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Pic: Red Panda (Ailurus fulgens), State Animal of Sikkim

Conserving the Arboreal Species

Red Panda Conservation Breeding Program in Sikkim

The Red Panda (Ailurus fulgens) is an evolutionary distinct species, largely arboreal in its habitat. Locally known as 'Sankam' in Lepcha, 'Okdonga' in Bhutia and 'RatoHabray' or 'NigalyaPonya' in Nepali, Red Panda is the State Animal of Sikkim. Though subsisting on an extremely herbivorous diet of bamboo leaves, this elusive species combines it well with roots, fruits, shoots, as well as insects and eggs, while still retaining the morphological features of a carnivore.

Today, as a species, the Red Panda is desperately losing hold of its habitat. It is enlisted as Vulnerable by the IUCN and is a Schedule I species in the Indian Wildlife Protection Act (1972). It is estimated that Red Panda numbers may be as low as 10,000 (IUCN 2010) within the Eastern Himalayan region of Nepal, Sikkim, Darjeeling, Bhutan, Arunachal Pradesh extending into Myanmar and few provinces of China.

The Himalayan Zoological Park (HZP) at Bulbulay, Gangtok, Sikkim is the participating zoo in India to the Red Panda conservation breeding program, with its coordinating zoo at the Padmaja Naidu Himalayan Zoological Park (PNHZP) in Darjeeling, West Bengal. With the first breeding pair of individuals Preeti (female, from Rotterdam Zoo, Netherlands) and Jugal (male, from PNHZP, Darjeeling) brought to the HZP in 1997, the park has to date, housed a total of 34 Red Panda over the years.

Today, the Himalayan Zoological Park houses 4 Red Panda of wild origin, and 7 captive bred individuals. The park's location and favourable climatic and vegetation conditions, as well as the park's endeavor to ensure that all enclosures mimic the naturalistic conditions of the wild, has ensured a healthy breeding record for the HZP on a yearly basis.

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Hosted by

Forests, Environment & Wildlife Management Department, **Government of Sikkim**





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Ministry of Environment, Forests& Climate Change, Government of India

Inception Workshop for Preparation of State of Environment (SoE) Report of Sikkim

July 24, 2015: ENVIS Centre at Forest, Environment and Wildlife Management Department, Government of Sikkim in collaboration with the Development Alternatives, New Delhi organized a one day inception workshop for preparation of State of Environment (SoE) Report for Sikkim on the 24th of July 2015 at Forest Conference Hall, Deorali, Gangtok. The workshop was inaugurated by the Hon'ble Minister for Forest, Environment & Wildlife, Mines, Minerals & Geology, Science & Technology and Climate Change Departments Shri Tshering Wangdi Lepcha. Participated by officer representatives different government departments, from institutions and NGOs throughout the State, the workshop was also participated by senior officers Shri M. P. Johnson, Statistical Adviser and Dr. M. Salahuddin, Director from the Ministry of Environment, Forests & Climate Change, Government of India.

ENVIS Centre Sikkim hosted by the State Forest Department will be preparing the second SoE Report for Sikkim in consultation with several expert agencies of the country. A New Delhi based organization Development Alternatives has been appointed as the National Host Institute to facilitate the State in report design, capacity building on SoE framework and multi-stakeholders consultations. The first SoE Report was published by ENVIS Sikkim of the Sikkim forest department during 2007. The basic aim of this reporting process is to bring out an overview of the environmental scenario of the State for mainstreaming environment in policy and decision making. It is anticipated that through SoE report, State Government would be able to integrate environmental dimensions in their socio-economic planning for sustainable development.

The main objective of this workshop was to frame the basic structure for outlining the comprehensive content of SoE Report for Sikkim. The workshop had been designed to provide a common discussion platform for all stakeholders of Government of Sikkim



Picture: The Hon'ble Minister (Forests) Shri T. W. Lepcha (centre at the first row) and senior officials from the MoEFCC, GoI and State Forest Department with the team from Development Alternatives New Delhi and Sikkim ENVIS of State Forest department.

including technical experts, government agencies and private sector agencies related to environment sector. The workshop accomplished two objectives, one of which was familiarizing the stakeholders with the likely content of the State of Environment (SoE) report and methodology to develop the intended content. The second objective of this workshop was to identify and prioritize the environmental issues as perceived by stakeholders.



