National Studbook of Red Panda (*Ailurus fulgens*)

Data current till March 31st 2009

Studbook compiled and analysed by

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Kanpur Zoological Park, Kanpur

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Authors

Contents

Red Panda: Biology and Status

Taxonomy

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Carnivora
Family:	Ailuridae
Scientific Name:	*Ailurus fulgens*
Species Authority:	F. Cuvier, 1825
Common Name/s:	Lesser panda, red cat-bear, red panda

The red panda is much smaller than the giant panda weighs 3 - 6 kg. It lives in mountain forests with a bamboo under story, at altitudes generally between 1500 and 4800 m. Red pandas almost exclusively eat bamboo. Red pandas are mainly arboreal animals descending to the ground to move from one area to another. Red panda occurs in a mountainous band Nepal through north-eastern India and Bhutan and into China, Laos and northern Myanmar. The species is rare and continues to decline.

Distribution

Two sub-species of Red panda viz. *Ailurus fulgens fulgens A.f. styani* are believed to be extant. The range of *Ailurus fulgens fulgens* extends from Nepal through north-eastern India (West Bengal, Sikkim, Arunachal Pradesh), Bhutan and into China *(Bahuguna et al. 1998)*. *A.f. styani* is only found in China, in the areas of the Hengduan Mountains in Sichuan and the East Nujiang River of Yunnan Province *(Wei et al. 1998)*, and in northern Myanmar *(Roberts 1998)*. The red panda range is being increasingly fragmented and the population continues to decline sharply.

