in their natural habitat, since they happen to be custodians of a large, varied, and diversified endangered species.

Himachal Pradesh with its limited resources has tried to breed some of the Himalayan endangered species like Brown Bear, Musk Deer, Monal, Chir Pheasant, and Tragopan. Our experience with regard to their breeding in captivity is as follows :

MUSK DEER

Location of the breeding enclosure : Initially the animal was kept at Tutikandi Zoo located at an elevation of about 5,000ft. Recognizing that the animal was not feeling comfortable during the summer months, an enclosure was made at Kufri at an elevation of 8,500ft. An enclosure of about 0.5 hectare was provided where 2 males and 1 female were kept in a two chambered wooden house of 2 X 2 ½ mts. each.

The procurement of the animal was the biggest hurdle as the areas of their natural habitat were

remote and inaccessible. The stock had to be raised from the wild as no zoo-born Musk Deer was available in the country. We took advantage of migratory graziers visiting the Alpine pastures during the summer months, coinciding with the breeding period of the Musk Deer, when some stray young fawns would get mixed up in the herds of sheep and goats. These were transported to Kufri Musk Deer taking heavy toll with many fawns dying of long journey and shock, refusing milk and food altogether. During last 20 years i.e. from 1965 to date, out of 14 animals received from the wild 9 died and 5 survived. Out of the breeding that took place, 3 animals survived out of 5 bred in the Zoo. Various food trials were made during the initial stages and finally the following food was found to be most suitable for the animal. The longest surviving male was Chaman (20 years).

The leaf fodder of Oak is preferred by the animal instead of Green fodder of Barseem or Grasses. In captivity, the feeding is generally done during night hours but the browsing of green leaves is carried out during day time. It has been observed that the artificial feeding of the young ones with cow or buffalo milk is dangerous and invariably lead to fatal loose motions. Goats milk is good food for the fawn in the initial stages. '**Lactogon**' was also tried and worked very well when fed under most hygienic conditions, i.e. proper sterilization of the nipple and bottle every time.

The animal is very choosy about its partner, and frequently changing of combination of males with the female resulted in no breeding in the farm for long time. Ultimately close observation revealed preference of the female for a particular male wherein the pair was permanently established and this resulted in breeding during the year 1979, 1984 and 1985. The male would start chasing the female during 2nd week of December, making it tire from exhaustion, perhaps for an easy approach to the female which is otherwise very alert and elusive. Mating takes place day and night during which time the male becomes aggressive on not achieving the complete surrender of the female. The breeding of only one fawn was observed during mid-June in 1979, 1984 and early July 1985, a gestation period of 6 months. Average weight of new fawn was 350 gms. increasing to 1 kg within 54 hours

Artificial musk extraction was also tried in the Zoo with following result with animals of different ages. Musk extracted on 18.11.77. At the age of complete one year, experiment shows that no musk was

found in the Musk Pod, as formation of Musk takes place after the age of one year. Summer months may be ideal months for extraction of Musk basically for the reason that vigour of severe winter is over by that time and the physiological changes which may be taking place in the body of the male deer before the breeding season is yet to set in. It leaves enough time for the animal to return to its normal self before the breeding season. The breeding of Musk Deer is required to be undertaken on a large scale with concentrated efforts so that this valuable animal could be saved from extinction and the experience gained by Himachal Pradesh can be shared with other Zoos or agencies involved in this task.

MONAL PHEASANTS

Monal Pheasants have been kept in the main Zoo at Tutikandi, at an elevation of about 5000 ft above mean sea level, which is certainly not similar to their natural habitat. Due to shortage of females, a pair has been kept in an enclosure measuring 13.5 x 4mts. In order to give a natural look to the enclosure, night sheds as well as other hide-outs have been made mainly in rough stone masonry. In the Zoo we feed them with mixed grains consisting of crushed Soyabeans, crushed Maize, Kangni, Jawar, and Bajra etc. Apart from this, lime grit is also given to all the birds. In addition to the grain, green leaves of spinach are also given as part of the daily food. Monal prefers green leaves or tender shoots more than any kind of grain. It is also observed that the bird prefers to dig out small insects itself which it invariably shares with the female.