Senior officer representatives from different departments

Shri Anand Kumar from Development Alternatives during his presentations mentioned that the SoE report would be prepared on the PSIR (Pressure-State-Impact-Response) framework. The methodology for preparation would depend on two parallel streams of activities coming together at critical junctures. While one stream focuses on the *data based* (scientific community) approach, the other stream adopts a perception based *participatory* approach often used by the civil society.

Thus the preparation of the report would be based on both analytical and participatory to ensure scientific rigor coupled with awareness and ownership building among stakeholders.

During the workshop, moderated discussion and interactions were witnessed with the stakeholders to achieve consensus on prominent environmental aspects pertaining to the state of Sikkim. The workshop concluded with the finalization of the outline of the SoE report, as agreed with the participating stakeholders. The final outline presented to the stakeholders is as follows:

PARTI	: An Overview of the State
PART II	: Status and trends of Environment
PART III	: Drivers of Environmental Change
Part IV	: Key Environment Concerns
PART IV	: Options for action

This report is expected to be completed in nine months duration.





Green Teacher's Training for 250 schools of Sikkim Rangita Menor National Green Corps Programme - Sikkim

August 20-22, 2015: ENVIS Centre at Forests, Environment & Wildlife Management Department, Government of Sikkim conducted three-Days training programme scheduled from August 20 to August 22, 2015 for 250 green teachers from various schools of the State at the Forest Conference Hall in Gangtok. The training is an ongoing programme for strengthening and implementing the National Green Corps (NGC) Eco-Club programme being implemented in Sikkim since the year 2000.

The training was conducted in batches of 100 green teachers from North and East District schools on the first day, a batch of 100 green teachers from South and West District schools on the second day and a batch of 50 green teachers selected from all districts on the third day. The first two days training programme was focused on Solid Waste Management and Green Schools Auditing based on the Green Schools Programme for which resource persons from a New Delhi based reputed organization Centre for Science and Environment Ms Rangita Menon, Programme Director and Ms. Sanchita Deb Roy, Programme Officer from Environment Education Unit of CSE were invited. The training on green schools auditing was based on the manual "How Green Is Your School?" published by CSE.

The third day training programme was based on the earthian schools programme funded by WIPRO Pvt. Ltd with the focus on water and biodiversity management in the schools. Mr Ashish Shah, Associate from earthian WIPRO imparted a short training cum orientation programme to introduce the earthian schools programme in the State. During the programme films documentary on environment were screened for the participants.



Sanchita Deb

The training programme was intended to help the schools to prepare younger generation to understand current environmental challenges and build knowledge and skills through action oriented projects. The participating schools also registered for the National and State level Green Schools competitive programme. The Forest department also provided token grant-in-aid of Rs.2500/- each with resource materials like Eco-Club handbook, Green Schools Manual etc to all School Eco-Clubs.



... Red Panda Conservation Breeding Program (RPCBP) in Sikkim



Red Panda with an infant at HZP

At present, the Red Panda population at HZP consists of the following individuals:

As on 31 st September, 2015										
SN.	HOUSE NAME	SEX	DOB / DATE OF ARRIVAL AT HZP IF OF WILD ORIGIN	Remarks						
1.	Lucky	F	24.01.2005 Sub-adult (approx 9 months)	Wild Origin, Bulbuley						
2.	Ram	Μ	24.01.2005 Sub-adult (approx 9 months)	Wild Origin, Bulbuley						
3.	Simon	М	13.06.2008	Captive Bred						
4.	Sonam	М	02.07.2009	Captive Bred						
5.	Karma	F	03.06.2010	Captive Bred						
6.	Chen- chen	F	20.06.2010	Captive Bred						
7.	Susan	F	20.06.2010	Captive Bred						
8.	-UN-	F	10.06.2013	Captive Bred						
9.	Riya	F	20.01.2014 Sub-Adult	WO, Ratey- chu Water- shed						
10.	Diya	F	20.01.2014 Sub-Adult	WO, Ratey- chu Water - shed						
11.	Baby2	Un	24.06.2015	Captive Bred						

Today, the Himalayan Zoological Park houses 11 Red Panda out of which 4 are of wild origin and 7 are captive bred individuals.