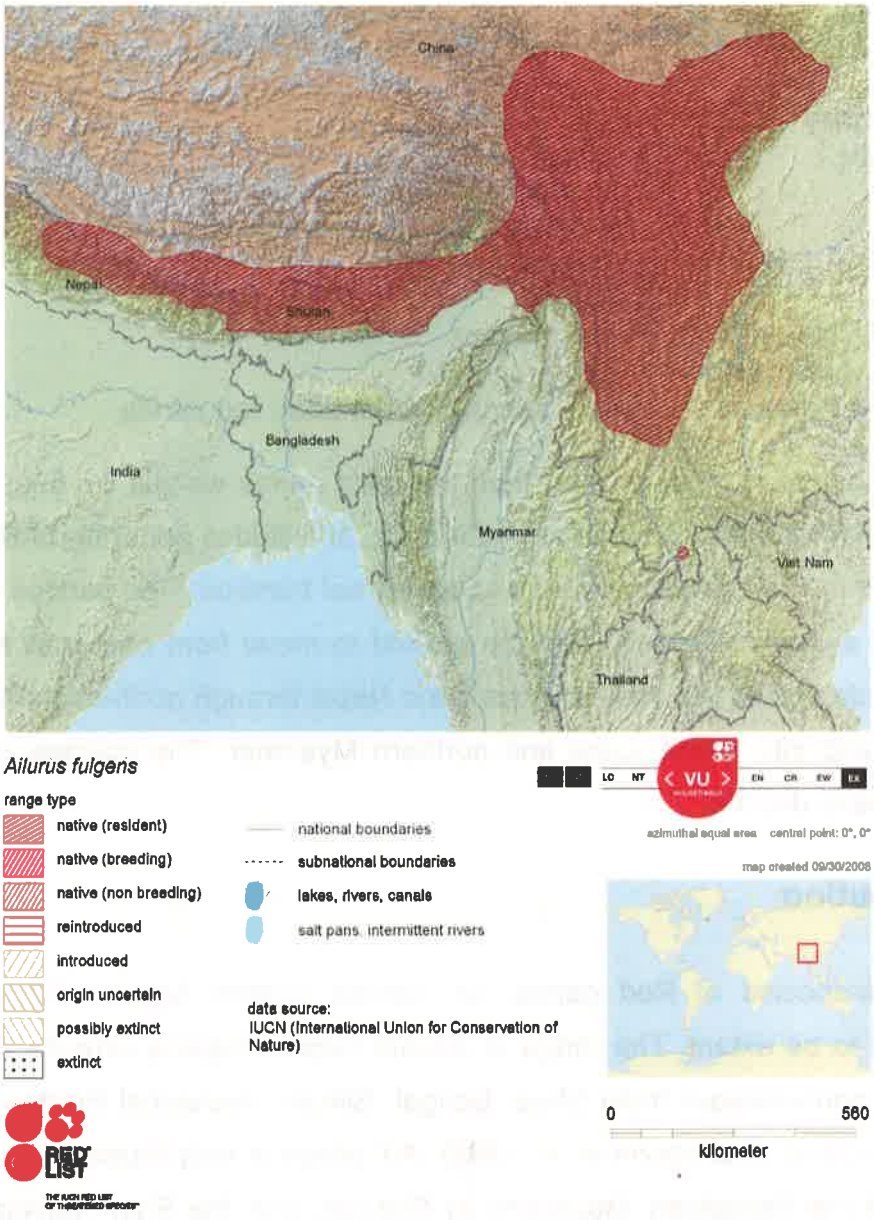


Figure 1. Global Range Map of Red Panda

Habitat:

The species inhabits forests with bamboo understory at an altitudinal range of 1500 – 4800 m however in Meghalaya it also occurs at lower altitudes. It occurs in a variety of forest types (temperate montane, subtropical and tropical).

Age to Maturity: Approximately 18 months

Gestation Period: Gestation period averages 131 days.

Birth Season:

Mating usually takes place in middle to late winter and female give birth mainly in June.

Litter Size: 1-5, usually 2 young

Diet: Mainly bamboo leaves and shoots, occasionally feeds on berries, flowers, seeds, eggs and young birds, small rodents and insects.

Behavior:

Red pandas are mainly arboreal spending most of their time on trees. They are active during the day and spend most of their time feeding on trees. Female red pandas make nests in tree hollows, bamboo thickets or rock crevices and lay their young in these nests. Parental care is provided by the mothers.

Social Organization:

Red pandas are solitary, except for a brief mating period and the time when a mother and its young are together.

The home range of a male usually overlaps the home ranges of several females.

Threats and Status

The main threat to the survival of red pandas is loss and fragmentation of habitat. Additional threats are continued poaching for skins and for pet trade. The species shows a declining population trend across its range. It is therefore listed in

Schedule I of the Wildlife Protection Act (1972) of India and is listed as Vulnerable (C1) in the 2008 IUCN Red List of Threatened Species.

Conservation Measures

Several Protected areas have been established across its range in India to conserve the species and its habitat. Padmaja Naidu Himalayan Zoological Park, Darjeeling and Himalayan Zoological Park, Gangtok have an ongoing conservation breeding program for the species. The present captive population of the species in Indian zoos is given in table 1 below.

Table 1 Status of captive red panda population in Indian zoos on 31st March 2009

Institution	Male	Female	Unknown	Total
Padmaja Naidu Himalayan Zoological Park, Darjeeling	10	3	1	14
Himalayan Zoological park, Gangtok	7	1	0	8
Totals	**17**	**4**	**1**	**22**

Methods

The data collected for the compilation of the studbook by was through mailed questionnaire surveys. The data collected was entered in SPARKS 1.5. and studbook report was generated using the reports option. The SPARKS dataset was imported in poplink 1.3 and ~.prn and ~.ped files were created from this dataset for demographic and genetic analyses by PM2000. PM 2000 was used to produce the census report, life tables and population projections, as well as founder statistics, inbreeding coefficients, possible pairings and population planning.

Census

The present day captive population of Red panda in Indian zoos owes its origin to individuals obtained on breeding loans from foreign zoos and wild caught animals. The details of the census are presented below in Figure 1.

