CENTRAL ZOO AUTHORITY

APPLICATION FOR SMALL GRANT FELLOWSHIP
Please read appendix I for instructions (last page of this document)
Form must be filled in English

Internal Project Number (To be filled in by CZA).....

1. **GENERAL INFORMATION**

Date of application:

Name of Zoo/Organization: Padmaja Naidu Himalayan Zoological Park

Contact person/project leader: Shri A.K.Jha IFS Director, Padmaja Naidu Himalayan Zoological Park.

2. **CLASIFICATION OF THE PROPOSAL**

Improvement Of the Zoo	**Scientific management**	**Ex-situ Conservation**	**Welfare of the animal**	**any other, please specify**

Ex- situ Conservation and linkages with in-situ conservation efforts.

2a. Name of the Project: ***Red Panda Nutrition : Towards an integrated approach***

3. **DATE OF INITIATION OF THE PROJECT:**
4. **DURATION OF THE PROJECT:** Two years
5. **LOCATION OF THE PROJECT.**

Region/State: West Bengal

Closest main city: Darjeeling.

6. **STAFF INVOLVED IN PROJECT (please include curriculum vitae of the individuals):**

1. **Name (title)** – Main Research associate to be selected after advertising from suitable candidates.
Zoo/Organization
Padmaja Naidu Himalayan Zoological Park, Darjeeling, West Bengal.
Period to be spent on the project from:
(day/month/year) for 6 days/ per week / two years

7a. **Background and history of the project (max.300 words)**

The Red Panda is the monotypic member of the family Ailuridae. As a carnivore, it is adopted to the diet of bamboo. In China and India, the main food resources for Red Pandas are bamboo (Wei et. al. 1999 2000, Pradhan et.al. 2001). Pradhan et.al. (2001) reported that the bamboo species *Arundinaria maling* and *Aru. Aristata* constituted 68.4% of the total diet, followed by berries of *Sorbus cuspidate*, *Sorbus microphylla, Actinida strigose* and *Rosa sericera.* A study conducted in June 09' by PNHZ Park also reports that Red Panda relishes flowers and fruits of *Actinidey collasasa* , *Sorbus cuspidata* and eats tender leaves of *Schefflera impressa* including leaves and fruits of *Osthmanthus suavia.* In captivity, the Species Survival Plan (SSP) guidelines for feeding are followed worldwide. SSP recommends that the Red Panda diet should contain 17% Crude protein, 0.5% calcium, 0.4% Phosphorus and not more than 5% Fat. It further states that Ca: P ratio should range between 1:1 to 2:1.

This study would be a sincere effort, to conduct a dietary analysis of the feed of the Red Pandas from the wild and the ex-situ facilities for establishing an appropriate diet regime for the captive Red Pandas.

7b. Main problem or question (max 200 words)

1. The method of dietary evaluation by weighing feed and remains is relatively simple but time consuming, and will only determine the actual amount of food fed to and consumed by the species in an enclosure.

2. Diet evaluation by focal animal observations in their natural groupings is an unreliable means of estimating their individual intake as it relies on the assumption that every animal in the group eats an identical amount but factors such as age, sex, grouping, dominance status and breeding origin may affect the food choice and consumption made by individuals thus making the evaluation difficult.

3. Dietary evaluation by survey and review do not clearly indicate the information's required.

4. It is necessary to combine the recorded ingredient in a diet along with quantities fed and consumed along with the nutrient composition of each ingredient in order to provide a nutritional summary of the diet, but such analysis is difficult due to absence of electronic database.

5. Most zoos do not have facilities to perform chemical analysis of faeces and foodstuff and have to rely on other collaborators.

7c. AIMS AND OBJECTIVE OF THE PROJECT (max. 200 WORDS)

The project shall lay emphasis on the non-invasive research method for dietary analysis both in in-situ and ex-situ facilities that will be oriented towards improving animal husbandry that is food presentation methods, behavioural and environmental enrichment involving food, feeding and foraging techniques.

The objective of the programme will be to provide nutritional support for all stages of life – gestation, lactation and post- natal growth to avoid susceptibility to diseases, increase fertility, reduced neonate viability, retarted growth and physical deformities, obesity, stereotypies or increased aggression.

7d. METHODOLOGY AND/OR PROPOSED ACTIVITIES (MAX.300)

1. Select a particular site at Singalila National Park and Neora Valley National Park and study the vegetation type of the selected area by line transects method.

2. Collection of scat sample from the selected site.

3. Micro- histological fecal analysis method to be used to analyse and estimate the diet of Red panda including chemical analysis of the fecal sample. The protocols for such analysis will be as per the protocols used by Indian Veterinary Institute.

4. Chemical analysis of the fecal sample and the feed items of the ex-situ facility

5. In the ex-situ facility, seasonal collection (December- February /March-May/June-August/September- November) of the scat sample for micro- histological analysis. The fecal sample will be collected continuously for seven days seasonally.

6. Routine dietary evaluation by weighing feed and remains.

8. COLLABORATION (IF ANY): Please specify with which institution/ organization will collaboration take place and type of the collaboration and support should also be indicated.