Breeding during current year (2015):

The first Red Panda cub for the year 2015 was born on the auspicious day of Saga Dawa on 02.06.2015. The cub was born to the breeding pair of Ram (male) and Lucky (female) at the Breeding center in one of the two new night shelters that were constructed in the month of March. The enclosure was also set up with eight CCTV Cameras. It was observed that due to excessive rainfall and harsh weather conditions the mother had shifted the cub from one shelter to another twice resulting in death of cub which survived only 21 days.

Birth from two wild caught females:

A second cub was born to one of the two wild caught females bred to Sonam (male) on 24.06.2015. Owing to the excessive rainfall and the presence of two males who could not be housed with other pandas as they were related, the new mother had to be confined in the feeding house with the cub. The mother and cub adapted to their new surroundings and have shown good response so far.

On 07.07.2015 a third cub was born to the second wild caught female also bred to Sonam (male). This female, like the first, was also in her first breeding and housed in the feeding house separate from the other nursing mother. Both females showed good response to feeding and

This year (2015) the Panda Conservation Red Breeding Program at the Himalayan Zoological Park witnessed the births of three cubs, born to females, all of wild origin. Of the three cubs all of which were born healthy and normal, two unfortunately died. An interesting case was also presented when one of the wild caught females killed her cub and ate it resulting in the questions being raised as to whether she should continue to be included in the breeding program or not.

were observed daily, while taking care to ensure that they were undisturbed.

Report on Infanto-Phagia by Red Panda in Display II: On 03.08.2015 at 9:05 AM, the third cub, born on 07.07.2015, was lying dead in the enclosure. On closer inspection it was found that the cub was partially eaten and while the dam (female parent) showed no signs of distress except for mild disturbance due to the keeper entering the enclosure (*such behavior for this particular individual was not considered unusual, as she seemed to be more nervous around keepers than other red panda females in the zoo*). The dam had eaten more of the cub, leaving only the spinal column, head, forelimbs and hind quarters of the cub, having eaten the rest of the cub clean.

It should be noted here that while this is not an isolated case, as individuals in other species are also known to sometimes kill their offspring. However, this incident is the first of its kind in the history of the HZP. It is still unclear as to why such an incident occurred – whether it was owing to the fact that this was an inexperienced, new mother, or stress caused by not being able to raise the cub in natural surroundings (which could not be met owing to space constraints and unfavorable weather conditions) despite providing necessary measures to keep both mother and cub warm, dry, well fed and comfortable. Such a case of Infantophagia however, tends to become a recurrent phenomenon, as it manifests as a vice or bad habit. In the event that a cub is successfully raised from a parent showing infantophagic tendencies, the same cub is liable to manifest the same kind of behavior, leading to a line of individuals potentially displaying bad parenting behavior which could subsequently jeopardize Conservation Breeding strategy for the species.

Ideally under domestic situations, such individuals would require to be culled or removed from the program, and kept strictly for display purposes only. However, as this is an endangered species, this incident may be considered a learning experience for the management of the species, and a second breeding may be attempted in the next season. If the same situation were to occur, she, as mentioned above, may be retained four purely display purpose only.

Strengths: Himalayan Zoological Park (HZP) has been successful in providing favorable conditions for optimal breeding success. All enclosures within the HZP are based on the concept of Immersion Exhibit whereby the natural feature of the land is not disturbed and is kept as natural as possible while also successfully containing the animals. Vegetation provided within the enclosure is also maintained such that the enclosure resembles to that of wild Red Panda habitat. Minimal man-made interference is also maintained so that the parents may raise the cubs as naturally as possible. Only in dire cases such as inclement weather (heavy rainstorms)as was faced during this year's breeding season are heaters provided to the breeding/ nursing enclosures to ensure that both parents and the cub are warm and dry.

Weaknesses: The HZP spans to 230 ha, which is larger than normal for a regular zoological park. Such sheer size would also mean added expenses in terms of labor, servicing, enclosure management and man-power. Consequently the breeding program also suffers some setbacks in the form of lack of sufficient funds to provide for extra enclosures with all sufficient necessary safety measures, feeding/night houses, make-shift power connectivity and additional feed rations during the breeding season. Lack of sufficient security



measures would also mean a risk of feral dog attacks or transfer of Canine Distemper to the animals, six of which succumbed to the disease in 2012. Such threats would spell disastrous to the breeding program if gone unchecked.

