Nutrition and Breeding of two Himalayan species – The Snow Leopard (*Uncia uncia*) and the Red Panda (*Ailurus fulgens fulgens*)

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Submitted to,

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Director of Padmaja Naidu Himalayan Zoological Park,

Darjeeling
Acknowledgment

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Abstract

My work consisted of studying the Conservation Breeding Programs in India, and focus on the Conservation Breeding Programs of Red Pandas (*Ailurus fulgens fulgens*) and Snow Leopards (*Uncia uncia*) at Padmaja Naidu Himalayan Zoological Park. India currently is working on the Conservation Breeding programs for **twenty six** species funded by Central Zoo Authority. My work majorly involves studying **the breeding and nutritional aspect of Snow leopards and Red Pandas**. I shall be dealing with aspects like the breeding biology, how breeding is done in the park and thereafter including type of diet, feeding method, food preparation, feeding time etc...
Objective of my work

The aim of my work is to understand the basis of the conservation breeding in the PNZP of two vulnerable species – the Snow Leopard and the Red Panda. For this, I will describe the Breeds used, the mating systems, and then follow the pregnancy and the birth of each species by CCTV Camera in their enclosure. I will also observe the precautions to take during the rearing of each animal, and the modifications and New Techniques implemented inside the Breeding Rooms.

I will then describe the animal Conservation Breeding system, the relationship between the animal breeders and the veterinarians, and the future of the giver Breeding Center.

On the Nutrition Part, I will focus on the Diet Preparation of each animal, the Nutrient Requirements, and the improvement throughout the years of the diet, and its standardization for each species and regular feeding methods.

Hence for the said work I joined the Park on 12.07.2014
Chapter 1 – General Description of PNZP

Introduction

In 1826, the English occupation in North India deteriorated massively the different forests to create Tea plantations for economic purpose. By doing that, deforestation occurred at an elevation from 2000 to 6000 feet altitude affecting the whole Biodiversity of the hills. The most affected were the high altitude fauna and flora.

In the 1950’s, the wild animals in India were captured and used by humans, without having the knowledge about the “Biodiversity”. It is in 1972 that the Wildlife Protection Act, came into being, protecting endangered species of the wild by establishing Biosphere Reserves, National Parks and Sanctuaries of the Indian forests.

In the Zoos, Conservation Breeding programs began, which was planned by the Central Zoo Authority in the year 1992. Its main objective was to oversee the functions of Zoos in the country and to enforce minimum standards and norms for upkeep and health care of Indian animals in Indian Zoos. In 1986, the Padmaja Naidu Himalayan Zoological Park had already initiated the breeding program for the Snow Leopards, and 1990’s for the Red Pandas.

The Conservation Breeding is a planned breeding, working on keeping the genetic variability of species to finally be able to reintroduce them into the wild. This is based on the identification of species with their pedigree, the approximate number of animals of the species in the wild compared to the number of animals of the species in captivity in Indian Zoos, and the population management analysis introduced by the Wildlife Institute of India. This institute takes in consideration and gives information on the genetic variability of the animals, their kinship value, and the population of the species in the next 10 years.
**Padmaja Naidu Himalayan Zoological Park**

Established the 14\textsuperscript{th} of August 1958 in Darjeeling, it is the only specialized institute in India, and is internationally recognized for its Conservation and Breeding Programs of Snow Leopard, Red Pandas, Tibetan Wolfs and other highly endangered species of Eastern Himalayans. The Zoological Park falls under the category of small Zoos as per Central Zoo Authority’s classification, but is the largest high altitude zoo in India.

Darjeeling is a town in the Indian state of West Bengal. It is located in the Mahabharat Range or Lesser Himalaya at an average elevation of 6,710 ft (2,045.2 m). Of the total 78.5 acres with the Zoological Park, 67.56 acres are presently under the Zoological Park Management.

Padmaja Naidu Himalayan Zoological Park in 2003 had 18 Snow Leopards (9 males and 9 females), one of the largest captive population in a single Zoo in the world. As on now, there are 14 Snow Leopards (5 males, 7 Females, 2 unidentified cubs).

The Red Panda population is now made of 9 male, 8 female and 1 unidentified cub.
Objective of the Breeding Program

The Reintroduction of 10 different species is the main goal of the conservation breeding program of the PNZP. These species are the Snow Leopard, the Red Panda, the Himalayan Wolf, the Blue Sheep, the Himalayan Tahr, the Blood Pheasant, the Himalayan Monal, the Satyr Tragopan, the Himalayan Salamander and the Bhutan Grey Peacock Pheasant.

My project will be focused on the two first species, the Snow Leopard and the Red Pandas. The first idea of the PNZP is to have the less human interference and contact possible with the animals, training them to be rehabilitated in the wild from the birth.

The Snow Leopards rehabilitation project is to then be able to release the Snow Leopards of the Zoo into Sikkim, Jammu, Kashmir and Uttarakhand, their natural habitats.

Four Red Pandas already got released into the wild by the Center, using habitat study, population estimations and animal trainings. The Red Pandas are released in Soft Release Facilities, in the Singhalila National Park. They are first released in an environment barricaded by thin sheets in the Jungle. This way, they are half way into the wild – they are then slowly habituated to eat only bamboos (their in situ Diet), by slowly stopping feeding them bananas, apple and bread.
Tasks of employees of Different Positions and Owner’s role

**Director** – Administration of the Park

**Director Deputy** – Assists the Director in Different Administrative work

**Veterinary Officer** – Treatments, record keeping of animals

**Research Officer and Education** – Record Maintenance, Exchange Programs, Day to Day input of the Field, Breeding Education, Outreach Programs

**Estate Officer** – Security of the Center, Enclosure Designing and Construction, Natural Disasters Outbreak

**Store Section** – Food of the Animals, Preparation of the Food, Sanitation of the Center

**Animal Supervisor** – Keepers of the Center
Chapter 2 – Aspects of Animal Nutrition

Introduction

Darjeeling has a temperate climate with wet summers caused by monsoon rains. The annual mean maximum temperature is 16 °C while the mean minimum temperature is 9 °C, with monthly mean temperatures range from 5 to 17 °C. The average annual precipitation is 309.2 cm, with an average of 126 days of rain in a year. The highest rainfall occurs in July.

This can be a cause of sickness for animals who are used to living in Dry Climates – The Snow Leopard for instance can get pneumonia in adults, or osteoporosis in cubs.

The Snow Leopard (Uncia uncia or Panthera uncia)

The Snow Leopard is a moderately large cat native to the mountain ranges of Central Asia. It is smaller than a Panther, with a longer tail. It is an endangered species under the IUCN.

Distribution

Snow Leopard range along the whole Himalayan chain from Kashmir to Bhutan. Northwards, their territory extends into Thibet and Central Asia.

Habitat

The Snow Leopard lives in high rugged mountains. The environment at this elevation is harsh and forbidding. The climate is cold and dry.

These animals prefer steep, broken terrain of cliffs, rocky outcrops and ravines.
Nutrition of Snow Leopard in Captivity

Snow Leopard in their natural habitat requires approximately 3000-4000 kcal per day, or alternatively about 40-45 kg of food per kg of body weight/day. A Snow Leopard would need 1.5 kg per day, and an adult Snow Leopard eats 20-30 blue sheep annually.

Slow leopards eat slowly, usually taking 3 or 4 days to consume a prey animal. During that time, the cat remains near the kill site to defend the meal from scavengers like vultures and ravens, eating every few hours until the carcass is bare.

In the nature, the Snow Leopard preys on Bharals, Markhors and Himalayan Tahr.
Diet Preparation

At the Park, Snow Leopards are fed with Chicken, Mutton and beef in alternate days, raw eggs and boiled water everyday. Prior to feeding, the items are weighed and the feeders make sure that the animals don’t get overfed. The veterinarian’s task is to check the quality of the meat everyday.

700-1200kg of prey is required to feed an adult Snow Leopard in the wild.

It has been observed that Snow Leopard preferred chicken rather then Mutton or Beef. An unhealthy or old Snow Leopard would be than fed only with Chicken.

To match up with the conditions in the wild, the animals are kept unfed for a day in the week.

It took twenty years of experiments to the Zoo to be able to improve the given feed to the animals until it was an optimal food. The standardization was then done on what they actually like – Mutton, Beef and Chicken.
<table>
<thead>
<tr>
<th>YEAR</th>
<th>Given Food</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>Dressed Chicken</td>
<td>3 kg</td>
</tr>
<tr>
<td></td>
<td>Sheep meat</td>
<td>1 kg</td>
</tr>
<tr>
<td></td>
<td>Beef</td>
<td>¾ kg</td>
</tr>
<tr>
<td></td>
<td>Liv-52</td>
<td>1 tab</td>
</tr>
<tr>
<td></td>
<td>Multi Vitamin</td>
<td>1 tab</td>
</tr>
<tr>
<td></td>
<td>Complan mixed with Kalzan</td>
<td>1 tab</td>
</tr>
<tr>
<td>2012</td>
<td>Mutton (Saturday, Monday and Wednesday)</td>
<td>2-2,5 kg</td>
</tr>
<tr>
<td></td>
<td>Beef (Sunday and Tuesday)</td>
<td>2-2,5 kg</td>
</tr>
<tr>
<td></td>
<td>Egg (everyday)</td>
<td>1 piece</td>
</tr>
<tr>
<td></td>
<td>Chicken (Friday)</td>
<td>2-2,5 kg</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>2 L</td>
</tr>
</tbody>
</table>

Table 1: Feeding Records of the Snow Leopard at PNHZ Park (1986 and 2012)

Figure 2- 2,5 kg of Chicken given to the Snow Leopard, Figure 3 – A Snow Leopard eating Chicken
**The Red Panda** (*Ailurus fulgens* – in Latin, shining Cat)

The Red Panda, also called Firefox or Lesser Panda, is a mostly herbivorous mammal, specialized as a bamboo feeder. It is an endangered species under the IUCN.

One Red Panda was first brought from Rotterdam Zoo on the 1rst of July 1993 to augment the population of 4 Red Pandas at the Zoo. The first successful breeding of Red Pandas occurred on the 20th of June 1994, when two cubs “Ekta” and “Friend” were born.

When the Park had a stable and genetically healthy population of 21 Red Pandas in 2003-2004, it was in position to release 4 Center Bread Red Pandas back into the wild, in the Singhalila National Park, Darjeeling, which is the natural habitat of Red Pandas.

**Distribution**

They are distributed along the Himalayas from Nepal into Sikkim, Darjeeling Hills and Bhutan. They are found in within 2400 to 4000 meters within their Distribution Range. You can find the Red Pandas at the Singhalila National Park in India, and the Neora Valley National Park.

**Habitat**

The Red Panda lives in temperate forests of Himalayas above 5000 feet (1525m) up or so.
Nutrition of the Red Panda

In the Nature, the Diet of the Red Panda consists of about two thirds bamboos, but also consists of berries, fruits, mushrooms and grasses. Their Diet is supplemented with young birds, fish, eggs, small rodents and insects on occasion.

The Red Pandas eat mostly two species of bamboo in the region of Darjeeling – *Arundinaria maling* and *A. Aristata*. They eat flowers *Rhododendron, Quercus, Betula, Acer spp, Thanmocalmus, Taxus, Abies, Berberies species, Tsuga* and Lichen found to comprise a major Diet in the wild.

In the wild, the Red Pandas eat 14-15 hours a day, mostly Bamboo. The Bamboo having no nutritional value, it mostly acts as a help to the Panda’s digestive system transit. The Red Pandas have a short digestive system, without microorganism to help their digestion, therefore, they need to eat a lot of bamboo to be able to digest well their food.
Diet Preparation

In Captivity, the Red Panda is fed in the morning at 9h30 am with fruits (apple, banana) and sweet bun. It is also given a mix of egg, milk and honey, because it likes sweet food.