Figure 2 - Census Trends of Red Panda in indian Zoos

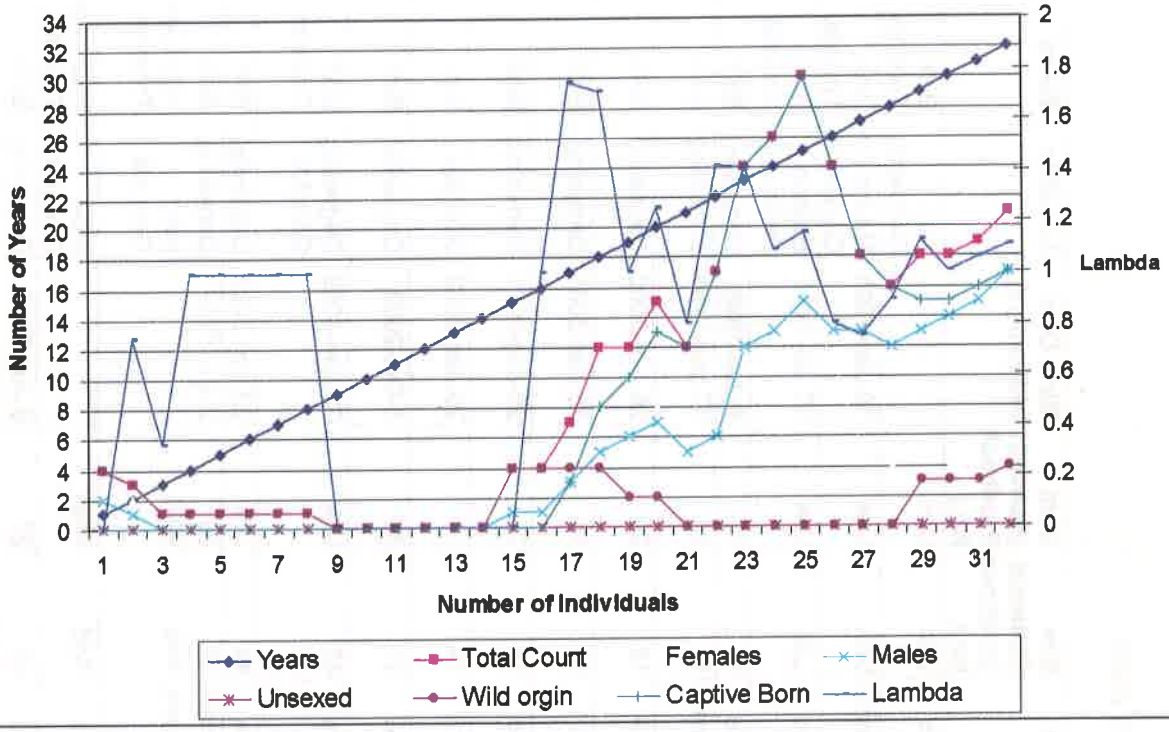


Table 2 Listing of live red panda in Indian zoos

Sl. No.	Name And Transponder no.	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date (dd/mm/yy)	Location	Event	Date	Remarks
1.	_____ GORA	00011	Intl.9305	Male	Unk	Unk		Koln Darjeeling	Birth Transfer	25-Jun-1993	
2.	_____ INDIRA	00013	Intl.9330	Female	Unk	Unk	30-Jun-1993	Madrid Zoo Darjeeling	Birth Transfer	30-Jun-1993 10-Nov-1994	
3.	_____ OMIN	00018	Intl.9404	Male	Unk	Unk	17-Jul-1994	Belgium Darjeeling	Birth Transfer	17-Jul-1994 25-Dec-1996	
4.	Lalit	00021	Intl.9650	Male	11	15	8-Jun-1996	Darjeeling	Birth	8-Jun-1996	
5.	Anne 00-0612-5AC9	00027	Intl.9879	Female	11	15	17-Jun-1998	Darjeeling	Birth	17-Jun-1998	
6.	Sagar 00-0611-1058	00042	Intl.00121	Male	18	20	26-Jun-2000	Darjeeling	Birth	26-Jun-2000	
7.	Pokraj 00-0610-FD19	00046	Intl.01127	Male	11	15	18-Jun-2001	Darjeeling	Birth	18-Jun-2001	
8.	Sakya 00-0611-30B3	00048	Intl.01130	Male	18	20	28-Jun-2001	Darjeeling	Birth	28-Jun-2001	
9.	Rahul 0006-B74-149	00052	Intl.02111	Male	19	17	20-Jun-2002	Gangtok	Birth	20-Jun-2002	
10.	Siddharta 00-0611-5CCB	00054		Male	11	15	3-Oct-2002	Darjeeling	Birth	3-Oct-2002	
11.	Nakul 0006-B74-149	00055	Intl.0358	Male	48	Unk	22-Jun-2003	Darjeeling Gangtok	Birth Transfer	22-Jun-2003 3-Apr-2007	
12.	Sahadev	00056	Intl.0359	Male	48	Unk	22-Jun-2003	Darjeeling	Birth	22-Jun-2003	
13.	Seetal	00057		Female	18	20	2-Jul-2003	Darjeeling	Birth	2-Jul-2003	
14.	Lucky 0006-B73-47C	00058		Female	Wild	Wild		India Gangtok	Wild Capture Transfer	24-Jan-2005	
15.	Ram	00059		Male	Wild	Wild		India Gangtok	Wild Capture Transfer	24-Jan-2005	
16.	Sahani	00060		Male	48	27	5-Jun-2006	Darjeeling	Birth	5-Jun-2006	

Sl. No.	Home Name And Transponder no.	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date (dd/mm/yy)	Location	Event	Date	Remarks
17.	John	00061		Male	Wild	Wild		India Gangtok Darjeeling	Wild Capture Transfer Transfer	 24-Jan-2005 3-Apr-2007	
18.	Rigsel 0006-B71-07E	00062		Male	52	58	28-May-2007	Gangtok	Birth	28-May-2007	
19.	Shann	00063		Male	54	57	4-Jul-2007	Darjeeling	Birth	4-Jul-2007	
20.	Kaijal	00064		Male	Wild	Wild	8-Mar-2008	Darjeeling	Wild Capture	8-Mar-2008	
21.	Unamed 0006-B73-87C	00065		Male	52	58	13-Jun-2008	Gangtok	Birth	13-Jun-2008	
22.	Unamed 0006-B71-A9F	00066		Female	Wild	Wild		Unknown Gangtok	Wild Capture Transfer	 12-Feb-2009	

The pedigree report of the live animals was generated using SPARKS 1.54 and is placed as **Annexure I** at the end of this report.

Table 3 Historical listing of Red panda in Indian zoos

Sl. No.	Home Name	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date	Location	Event	Date	Remarks
1.	Unm1	00001	Intl. 7725	Female	Wild	Wild		India Kanpur Kanpur	Wild Capture Transfer Death	 17-Mar-1977 7-Aug-1979	
2.	Unm2	00002	Intl.7726	Male	Wild	Wild		India Kanpur Kanpur	Wild Capture Transfer Death	 17-Mar-1977 6-Aug-1979	
3.	Unm3	00003	Intl.7727	Female	Wild	Wild		India Kanpur Kanpur	Wild Capture Transfer Death	 17-Mar-1977 19-Jan-1985	
4.	Unm4	00004	Intl.7728	Male	Wild	Wild		India Kanpur Kanpur	Wild Capture Transfer Death	 17-Mar-1977 6-Dec-1978	
5.	Unm5	00005	Intl.7894	Male	4	1	31-May-1978	Kanpur Kanpur	Birth Death	31-May-1978 6-Jun-1978	
6.	Unm6	00006	Intl.7895	Female	4	1	31-May-1978	Kanpur Kanpur	Birth Death	31-May-1978 15-Jun-1978	
7.	Anita	00007	Intl.8221	Female	Wild	Wild		Singalila Darjeeling Darjeeling	Wild Capture Transfer Death	 1-Dec-1991 2-Jul-1997	
8.	Chanda	00008	Intl.8222	Female	Wild	Wild		Singalila Darjeeling Darjeeling	Wild Capture Transfer Death	 31-Dec-1991 10-Oct-1995	
9.	Basant	00009	Intl.8649	Male	Wild	Wild		Singalila Darjeeling Darjeeling	Wild Capture Transfer Death	 31-Dec-1991 4-Jul-1997	
10.	Divya Divya	00010		Female	Wild	Wild		Singalila Darjeeling Darjeeling	Wild Capture Transfer Death	 31-Dec-1991 10-Jul-1995	
11.	_____ GORA	00011	Intl.9305	Male	Unk	Unk		Koln Darjeeling	Birth Transfer	 25-Jun-1993	
12.	_____ HARI	00012	Intl.9302	Male	Unk	Unk	26-Jun-1993	Rotterdam Darjeeling Darjeeling	Birth Transfer Death	26-Jun-1993 10-Nov-1994 27-Nov-1997	