The non-approval of the Master-Plan of the zoo has also made it increasingly difficult for the HZP to conduct Red-Panda exchange programs with zoos outside the country thus limiting genetic exchange with individuals in PNHZP, Darjeeling and wild caught animals from reserve forests within the state.

Future Prospects: With only 30 percent of the HZP's total area developed, the park has enormous potential to expand the Red Panda Conservation Breeding Program. The breeding program currently consists of one designated breeding enclosure, one main display enclosure and an annex display enclosure in which breeding occurred this year. With better funding towards the program, the HZP will be able to construct more designated breeding enclosures with better facilities, such as CCTVs, proper drainage, power lines, keeper's quarters, separate veterinary section meant solely for the program, and if possible, soft release enclosures large enough to potentially carry out reintroduction in the wild.

The vast area and richness in the biodiversity of the area as well as free roaming Red Panda found in the upper reaches and higher perimeters of the HZP, provides vast opportunities for local researchers to conduct studies on natural food eaten by Red Panda in the wild. Such studies are already being conducted at PNHZP Darjeeling, and additional information provided by the rich forest within the HZP perimeter would be invaluable to the program. Research work may also be conducted on Red Panda behavior to provide insight into wild Red Panda activity and be beneficial in enrichment programs.

Red Panda was first described to the world by the French naturalist, Federic Cuvier in 1825. It was only in 1869 that the globally better known Giant Panda was described by Pere Armand Davis.

Red Panda in known to have two subspecies – Ailurus fulgens fulgens (also known as the Himalayan species) and the Ailurus fulgens styni (also known as the Chinese Red Panda). Recent analysis (Grooves 2011), however, claims that the subspecies are actually distinct species namely Ailurus fulgens and Ailurus styni.

Its tail helps in balancing during arboreal locomotion, sharp retractile claws help in climbing along with an enlarged radial sesmoid of the forepaw, also known as pseudo thumb and locomotion along the branches (Roberts and Gittleman 1984)



PEDIGREE CHART

RED PANDA CONSERVATION BREEDING PROGRAMME, HIMALAYAN ZOOLOGICAL PARK

The Himalayan Zoological Park so far has managed to maintain strict a pedigree with all breeding pairings remaining entirely unrelated.



The Red Panda Conservation Breeding Program is essential for survival of the Red Panda in the state of Sikkim, where growing urbanization of the land is inevitable. The viability and sustainability of the breeding program depends a lot on the support given to it not only financially without which running such a program is not possible considering the demands of the project, but also awareness among the people about the impact of the species on the overall ecosystem of the area.

With the current record of the program's breeding success it is evident that HZP is an integral part of the overall conservation program. If more efforts are made to expand the program in terms of research, international animal exchanges, re-introduction and species advocacy, the breeding program will undoubtedly make waves in the conservation of this vulnerable species and subsequently the surrounding ecosystem.