In the afternoon, the given food is similar to the food they will eat in the nature – bamboo and water.

<table>
<thead>
<tr>
<th>Aliment</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>300 g</td>
</tr>
<tr>
<td>Banana</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Sweet Bun</td>
<td>Half a piece</td>
</tr>
<tr>
<td>Egg</td>
<td>1 piece</td>
</tr>
<tr>
<td>Milk</td>
<td>300 ml</td>
</tr>
<tr>
<td>Honey</td>
<td>50 ml</td>
</tr>
<tr>
<td>Bamboo</td>
<td>4 cages</td>
</tr>
<tr>
<td>Water</td>
<td>500 ml</td>
</tr>
</tbody>
</table>

*Table 2 - Feeding Chart of the Red Pandas*

*Figure 4 – Staff weighing the food in the morning*
Figure 5 – Food in the morning for 2 Red Pandas

Figure 6 – The Red Panda comes and goes to the enclosure with the food
Conclusion

The Nutrition of the two studied species was very different. The Red Panda, a lesser carnivore, will be fed a herbivorous diet, bamboo in the afternoon (their Diet in the wild), and a human standardized Diet, fruits, bread, milk, honey and eggs in the morning. Prior to reintroduction and during acclimatization the pandas are kept in a soft release facility that has a large quantity of bamboos. They are released into the facility everyday and slowly they get accustomed to feeding only on the bamboos, so simultaneously the captive diet is slowly eliminated. In a release program conducted by the Park in 2003-04, the four females released had got accustomed to the wild diet.

The Snow Leopard, a carnivore, eats only meat – beef, chicken and mutton. The Chicken is its favorite Diet, so it is preferred in case of unhealthy or old animal. 2.5 kg of each item is provided to the animal.

In Conclusion, I was able to understand and study the diets of Red pandas and Snow leopards and observe their method of feeding. The difference observed in the captive diet of the Red pandas in PNHZ Park and other Zoos is that the Park feeds them more bamboos than artificial diets for them to be reintroduced into the wild in the future, while zoos abroad housing Red Pandas are more dependent on artificial diets.
Recommendations

The food that is fed to the animals at the Park has been studied and standardize for more then twenty years. This is a really positive point for the Conservation Breeding Program of the PNZH Park. I would recommend enrichment for the feeding of animals: as they will be reintroduced to the wild in the future, they should learn to find their food into the wild.

For the Red Pandas, an idea would be to put the whole uncut fruits hidden in the trees of the enclosures, so that the animals have to actively search and shred their food, as needed in the wild.

Moreover, I think it would be interesting to hang the bamboo trees in their enclosures, as they grow vertically in the wild, to habituate the Pandas to fold the trunks before eating the bamboo leaves.

For the Snow Leopards, enrichment also should be done for the feeding in enclosures. As raw meat can’t be hidden on the floors of enclosures for avoiding infections, an idea would be to hang the raw piece of meat, or to put it on a stick and make it move, mimicking a live animal.

Furthermore, if the law authorizes it, a live chicken could be put in the Snow Leopard’s enclosure to habituate him to chase,
Chapter 3 – Aspects and Trends of Conservation Breeding

Introduction

Conservation Breeding of the Snow Leopard

The Snow Leopards being a highly endangered cat of the high mountains, planned breeding in captivity is a major conservation step.

The breeding program for Snow Leopards in Darjeeling Breeding Center was initiated in 1983. To begin a pair of unrelated Snow Leopards was flown to Darjeeling from Zurich Zoo on the 21rst of March 1986.

The Snow Leopard Breeding Project at Padmaja Naidu Himalayan Zoological Park is one of the most successful and only breeding program of the species in South East Asia.

The center has today 8 Snow Leopards, one of the largest captive populations in the world.