In the Zoo courtship takes place during April-May in which the male took short flights within the enclosure in the early morning. Courtship was not noticed during day time. During the courtship period, the female is fed with the extra calcium substitute. In this Zoo, hatching was done with the help of a brooding hen because the female did not attend the eggs after laying.

During the year 1976, one egg was also hatched successfully in the incubator. In the year 1984, female laid 3 eggs unattended during early June. We are facing many difficulties in connection with their natural breeding and habitat, such as:

- **Natural habitat:** Our Zoo is situated at an elevation of about 5,000ft which is contrary to their natural habitat. This has certainly affected their habits adversely. The birds cannot have proper exercise.

- **Feeding:** In case of feeding, the Monal prefers to extract its food by digging in the ground. For want of digging exercises, the beak (Culmen) becomes malformed and elongated, which is then cut shorter to enable the bird to feed properly.

- **Courtship and Breeding:** The breeding season is unfortunately during summer. During this period there is a heavy pressure of visitors the Zoo. The birds get disturbed. Apart from this Monal requires a bigger enclosure in which can take flight during courtship. Female lays eggs unattended.

TRAGOPAN

In case of Tragopan, the location and feeding etc was also similar to the Monal pheasant. In case of this pheasant, we could not breed them naturally. Only eggs were laid by the female as per details below: 1975 & 1976 : Only one egg was hatched successfully the Incubator

CHIR PHEASANTS

Chir pheasants have been kept at Tutikandi at an elevation of 5,000ft. which is their natural habitat. Chir pheasants consisting of 2 males and 5 females have been kept in an enclosure of 13.5 X 54 mts. In the Zoo, Chir pheasants are fed with mixed grains as well as spinach. After breeding young chicks are fed with maggots developed in the zoo locally.

In case of Chir pheasants, courtship takes place during April and May. Unlike Monal courtship was frequently noticed during day time. During this period, female is also fed with extra quantity of calcium in the form of lime grit. In our Zoo, natural breeding has been achieved. Laying of eggs were noticed during late May and early June. Incubation period was noticed to be 25-26 days. In case of Chir pheasant, a few difficulties are realized, particularly during breeding season. Females sometime disturb the eggs of other females which become infertile. Apart from this, sometimes chicks are born malformed due to inbreeding. In case of Chir pheasant. Bumble Foot has been observed. In few cases Coccidiosis was also noticed. Due to the abrupt change in atmospheric temperature, pneumonia was also observed, but it has been very few cases.



Interview with Dr. R.K. Lahiri

Dr. R. K. Lahiri was one of the oldest and most experienced zoo-men in India. He is a veterinary doctor who came to work at the Calcutta Zoo right after the war and stayed 26 years. Lahiri then served West Bengal for 10 years as a Wildlife warden until his retirement. After retirement his services were requested to run the Padmaja Naidu Zoological Park in Darjeeling where he has been for the last few years. He is truly one of India's great zoo-men.

ZOO : As Director of Calcutta Zoo what were the difficulties of running an old zoo then.

RKL : Many ! The zoo was planned in the year 1875 so many of the enclosures and cages were outmoded and the first thing was to modernise them in keeping with the modern concepts of zoo management. The conversion was done in many stages and very successfully, particularly in case of the aviaries and the small mammal cages. The zoo has very little space (same size as London Zoo (40 acres), so the big enclosures were tackled in a different way. The foremost task was done in the post-war period, an uphill task, assessing damage done to the zoo by the army which occupied the entire zoo with 4000 soldiers, many vehicles, tents, utilizing all enclosures. Every morning we went round and made lists of damages done by the army in '46. Hedges were spoilt, lawns destroyed, trees uprooted, etc.

I was 25 years old when we started this rebuilding programme and opened the zoo to the public in 1.5 years. . The first animal I purchased was a striped hyena having one ear only. Our bird collection became the best in the country as keeping of insectivorous birds is no problem in Calcutta because you get huge quantities of ants eggs. Mammal restoration took more time but it was done.

After the war and British Airways, BOAC, PanAm and army planes carried many animals from India to European Zoos, so there was a very large traffic in animals. Particularly so in monkeys because lots of research work was being done on primates and the Defence Ministries of different countries purchased lots of monkeys. We got some animals also out of this. For instance, one day British Airways rang me saying that some animals have been dispatched from Australia going to England and a stinking smell was coming from the hold. They asked me to unload the whole thing and take it to the zoo. I rushed to the airport and found that these were echidnas, mostly decomposed but three living so I took them to the zoo. We washed them clean, fed them with proper diet and they thrived there for a long time. And another time Giant Pandas were being shipped to England. There was tremendous heat and they were suffering, So I rushed them to the zoo and put them in the cold storage. After half hour they revived and were even playful.

Like that many stray animals we got here and there. Jungle cats, fishing cats, otters, all these were available if you wanted to build your collection. If you shot off letters to everyone then you'd get

some response at least. At Darjeeling Zoo the first pair of Siberian tigers were a presentation to our late governor Padmaja Naidu. She was the lady who started the zoo and was a great animal lover. When we got our Siberian tigers the captive population was abundant and if you requested a few zoos get one or two pairs. Unfortunately no one requested and up to two generations there were inbred. We had just a pair and we needed another pair badly. Leipzig zoo offered us some.

ZOO : You find much difference in the keepers of that time and the keepers today ?

RKL : Those days the keepers and the malis were very devoted. We used to recruit keepers from boyhood. In Calcutta Zoo was the first appointment of a crow-driving boy, paid 8 rupees. Then senior salary was Rs. 13-14 and a clerk used to draw Rs. 30. Lots of swans used to nest on the banks of the lake. Calcutta zoo has a good record of black swan and white swan breeding and during the season in at least 12-13 places you will see them nesting. The crows used to destroy their eggs as soon as the swans used to go for food and into the water. The crow-driving boys holding catapult and some shots used to sit all the time and watch over the eggs and cygnets. The keepers were very good. The people at the helm of affairs here constantly visited various countries in the world. I particularly remember that in these days the British officers used to go on furlough to England and they used to go to Kew Gardens and see the improvements in gardening and seed collections and bring some for us. So there was a traffic in knowledge and the malis here, in those days, used cobalt solution for growing pansies. There mali named Radha. One day the rainy season I had seen to it that the seedlings were exposed to the morning dew. Later I was in my house when the rains suddenly came down. I thought that all the seedlings would be spoilt. I took my cycle and rushed to the nursery and there I found that Radha had already covered the seed beds. Although he was running a very high temperature, he wouldn't neglect his job.

People concerned with zoos must discharge their duties properly as it is a demanding job. Otherwise zoos cannot survive. It is not only the animal management but also the man management that is important. The Director should know his people very thoroughly, their likes and dislikes, their love and affection for different categories of animals and how devoted is their attention to proper feeding and care. They must look to the difficulties of the animals. Supposing a bird is finding it difficult to

climb a perch, keeper has to lower the perch or see if the wings of the bird are defective. The bird keeper should every night see that each bird has gone to its proper perch as birds choose their own perch for sleeping. The Director has to see that this is done.

Supposing an young mammal is born. Director and keeper must look after the young one properly day in and day out, till it is independent. This is not an easy job; it is one of the most demanding jobs in the world. The Zoo Director must be held in high esteem but if there is a bad Director then the zoo will fail. Then I cannot blame the public or the administration but the Director. You must know your subjects well so that you can give commands and dictate information. These are the things that must be very thoroughly done, otherwise the zoo cannot thrive properly.

I personally feel that the zoo director should pay attention to the sanitation and the hygiene in the zoo - in the peripheral zone, to utensils, watering troughs, food trays, etc. Though these look small these are the basic things that must be done. Otherwise contamination may take place unless utensils and water trough are boiled and scrubbed periodically.