Red Panda Stud Book Record, HZP

SL. NO	ID NO.	HOUSE NAME	SEX	DOB	SIRE NO.	DAM NO.	DATE OF ARRIVAL AT	DATE OF DEATH / TRANSFER	WILD ORIGIN/ CAPTIVE BRED	REMARKS
1.	RP/M/PD/97/HZP/GTK/1	Jugal	Male	21.06.1994			14.03.1997	22.03.2007	CB at PNHZP	Died of old age
2.	RP/F/RH/97/HZP/GTK/2	Preety	Female	26.06.1994			14.03.1997	23.03.2003	CB at Rotterdam Zoo, Holland	Died of old age
3.	RP/M/CB/99/HZP/GTK/3	Shera	Male	22.06.1999	Jugal	Preety		29.12.2003	CB, HZP	Escaped
4.	RP/M/CB/99/HZP/GTK/4	Mickey	Male	22.06.1999	Jugal	Preety		29.12.2003	CB, HZP	Escaped
5.	RP/M/CB/2000/HZP/GTK/5	Rickey	Male	04.07.2000	Jugal	Preety		11.10.2000	CB, HZP	Died, Abandoned by dam
6.	RP/M/CB/2000/HZP/GTK/6	Nickey	Male	04.07.2000	Jugal	Preety	-	19.11.2005	CB, HZP	
/.	RP/F/CB/2001/HZP/GTK/7	-UN-	Female	29.06.2001	Jugal	Preety		14.07.2001	CB, HZP	Died, Abandoned by dam
0. Q	RP/M/CB/2001/HZP/GTK/8	-UN- Rahul	Male	29.06.2001	Jugal	Preety		31 10 2011		
5.	TNo.: 0006B74A7F	Ranar	Whate	20.00.2002	Jugui	Treety		Transferred	00, 1121	Darjeeling
10.	RP/M/CB/2002/HZP/GTK/10	Kiran	Male	20.06.2002	Jugal	Preety		29.12.2003	CB, HZP	Escaped
11.	RP/M/W/2005/HZP/GTK/11	John	Male	Sub-Adult (approx 7 months)			24.01.2005	03.04.2007 Transferred	wo	Transferred to PNHZP Darjeeling
12.	RP/F/W/2005/HZP/GTK/12 TNo. 0006B7347C	Lucky	Female	Sub-Adult (approx 9 months)			24.01.2005		WO, Bulbuley	
13.	RP/M/W/2005/HZP/GTK/13 TNo. 0006B7406B	Ram	Male	Sub-Adult (approx 9 months)			24.01.2005		WO, Bulbuley	
14.	RP/M/W/2007/HZP/GTK/14 TNo. 0006B74149	Nakul	Male	22.06.2003	Sakya No. 1127	Rani No. 97116	03.04.2007	31.05.2009	CB at PNHZP Darjeeling	
15.	RP/F/CB/2007/HZP/GTK/15 TNo. 0006B7107E	Rigsel	Female	29.05.2007	Rahul	Lucky		31.10.2011 Transferred	СВ, НZР	Transferred to PNHZP Darjeeling
16.	RP/M/CB/2008/HZP/GTK/16 TNo. 0006B7387C	Simon	Male	13.06.2008	Rahul	Lucky			CB, HZP	
17.	RP/F/W/2009/HZP/GTK/17 TNo. 0006B71A9F	Doma	Female	Adult			12.02.2009	15.08.2012	WO from Ravangla	Death due to Canine Distemper
18.	RP/F/CB/2009/HZP/GTK/18 TNo. 683614D	Nidhi	Female	13.06.2009	Ram	Lucky		15.08.2012	CB, HZP	Death due to Canine Distemper
19.	RP/M/CB/2009/HZP/GTK/19 TNo. 6B711CA	Sonam	Male	02.07.2009	Ram	Rigsel			СВ, НZР	Named by Dr. Axel Gebauer, Tier Gorlitz Park, Germany
20.	RP/F/CB/2010/HZP/GTK/20 TNo. 956000002158469	Karma	Female	03.06.2010	Ram	Lucky			CB,HZP	
21.	RP/F/CB/2010/HZP/GTK/21 TNo. 956000002149657	Chen- chen	Female	20.06.2010	Ram	Rigsel			CB, HZP	
22.	RP/F/CB/2010/HZP/GTK/21 TNo. 956000002072359	Susan	Female	20.06.2010	Ram	Rigsel			CB, HZP	
23.	RP/F/CB/2011/HZP/GTK/23 TNo. 956000002148969	-UN-	Female	07.06.2011	Ram	Lucky		22.02.2014 Transferred	CB, HZP	Transferred to PNHZP, Darjeeling
24.	RP/M/CB/2011/HZP/GTK/24	-UN-	Male	10.06.2011	Rahul	Doma		08.08.2012	CB,HZP	Death due to Canine Distemper
25.	RP/M/CB/2011/HZP/GTK/25	-UN-	Male	10.06.2011	Rahul	Doma		14.08.2012	CB, HZP	Death due to Canine Distemper
26.	RP/M/CB/2011/HZP/GTK/26	-UN-	Male	11.06.2011	Rahul	Nidhi		11.08.2012	CB, HZP	Death due to Canine Distemper
27.	RP/F/CB/2011/HZP/GTK/27	-UN-	Female	11.06.2011	Rahul	Nidhi		13.08.2012	CB, HZP	Death due to Canine Distemper
28.	RP/M/W/2012/HZP/GTK/28 TNo. 956000002156511	-UN-	Male	Adult			07.05.2012	27.01.2014	WO from North Sikkim	Died
29.	RP/F/CB/2013/HZP/GTK/29 TNo. 956000002161364	-UN-	Female	10.06.2013	Ram	Lucky			CB, HZP	
30.	RP/F/W/2014/HZP/GTK/30 TNo. 956000002145938	Riya	Female	Sub-Adult			20.01.2014		WO, Ratey-chu Watershed	
31.	31. RP/F/W/2014/HZP/GTK/31 TNo. 956000002149016		Female	Sub-Adult			20.01.2014		WO, Ratey-chu Watershed	
32.	RP/M/CB/2015/HZP/GTK/32	Baby1	Male	02.06.2015	Ram	Lucky		23.06.2015	CB, HZP	Died due to harsh weather conditions during shifting by parent
33.	RP//CB/2015/HZP/GTK/33	Baby2		24.06.2015	Sonam				CB, HZP	Ester builder
34.	KP//CB/2015/HZP/GTK/34	варуз		07.07.2015	Sonam				CB. HZP	Eaten by dam
	Escaped Died		Died due distemp	e to canine er	Tran PNH	sferred to IZP	Wil	d Origin	Acquired from PNHZP	n Existing at HZP