Detailed Program of one Day Breeding work with the Snow Leopard

From December the female is into Estrus. Prior to the estrus, the animal’s Pedigree chart is analyzed. We then decide which animals are supposed to be paired, in which enclosures and breeding center. After having it approved by the Director, the unrelated animals are finally shifted in the same enclosure to start the mating.

When the mother is in a pick of estrus, we release the 2 individuals from 7 am. Their behavior is analyzed, and we can see the female rolling frequently whilst the male raise his tail and sprinkles urine around.
We follow the male, who finally mounts the female until copulation.

The time of the mount is recorded, as is the number of copulations in the day. It has been reported that the Snow Leopards can copulate up to 46 times a day.

Then during the day time, in the afternoon there is less frequent mating, so the two animals are separated in different enclosures, but being still able to make eye contact with each other.

It is in the evening that the animals are put back to the same enclosures, to mate again. The number of mounts and copulation are again taken, and a frequency chart is made.

The next day, if the female is still in estrus, we repeat the process until there is no estrus. At this point, the absence of estrus is a sign of pregnancy. We count the Gestation Period after the last copulation – which has been recorded to be around 96 days in the Snow Leopard.

**Breeding measures for Snow Leopard at Darjeeling Breeding Center**

Three weeks before the assumed birth rate, the breeding cage is provided with wooden platforms, cemented walls are white washed and parqueting is done and the rods are shielded with wooden ply board so that every disturbance can be kept away from the animal.

A CC TV Camera is installed both inside the breeding room and at the open enclosure in order to be able to supervise the events going on.

**Mating Behaviour of Snow Leopards**

**Oestrus Period**

Little information is available regarding the mating season of wild Snow Leopards.

The time of the year of oestrus is not always the same – this is probably the effect of captivity.
Most of the mating has been observed in January-February, and Kichener and al (1975) reported that mating have been observed to take place between late winter and early spring.

**Oestrus Detection**

Captive observations have indicated that oestrus usually lasts for 5 to 8 days. Very often the female presents herself to the male by walking in front of him with her tail raised in the air so the anal region is visible.

Copulation takes place over a period of 3-6 days. An introduction period of 1 hour in which copulation does not occur is usually sign that full estrus has not yet begun (Wharton and Mainka 1997). During Copulation, the male usually grips the fur on the female’s neck when he mounts.

After a last thrust and with the occurrence of the full immissio penis, the male gives a loud piercing yowl.

Sometimes aggressiveness is observed when the male dismounts the female. The female might swear at the male, paw him and even chase him. After copulation, the female rolls on the ground. (Behaviours observed at the Darjeeling Breeding Center)

**Gestation Period**

The Gestation period has been reported to last 91-100 days by some, whilst Fowler (1986) described the gestation period from 93-110 days.

The record of the gestation period of Snow Leopard at the Darjeeling Breeding Center from 2002 to 2012 shows that the gestation period has been recorded to last from 96-127 days. However, the record shows no direct relation between the mating frequency, gestation period, number of litters and the survival rate.
In many instances, it has been recorded and observed that instead of successful and continuous mating, the females have failed to conceive, and sometimes showed a case of pseudo pregnancy. It is therefore not reliable to consider maximum number of mating to be called a successful mating.

**Pregnancy Behavior**

The Snow Leopard’s behavior was recorded to confirm pregnancy in at the Darjeeling Breeding Center. The Snow Leopard I studied was mated the 2nd of March 2014. The gestation period is of 96 days in average.

The first week, the Snow Leopard is very active. It keeps on turning around in his cage.

During the night, the grooming behavior is really frequent. The Leopard wakes up, grooms and then gets back to sleep.

After the first month, the Snow Leopard starts sleeping more during the day, and frequently changes place to rest. It also turns around its empty platters of food, displacing them throughout the time.

There is an increase in genital grooming from month 2, as confirmed by Shradhanjali, 2013.