NGO'S	NAME	LOCATION
Ministries: Wildlife Wing, Forest Department, Govt. of West Bengal		
Universities: None		

Research institutes/ or any other: Indian Veterinary Research Institute.

8a. **Support from host zoo: (Please specify what support the host zoo will be providing, it could be in the form of laboratory, equipment, space or personnel).**

Previous feeding records maintained at the Park will be utilized as a ready reference as per the research requirement. The Indian Veterinary Research Institute shall assist all the laboratory analysis.

9. BASIC TIME SCHEDULE:

Two years can be extended upto three years.

10. **OUTPUT**

10a. Describe which output can be expected from this project (reports, (scientific) publications, management plans, educational tools, etc.) and how they will be disseminated.

The output will help in assessing the diet of the Red pandas and the main food sources of the Red Pandas in the wild through the micro- histological fecal method including their nutrient value. A comparative analysis of the results from both the in-situ and ex-situ facilities will help in formulating an appropriate captive diet that shall also include some of the wild feed items. Inclusion of more of the wild diet items will also help the individuals in the long run when being considered for restocking.

The outputs will be a good source for publication as such datas will also help the other ex-situ facilities that hold Red Pandas. The results will be of use when designing management plan for the species in captivity and also in the form of educational tool when educating the masses about the species.

10b. Describe the (practical) relevance of this project for ex-situ conservation and scientific management of animals in general.

The relevance of this project lies in the fact that till date in almost all the ex-situ facilities all the species including the ones considered for Conservation breeding are fed with artificial diets or on the assumption that foods eaten in the wild is adequate for the species in captivity, thus the results will help us in formulating an exact diet for the species in captivity in terms of the items and its nutritional value.

10c. Describe how results/ output will be evaluated (timelines and benchmarks)

The results obtained from this study will be help in formulating a new diet for the Red Pandas in captivity. The outcome of the implemented new diet shall also be monitored in the individuals through their feed consumption, health and breeding.

11. **FEASIBILITY (How well is the execution of the project guaranteed? Possible risks such as logistics, permits, and other finances and how these risks are dealt with).**

Feasibility of the project is very good as the study is of low cost, and is concentrated in small geographical area. Since Wildlife Wing Forest Department Govt. of West Bengal is also a part of the project the field visit shall be facilitated.

FINANCIAL ASPECTS (Please include budget overview (in Rs.) in an appendix)

YEAR I

Sl No.	Items	Budgets	Justification
1.	Junior Research Fellow Honorarium Rs. 16,000 per month including HRA, in LS	1,92,000.00	Honorarium of the scholar inclusive of house rent.
2.	Cost of data processing and input of data and monitoring etc	50,000.00	Cost of computer
3.	Cost of Books, Periodicals Stationary, CD etc	40,000.00	To cover the cost of purchase of books, periodicals CD, Internet, paper, pen etc.
4.	Cost for Chemical analysis	50,000.00	To cover the cost of chemicals
5.	Postage and Communication	20,000.00	Cost of communicating with expert.
6.	Cost of travel etc.	80,000.00	
	Total	**4,32,000.00**	

YEAR II

Sl No.	Items	Budget	Justification
1.	Junior Research fellow Honorarium Rs. 16,000 per month including HRA, in LS	1,92,000.00	Honorarium of the scholar inclusive of house rent.
2.	Cost of chemicals	50,000.00	To cover the cost of purchase of books, periodicals etc.
3.	Cost of books, periodicals, stationeries	40,000.00	To cover the purchase of CD, Internet , paper , pen etc.
4.	Postage and Communication	20,000.00	
5.	Cost of travel, field trip etc.	70,000.00	
6.	Cost of workshop.	65,000.00	Cost of workshop with 6-8 experts for evaluation of the work before preparing final draft.
7.	Publication of report.	1,50,000.00	Publication of report in a book form.
	Total	**5,87,000.00**	

Total cost= Rs. 4, 32,000.00 + Rs. 5, 87,000.00 = Rs.10,19,000.00 for two years.

Director
PNHZ Park, Darjeeling.

12a. Other financial sources applied for and / or guaranteed

- In case of Forest Dept./ Corporation/ Trust: please also mention the details
- Indicate if source is applied for or already guaranteed

None

2. **Name Department/ Institute:** Self
   Address: Padmaja Naidu Himalayan Zoological Park, Darjeeling.

Amount applied for or guaranteed:
Rs. 10,19,000.00 (applied for)

3. **Name Department/ Institute:** Self
   Address: Padmaja Naidu Himalayan Zoological Park, Darjeeling.

Amount applied for or guaranteed:
Rs. 10,19,000.00 (applied for)

7. DECLARATION

The information is submitted in this application is true, to the best of my knowledge. Should any significant developments arise after this application is made, I shall notify the Member Secretary, Central Zoo Authority.

SIGNATURE

Director/ Curator/ Officer-In-Charge of the Zoo (Supervisor of the Research)	Research Project Leader	Chief Wildlife Warden/ Municipal Commissioner/ Owner/ Zoo Operator
Signature: Date: Seal:	Signature: Date:	Signature: Date: