

Conservation Breeding Programs:

RED PANDA



Red Panda (*Ailurus fulgens fulgens*) is a small mammal of the Himalayas, almost the size of a jungle cat with a chestnut coat and ringed tail. It is distributed in the Himalayas from Central Nepal through northern Burma in the mountains of South-Western China at an altitude ranging between 900-13,000 feet. In India, Red Panda is distributed in Sikkim, Darjeeling Hills, and Arunachal Pradesh. Red Panda is threatened by habitat loss and fragmentation. Red Panda was also hunted and trapped in large numbers to be kept as pets and for supply to zoos all over the world. The species is enlisted as Endangered by the IUCN (2015) with a declining population in its distribution range. The species is a protected species in all its range countries (Nepal, Bhutan, India, Burma, and China). In India, species receive protection under the Indian Wildlife Protection Act (1972). The species is also under the CITES Appendix I. Population is estimated fewer than 2500 according to the Red Panda network.

The Red Panda Conservation Breeding Project at Padmaja Naidu Himalayan Zoological Park, Darjeeling is one of the most successful and only breeding programmes for the species in its natural distribution zone.

Mission:

To breed genetically and demographically viable red pandas in captivity with the aim to augment the ex-situ population when the need arises.

To create awareness of the importance of conservation of the species.

To facilitate research on the biology, management, and in-situ and ex-situ conservation of the species.

Objective:

To increase the genetically healthy population

To provide a backup population for the wild by breeding genetically and demographically competent individuals.

To donate stock to other zoos

Monitoring and modifying management practices to provide survival of Red Panda in captivity as well as in the wild

For research education and public awareness

HISTORY

In 1986, a planned conservation Breeding Project as a part of the Global Captive Breeding Master Plan was initiated in the early nineties in Darjeeling Zoo in response to International Conservation efforts, though the initiation of the conservation breeding project and improvement/modification of the existing housing facility.

At the beginning of the project in 1990, the Park had one male (Basant) and three female red pandas (Amita, Chanda & Divya) of wild origin in stock. One male 'Oscar' was brought from Rotterdam Zoo on 1st April 1993 to augment the existing populations of 4 Red Pandas in the Park. The first successful (planned) breeding of the Red Panda occurred on 20.06.1994 when two cubs "Ekta" and "Friend" were born to 'Basant' and 'Amita'.

The population at the park was further augmented by the acquisition of red pandas from foreign zoos. Two males and 1 female namely 'Hari', 'Gora', and 'Indira' from Rotterdam, Koln, and Madrid respectively, arrived in Darjeeling on November 10, 1994, with the purpose of introducing new blood. Two more red pandas, one male and one female, namely 'Omin' and 'Vicky', from Rotterdam and Antwerp respectively were acquired on 25.12.1996 to continue the conservation breeding programme.

The ultimate objective of a conservation breeding project is the reintroduction or augmentation of the species in its wild habitat. Therefore in 2003 when the Park had a stable genetically healthy population of 21 red pandas, the Park released captive-bred red pandas into the wild habitat of Singalila National Park.

In 2007, Darjeeling Zoo was designated as the Coordinating Zoo for the conservation breeding of red pandas by the Central Zoo Authority, Himalayan zoological park, Sikkim was designated as the participating zoo.

In 2007 and 2008 two wild-caught males and one female were acquired from the Auckland Zoo, in 2010 one female was again acquired from Auckland Zoo to increase the breeding potential and increase genetic variability of the existing captive population.

In 2012, a Red Panda census was carried out in Singalila National Park and Neora Valley National Park to assess their numbers in the wild through direct sighting and genetic analysis through fecal samples. 31 red pandas were directly sighted in both the national parks. Through genetic analysis, Singalila National Park had at least 38 (17:4:17) red pandas and Neora Valley National Park had at least 32 (12:13:7) red pandas. Along with the population assessment of the wild habitats, GIS mapping of both National Parks and threat analysis was also conducted.

A short-term research project was initiated from March 2012-2014 and funded by the Central Zoo Authority titled "Study of Red Panda (*Ailurus fulgens*) in ex-situ facilities in co-relation with in-situ facilities for conservation breeding".

In 2013, hormonal and genetic analysis of the captive red pandas was conducted in association with LaCONES, CCMB. The results showed that the captive population was genetically diverse and all females exhibited hormonal cyclicity.

5 hectares of land in Topkedara block under Senchal Wildlife Sanctuary was handed over to Padmaja Naidu Himalayan Zoological Park for the construction of the off-display Conservation Breeding Centre for Snow leopard and Red Panda. The new off-display Conservation Breeding Centre for Snow leopard (*Uncia uncia*) and Red Panda (*Ailurus fulgens*) at Topkedara funded by the Govt. of West Bengal and Central Zoo Authority, MoEF was inaugurated on 08.10.2013 by the Honourable Minister in Charge (Forest) Shri. Hiten Barman along with North Bengal Development Minister Shri. Gautam Deb. The centre currently has 6 open enclosures for the red panda.

A research project titled “Red Panda Nutrition- Towards an Integrated Approach” funded by Central Zoo Authority was initiated in 2013.

Pt Govind Ballabh Pant High Altitude Zoo, Nainital was approved as the participating zoo by CZA in 2013.

Population Habitat Viability Analysis (PHVA) for red pandas was conducted in November 2014.

A pair of red pandas were transferred to Nainital zoo and one female red panda was acquired from Sikkim Zoo to further the breeding program in 2014.

A research project titled “Studies on the Population and Behavioural Ecology of Red Panda (*Ailurus fulgens*) in Singalila National Park and Neora Valley National Park with reference to conservation” funded by the West Bengal Zoo Authority was completed in 2016.

One pair of red pandas was transferred to Tierpark Berlin zoo in 2020.

A research project titled “Studies on Population and Behavioural ecology of Red Panda in Neora Valley National Park”, funded by West Bengal Zoo Authority was initiated in 2021, the project is still ongoing.

The Second Red Panda Global Species Management Workshop was organized and hosted by PNHZ Park, Darjeeling in association with West Bengal Zoo Authority in April 2019. It was attended by 11 foreign delegates including the International Stud bookkeeper of Red Panda & GSMP convener, Dr. Angela Glatston, Rotterdam Zoo, and 37 delegates from 7 states in India.

A research project titled “Studies on Population and Behavioural ecology of Red Panda in Neora Valley National Park”, funded by West Bengal Zoo Authority was initiated in 2021, the project is still ongoing.

A research project titled “Red Panda Augmentation in Singalila National Park and Neora Valley National Park, West Bengal” for the red panda augmentation in Singalila National Park was initiated in 2019.



Fig: Ariel view of Topkeydara



Fig: Red Panda Enclosure

ENCLOSURES & ENRICHMENT

The red panda is a crepuscular, arboreal, and solitary animal. The enclosures for red pandas at PNHZ Park have been designed with careful consideration so that the enclosures meet the physical, social, behavioural, and psychological needs keeping in mind their natural ecology. The enclosures are designed and enriched to accommodate all behaviours. The structural enrichment is changed regularly to prevent boredom in animals and to stimulate their natural behaviours.

All enclosures are open with undulating topography, natural vegetation, and edible grasses. The enclosures are provided with complicated aerial walkways, nesting boxes at varying heights, and resting platforms. Visual barriers made from bamboo are present between all enclosures to reduce stress.

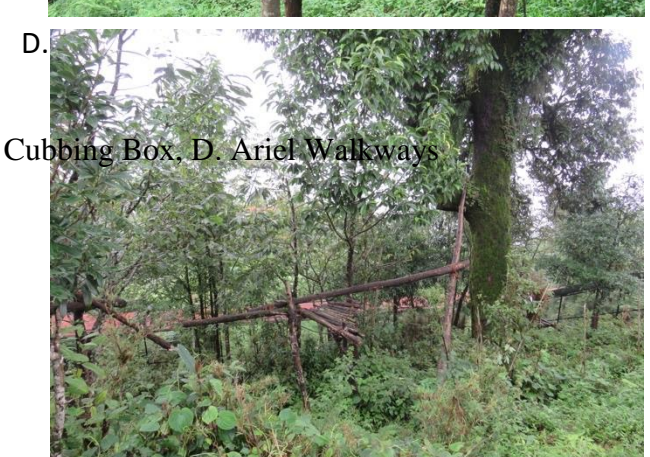


Fig: A.& B. Feeding Platforms, C. Cubbing Box, D. Ariel Walkways

VETERINARY CARE

Captive red pandas are usually free from diseases except for parasitic infections at times. Red pandas have been known to be prone to canine distemper, canine parvovirus, Tyzzer's disease, and dental problems. To prevent infections in captive pandas, the enclosures are regularly cleaned and disinfected. The stool is collected and tested for parasites regularly, deworming is done every 3 months or when a parasite is detected during stool tests. Behavioral observation is done regularly to check for any symptoms of diseases.

Deworming Schedule

SL NO	SPECIES	TYPE OF ENCLOSURE	DISINFECTANT USED AND METHOD	FREQUENCY OF DISINFECTION
1	ALL SPECIES	OPEN	1. Virkon S: 10% Solution Sprayed	Every Two Weeks
2	ALL SPECIES	NIGHT SHELTERS	1. Virkon S: 10% Solution Sprayed	Every two weeks
			3. Blow Flame: Flaming	Every Two Weeks
			4. Gluteraldehyde Concentrate.: 10% wash	Every day
			5. Potassium Permanganate: Foot bath	Every day

DISINFECTION SCHEDULE

SPECIES	DRUG USED	MONTH
Red Panda (<i>Ailurus fulgens</i>)	Praziquantel, Pyrantel Pamoate, Fenbendazole Fenbendazole Albendazole	APRIL- JUNE & JANUARY – MARCH JULY-SEPTEMBER OCTOBER- DECEMBER

FEED

Sl.No	Species	Feed item	Quantity		Day of fasting
			Winter	Summer	
1	Red Panda (<i>Ailurus fulgens</i>)	i. Egg ii. Banana iii. Apple iv. Honey v. Milk vi. Bamboo leaves vii. other seasonal fruits like	01 pc 300 gms 200 gms 50 ml 400 ml 05 kgs 200 gms Upon	01 pc 200 gms 500 gms 50 ml 500 ml 04kgs 200 gms Upon	No fasting day observed

		watermelon orange, grapes, cucumber viii. wild fruits, green leaves	availability	availability	
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Proper feeding management of wild animals in captivity incorporates both husbandry skills and applied nutritional sciences. As a basic foundation of animal management nutrition is integral to longevity, disease prevention, growth, and reproduction.