Two days prior to parturition it was seen that the mother stops taking food, and is found taking water. In my observations, it is only a day before she gave birth that the mother drank but rejected the food (stops eating the 8th, gave birth the 9th of May 2014, in the morning).
Figure 9 - Mother Snow Leopard 2 months pregnant, sleeping

Figure 10 – Increase of Genital Grooming from month 2.

Birth and Litter Size

Based on the local information collected by Schaller (1977) in the Himalayas, Snow Leopard cubs are born in June-July in this area.

In my observations, the day after she gave birth, the mother let the cubs on their own during 2 hours in the night, and then came back to take care of them.
Birth usually lasts 2-3 hours and in most cases takes place in the morning. The new born Snow Leopard weights from 300-380g. They are weak at birth and their eyes are closed. Their first cries sound rather like those of piglets. The eyes open in seventh and ninth day.

The litter size has been reported to be one 1-5 cubs per litter, though most litters comprise one to three cubs.

**Figure 12** – The mother gave birth to 2 cubs.

Modifications and New Techniques implemented inside the Breeding Room

1- Installation of a dehumidifier to absorb the moisture coming from outside.

2- Installation of UV light to sterilize the room and make it free of any microorganisms.

3- Installation of CCTV inside the breeding room to monitor and record each and every event without disturbing the animal.

4- Bedding of room with dry leaves and dry wood shavings which aid in absorbing the urine and fecal matters keeping the room clean and dry.
5- Installation of thermometer and hygrometer to keep the record.

6- Rods of the Breeding room were shielded with ply board from in inner side in order to prevent any form of casualties in the cub which included Brain hemorrhages.

7- Cubs are fed with femoral bone twice in a week to have a source of calcium which helps in bone formation and to keep healthy teeth and gums.

Precautions to take during the rearing of Snow Leopard Cub

Rearing conditions

Cubs should be kept relatively cool (21-23 degree celcius), to prevent excessive hair loss (Wharton and Mainka, 1997). Bedding materials should be provided for comfort and temperature regulation, and must be changed frequently as Snow Leopards cubs produce copious amounts of urine. The breeding room should be moisture free.

Management before and after birth

The breeding room should be constructed of wood (which provides effective traction for the newborn cubs), and should be kept warm, dry and moisture free.

All the preparation should be completed at least one month prior to birth, to allow the female to be accustomed to the changes. It is recommended that video cameras be set up to allow remote monitoring of the nest box and maternity den.

Providing the mother with the choice of more than one box in highly recommended.
Assisted Rearing

It is recommended that cubs be mother-reared unless specific medical or behavioral issues would prevent this from being successful.

Females that neglect their cubs or that show stress related behaviors such as frequently carrying the cubs around the enclosure or leaving them outside of the next box should be carefully monitored, as hand rearing should be necessary in these situations.

The Conservation Breeding of the Red Panda

Detailed Program of one day work with the animal

After the Pedigrees of the two animals have been taken in consideration, the male and the female Red Pandas are shifted to the same enclosure. The Red Pandas will mate early morning and late afternoon, and unlike the Snow Leopards, we will not separate the male from the female during the afternoon.

The Gestation Period is counted from the last copulation. The female is less interested in the male, and she doesn’t do “mate calls” anymore.

The nest of the Red Pandas doesn’t need to be set by the keepers, because the female Red Panda will do it on her own.

Until the mother gives birth, the animals continue mating. After Birth, the male is separated from the female, to let her take care of the new-born.

Ex-situ Conservation of Red Pandas in Darjeeling Zoo

A planned conservation Breeding Project as a part of the Global Captive Breeding Master Plan was initiated in 1990’s in Darjeeling Zoo. The Indian Zoo population of Red Pandas was
originally founded of 9 animals – 4 wild caught animals already living in the Zoo in the early 1990’s and five zoo-bred animals imported from Europe. In 2003-2004, it was the first time 4 female Red Pandas were reintroduced in the wild.

**Mating**

Mating takes place end of December to February. After a Gestation period of 112-158 days, the female gives birth to 1-4 blind cubs.