ZOO : Can you think of any way to make the zookeepers of today take more interest in their work and have a feeling of possessiveness and pride in their animals ?

RKL : The mode of recruitment should be changed. Here the recruitment is based upon certain minor educational qualifications. Whether the person has read up to class 4 or 5. In my opinion, a zoo keeper should not be recruited at an advanced age but from the very childhood. You must watch him for two years to see if he has love and affection for animals and if he does not have this then discard him. Keeping such a man in these days of rules and regulations, you spoil the entire zoo by wrong recruitment. For zoo people academic qualification is a secondary thing.

ZOO : Is there advantage to upgrade the position of zoo keeper? Western zoos have educated people with advanced degrees plus interest. Any possibility in India for that?

RKL : In our country the entire thing is different as job potential is extremely limited. The number of unemplo-yed is far more than the employed, so you can get people at a small salary. for persons working in the zoo the salary should be lucrative because it is a demanding job, and then there should be rigorous discipline. If you find that the man is not suitable then chuck him out rather than keep him there and spoil the entire zoo. In a country where the educational standards are not very high this must not happen because others will copy the defects of one person and it will go through the entire staff like a forest fire.

ZOO : Some people have suggested that zoos and zoo keeping should be made a special service so that strikes and unionism are not permitted.

RKL : Difficulty is that any employee has the right to form an union for their welfare. But if we are attentive towards their difficulties then it will not create any trouble. If we are attentive to them and their requirements then I am sure nobody will create any trouble or strike. A zoo director should be fatherly, even though he may young. He must have this quality and he must have compassion.

ZOO : Would you say what measures you are taking to breed the Red Pandas ?

RKL : Our Red Panda enclosure is a very sizeable area, all with trees and we have protective measures so that the animals may not escape. We have planted bamboo which is their food and we look after them in the normal way i. e. porridge of bamboo shoots, eggs plus vitamins, the standard food as everywhere in the world. We have made some conical baskets tilted at 60 degrees for denning. That has given us good results. I have written a paper about this which was published in our West Bengal journal.

ZOO : How many pairs of Pandas do you have in this zoo?

RKL : We have three pairs. We had a large-number at one time but sustained many mortalities. I think if one looks after the pandas properly they will do very well.

ZOO : Tell us arrangements for getting snow leopards, their enclosures and plans

RKL : I think a copy of the project report will give you all those details. Before formulating the project report, we have taken advice on snow leopard breeding. After getting all these things, the final report was made after which the Director of Zurich Zoo, Dr. Wiemann personally came over to the Darjeeling Zoo. We are not interested at the moment in the reintroduction of snow leopards. First we must build a breeding group and if breeding success is achieved then in establishing subsidiary centres at places like Sunderpur.

ZOO : That's a sensible thing to do. The idea of re-introducing the cheetah back to the forests of India should be done along such lines.

RKL : I can tell you, our knowledge about our own cultural resources is very low, we must agree to accept this. We must learn this properly. As in the cheetahs where breeding in captivity is a problem, breeding success must be first achieved. Re-introduction has manifold problems. The conditions of the forest are absolutely different from what it used to be. Restore the forests, have the supporting flora and fauna and then the question of reintroduction arises. We don't know the interaction between the leopard and the cheetah.

ZOO : Just reading old zoo annual reports and guide books you can see how much interest was being taken many years ago which is not the case today.

RKL : I think there are two reasons for this gradual deterioration. One is the constant change in the administrative set up. If there is any defect, modify the administration, don't change the whole set up. In my opinion the zoo director should not be changed frequently. Whatever gains that have been achieved will be lost by his departure, and to train a new man will take a decade. Most zoos have a five year term which will not work. People should work in zoos for two decades at least, it takes time to learn.

ZOO: At present people running zoos do not bother to come and take advice from you people and learn more.