Supplements:

Cod liver oil, calcium tabs, Revital, astymin, evion 400, Liv 52 is provided, for seven days every month, to supplement the captive diet and meet the species' physiological requirements

RESEARCH STUDIES

S. NO	TITLE	STATUS	FUNDING AGENCY
1.	Study of Red Panda (<i>Ailurus fulgens fulgens</i>) in ex-situ facilities in correlation with in-situ facilities for conservation breeding	Completed	Central Zoo Authority
2.	Red Panda Nutrition- Towards an Integrated Approach	Completed	Central Zoo Authority
3.	Studies on the Population and Behavioural Ecology of Red Panda (<i>Ailurus fulgens</i>) in Singalila National Park and Neora Valley National Park with reference to conservation	Completed	West Bengal Zoo Authority
4.	Studies on Population and Behavioural ecology of Red Panda in Neora Valley National Park	Completed	West Bengal Zoo Authority
5.	Red Panda Augmentation in Singalila National Park and Neora Valley National Park, West Bengal	Ongoing	Ministry of Environment, Forest & Climate change, Govt of India
6.	Determination of Diet of Red Panda (<i>Ailurus fulgens fulgens</i>) in the wild through scat analysis	Ongoing	In collaboration with Centre of Cellular & Molecular Biology (CCMB)

7.	Assessment of genetic variation and reproductive hormone profiles in selected endangered species of conservation interest at the Padmaja Naidu Himalayan Zoological Park, West Bengal	Ongoing	In collaboration with Wildlife Institute of India
8.	Gut microbiome study of Red Panda (<i>Ailurus fulgens fulgens</i>)	Ongoing	In collaboration with CCMB
9.	Study of Amdoparvovirus in captive and wild Red Pandas (<i>Ailurus fulgens fulgens</i>)	Ongoing	In collaboration with Indian Veterinary Research Institute (IVRI)

CONSERVATION BREEDING PLAN OF RED PANDA:

Given the present scenario of global habitat destruction, climate change and increasing human pressure captive breeding has made the difference between survival and extinction for some of the endangered species. The PNHZ Park has taken up the successful conservation breeding of Red Pandas & other endangered high-altitude animals. When it comes to conservation breeding, pairing of the individuals is an important aspect as a healthy breeding pair can produce genetically healthy off springs. The breeding pairs are selected based on the analysis of pedigree, DNA heterozygosity & inbreeding co-efficient of an individual. After thorough evaluation based on the mentioned three important aspects, at present the park houses 4 breeding pairs of Red Pandas.

RED PANDA AUGMENTATION PROGRAM:

In 2003, the zoo released two female Red Pandas namely Sweetie & Minnie into the wild habitat of Singalila National Park. Out of the two female red pandas released, Sweetie gave birth to a cub in July 2004 in a hollow of an Oak tree in Gairibas, Singalila National Park.

After the release in 2003, the PNHZ Park again took up the Red Panda Augmentation program in Singalila National Park by releasing 9 (2:7) red pandas in 2022-24. The released Red Pandas were selected based on DNA heterozygosity and relatedness in collaboration with CCMB, Hyderabad, and in consultation with the International Stud Bookkeeper for Red Panda.

Two pairs (2:2) of Red Panda namely Smile, Shifu, Noel and Yeshe were released in the soft release facility at Gairibas Singalila National Park on 15.01.2022. After acclimatization for over 2 months, the final release into the wild habitat took place on 26.03.2022. Out of the four red pandas (2:2) which were released into Singalila National Park, two survived.

Three female (0:3) Red Pandas namely Nira, Tista and Numa from PNHZP were released in the Soft Release Facility at Gairibas, Singalila National Park on 08.12.2022. After acclimatisation for over two months, the final release took place on 03.02.2023. The

three female red pandas were released and all 3 mated with their wild counterparts and gave birth to a total 5 cubs. This marks the success of the Red Panda augmentation program.

On 07.02.2024, two female red pandas were again released in Singalila National Park. After acclimatization for approximately one and a half month, the final release was held on 16.03.2024. The released red pandas were fitted with radio collars and were tracked and monitored for researchers, collecting valuable data on the behavior, movement and habitat preferences of the species.

The park plans to release more individuals in Singalila National Park until the population of red panda is sufficiently augmented. Following that, the park will release red pandas in Neora Valley National Park to augment the wild population there.