[Source: HZP Division, FEWMD | Article Contributed by Shri Hem Bdr. Rai, ACF,(HZP)]

PCRA Painting and Essay Writing Competition

'Fuel Conservation - Self, Family, Society and Nation'



Advertisement banner issued by PCRA, Ministry of Petroleum & Natural Gas, Gol

Aug 14 - Sep 30, 2015: ENVIS Centre Sikkim coordinated with as many as 50 schools of the State to participate in the National level Painting and Essay competition for students from Class VI to IX on invitation from the Petroleum Conservation Research Association (PCRA) under the Ministry of Petroleum and Natural Gas, Government of India.

The competition attracted many students not only with its prize but also as an opportune time for spreading awareness on fuel conservation. One best painting and essay from the participating schools were sent to PCRA for further scrutiny and short listing.

The awards will be distributed to the top three winners during the inaugural function of Oil & Gas Conservation Fortnight 2016, on 16th January, 2016, which will be as follows:

Awards for Painting / Essay competition

I. First Prize -Rs 30,000/- & a laptop plus an all-expense paid Study trip to Japan
II. Second Prize - Rs 20,000/III. Third Prize - Rs 12,500/-



Students of Government Sr. Secondary School, Tadong actively participated in the programme. All the Best for the Results



Ozone Day and Green Consumer Day observed by Sikkim School Eco-clubs

Pic: Inculcating the value of environment to these tender learners - Nyctanthes Eco- Club, Zoom Secondary School, West Sikkim

Sikkim has strength of 766 school eco-clubs, all empowered to prepare younger generations to understand current environment challenges and take positive actions through action oriented projects and activities at school and at locality.

With mailbox flooding with activity reports on eco-calendar days observed by school eco-clubs of the State, really gives a boost to the Nodal Agency at Forest Department to look for avenues for extension and support from all directions and eternal corridors.



Eco-club of Rinchenpong JHS organized Green Consumer week by distributing paper bags painted with eco-messages and pledged to safeguard environment.

Likewise, many school eco-clubs of the State have recently observed Ozone Day on September 16 and Green Consumer Day on September 28 at their respective school premises and locality by spreading awareness with meaningful actions.



The Hon'ble Chief Minister releasing the Topographical and Forest Resource Atlas of Sikkim on the occasion of the Independence Day 2015. The publication was prepared under SBFP project.

ENVIS Centre Sikkim On Status of Environment publishes newsletter on quarterly basis with the support from the Ministry of Environment, Forests& Climate Change, Government of India. A special edition "PANDA Newsletter" is published at every fourth quarter with the extended support from the Forests, Environment & Wildlife Management Department, Government of Sikkim.

This newsletter is aimed at disseminating environment, forest and wildlife information among the environment enthusiasts, students and public at large.

Please send your valuable suggestions, comments and queries to;

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