**Nesting**

The Nesting period of the Red Pandas is one month before Parturition, when the animal start collecting leaves to create a nest. In the nature, he will preferably choose a hollow wooden circle enclosed place (like a tree hole) to create his nest.

In captivity, we create different cubing boxes, wooden and hollow, for the mother to be able to chose where she will give birth.

During the Nesting, it is very important to keep the surrounding of the nesting box very quiet. Any noise could disturb and stress the mother, which could lead to a mistreatment of the newborn cub.

**Birth**

After the birth, the mother and the cubs are kept together for 1 year time. The first 2 days, the mother stays all the time with the cub, without even taking time for eating.

At one and a half year, the mother reaches her sexual maturity. She is though not ready to mate yet, and we will wait for at least 2 years for the mating.
Conclusion

After analyzing the breeding of the two species, I was able to understand that there were some differences in the conservation breeding methods by species. One of the most important requirements during the whole internship was not to disturb the animals during the after birth period, so the mother doesn’t feel any stress.

The breeding wildlife species for conservation is very different then the breeding for farm animals. First, the conservation breeding means a planned breeding, where various aspects are considered: pedigree of individuals, individual compatibility, age and normal estrus cycle should be considered to ensure successful breeding. Other considerations in a planned breeding program are scientific management of the species, proper husbandry and veterinary care, proper feed and enrichment. Exchange programs are also an important component of a planned breeding program and the continuous research work on the species concerned.
My experience in the Breeding Center was really interesting. I was able to observe different kind of mating and pregnancy behavior on two animals of the two different species. Also, I studied the different ways of breeding methods for each species: A night shelter is modified as a breeding room for the Snow Leopards, when no need to install anything for the Red Pandas.

The Nutrition of the two species I worked with was also entirely different. The Red Panda, a lesser carnivore, is used to herbivorous nutrition, and to different types of food in the prepared Diet. The Snow Leopard’s Nutrition consists of only meat, and they prefer Chicken when they are old or unhealthy.

**Recommendation**

The Breeding Program in the PNHZ Park was the first one I ever worked in. Everyone in the Breeding Center was very aware of not disturbing the cubs after birth, so the mothers wouldn’t get stressed and the after-birth care would be optimal from the mother. The workers at the Breeding Center would then take care to not speak loudly, and to have a minimum number of visitors everyday at the Center.

Before a breeding, the status of the animals were highly considered, and no random mating took place. The animals were in distinct cages, and the records were properly maintained.

As Darjeeling has a very humid weather during monsoon times, Dehumidifiers were set in every enclosure to keep the Snow Leopards in a habitat closest to their natural habitats. An idea would be to keep up these techniques, and continue adding every year some new facilities for keeping the animals in the driest habitats possible, so they get less chance of humidity related viruses and sickness.
Chapter 4: Diary

Diary

First week

9am : I arrive at the center

9:30am-10am : We go with the Staff to prepare the food to give to the Red Pandas

10-11am : Morning Feeding the Red Pandas - Bananas/Apple/Bread

11am-12am : We go to the Breeding Center to look at the breeding of the New Born Red Panda

12am-1pm : Lunch

1pm-3pm: I go to see the Veterinarians in the Hospital to understand what they are doing with the animal breeding and Nutrition

3:30pm-4pm: Afternoon Feeding of Red Pandas – Bamboos

4pm-4:30pm: Feeding the Snow Leopards

4:30-5:30 : Collect the Datas, write the Report

Second Week

9am : I arrive at the center

9:30am-12pm : I analyze the videos of the pregnancy of a Snow Leopard

12pm-1pm : Lunch

1pm-3pm : We go to the Breeding Center to look at the breeding of the New Born Red Panda’s videos

3pm-5pm : Write about the different analysis I have made
Reference


4-ALANKAR K. Jha IFS, Release and Reintroduction of Captive Bred Red Pandas into Singalila National Park, Darjeeling, India, 26-29th Nov 2013