RKL : This is more or less a smallness of the mind. You must take advice from even a small boy. He may know many things about rearing a particular animal, may be more than we know. In this city at least 22,000 people, may be even 50,000 used to keep birds and a person keeping birds must have learnt something and a zoo director can go to their house and learn this. You can collect knowledge from a boy from an elderly man, from anybody. If you leave a man who is knowledgeable it is your loss. During my time I used to run to every house where pets were kept. They might have achieved success with a certain species. One Dr. Law achieved success in so many fields. A certain chick was hatched in his aviary for the first time. I rushed to his house and asked him all this details, like what food he gave and the clutch size and the nesting site, any minerals, all these things. You expand your knowledge. Supposing there is a dog lover. You can learn many things from him. He may not be an academican having an university qualification. What about Karl Hagenbeck he was not highly qualified but started the first open air enclosure.

ZOO : I noticed that in the first 10 minutes we met you were quoting Heini Heidigger.

RKL : A person cannot be a zoo director unless he reads Heidigger thoroughly and commits it to memory. So many concepts have been explained by him. He was a genius. And what about Lang. Dr.Lang met me in Darjeeling. He is the man who bred the first rhino in captivity in the zoo.

ZOO : Heidiggers book is difficult to get. We are thinking of serializing his book in Zoo's Print. Some of the portions at least.

RKL : It is not a big book. Why don't you republish it? Heidigger was intoxicated with zoos. Some people drink wine and get intoxicated, his wine was zoos.

ZOO : What are the other books you would recommend for young people to read?

RKL : Heidigger, Lee Crandall, R.B. Sanyal's book "Handbook of the Management of Wild Animals in Captivity". On the disease side there is a good book

by Fox. You know if anybody comes to me and asks about bird watching and identification, I ask them if they observed the crow and the sparrow properly. If they do this, their whole problem will be solved. One bird, one species, read properly and thoroughly. Then you can make out the differences and go forward. Your pupils should be glued to the animal and the animal will start speaking to you.

ZOO : Once I saw a Great Indian Bustard with an injured leg. How do you treat injuries in bird legs of large birds?

RKL. First of all you have to seal up the openings in the leg. The leg is a hollow thing as in poultry-it has got no marrow. Instead it has got an air sac. Air sac means a prolongation of the lung into the leg and this is ruptured. The first thing is to seal that with a simple benzine compound seal. Then you wrap it and put two splints, and bandage it. Also you must see that the leg is not shortened. Measure the leg and make it balanced with the other leg. Sometimes there may be complicated fracture where the leg goes right up due to the tension of the muscle. It should be put in the proper order. It is not a very difficult task, particularly the leg and the wing.

ZOO : What if its a case of torn ligaments?

RKL : That is severed. Attach ligaments with ligature, You give sufficient space, then with the help of a needle you tie it up and then you plaster it. And see that the ligaments are length-ened after cure by massaging. Otherwise there will be tension of the muscles and the leg will be a little shorter. Just simple massaging. Its not very difficult, with the tiniest bird I have done it.

ZOO : I suppose thats a survival mechanism for healing in the wild.

RKL : Once our vet gave our old Siberian tiger a lot of medicine and it developed vomiting and loose stools. I stopped all medicine and simple aluminium gelusil was given and it healed itself. Quite often with indigenous drugs they do very well. For instance if the animal is not eating its food properly it has worm growth so you give them different types of leaves, margosa leaves or make a paste of it, then make a small bolus and give along with the food or with a little tricking. It gives an absolutely good result. Modern medicines are Very strong, particularly the laxatives. With elephants the indigenous drugs give good result. If you want to induce purgation in elephant you should not try any of the modern drugs, but you can use aloe - just a small lump. Powder it, make a small bolus and put it inside. It gives the best result. It is a time honoured remedy since the days of the Moguls. During Shah Sabar Akbar's period this also used to be prescribed for the elephants. Batsab Om Akbar used to keep 500 elephants in his Pilkana which is no joke. He himself wrote in his Ain-e-Akbari a chapter on elephants. You read this and you will understand. The Ain-e-Akbari portion for the birds, for the elephants, for the horses was written by Devatsa himself-based on his observation.