Sl. No.	Home Name	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date	Location	Event	Date	Remarks
13.	_____ INDIRA	00013	Intl.9330	Female	Unk	Unk	30-Jun-1993	Madrid Z Darjeeling	Birth Transfer	30-Jun-1993 10-Nov-1994	
14.	Friend 00-0610-FEE2	00014	Intl.94100	Male	9	7	20-Jun-1994	Darjeeling Darjeeling	Birth Death	20-Jun-1994 3-Nov-2002	
15.	Ekta	00015		Female	9	7	20-Jun-1994	Darjeeling Darjeeling	Birth Death	20-Jun-1994 23-Jul-2006	
16.	_____ PRITY	00016		Female	Unk	Unk	26-Jun-1994	Holland Darjeeling Darjeeling	Birth Transfer Death	26-Jun-1994 25-Dec-1996 14-Mar-1997	
17.	Preety	00017		Female	Unk	Unk	26-Jun-1994	Rotterdam Gangtok Gangtok	Birth Transfer Death	26-Jun-1994 14-Mar-1997 23-Mar-2003	
18.	_____ OMIN	00018	Intl.9404	Male	Unk	Unk	17-Jul-1994	Belgium Darjeeling	Birth Transfer	17-Jul-1994 25-Dec-1996	
19.	Jugul	00019	Intl.95126	Male	9	7	21-Jun-1995	Darjeeling Gangtok Gangtok	Birth Transfer Death	21-Jun-1995 14-Mar-1997 22-Feb-2007	
20.	Kalita	00020	Intl.95127	Female	9	7	21-Jun-1995	Darjeeling Darjeeling	Birth Death	21-Jun-1995 1-Feb-2004	
21.	Lalit	00021	Intl.9650	Male	11	15	8-Jun-1996	Darjeeling	Birth	8-Jun-1996	
22.	Mohini	00022	Intl.9651	Female	11	15	8-Jun-1996	Darjeeling Darjeeling	Birth Death	8-Jun-1996 28-Aug-1997	
23.	Neera	00023	Intl.9654	Female	9	7	14-Jul-1996	Darjeeling Darjeeling	Birth Death	14-Jul-1996 15-Jul-1997	
24.	Queen	00024	Intl.97120	Female	12	20	15-Jun-1997	Darjeeling Darjeeling	Birth Death	15-Jun-1997 11-Feb-2002	
25.	Rani	00025	Intl.97116	Female	11	15	25-Jun-1997	Darjeeling Darjeeling	Birth Death	25-Jun-1997 14-Sep-2002	
26.	Sweety 00-0617-ECA6	00026	Intl.97117	Female	11	15	25-Jun-1997	Darjeeling Singalila	Birth Release	25-Jun-1997 15-Aug-2003	Successfully released in the wild
27.	Anne 00-0612-5AC9	00027	Intl.9879	Female	11	15	17-Jun-1998	Darjeeling	Birth	17-Jun-1998	
28.	Mini 00-0617-D11A	00028	Intl.9880	Female	11	15	17-Jun-1998	Darjeeling Singalila	Birth Release	17-Jun-1998 15-Aug-2003	Successfully released in

Sl. No.	Home Name	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date	Location	Event	Date	Remarks
											the wild
29.	Ravi	00029	Intl.9875	Male	18	20	29-Jun-1998	Darjeeling Darjeeling	Birth Death	29-Jun-1998 1-Feb-2002	
30.	Rosi	00030	Intl.9876	Female	18	20	29-Jun-1998	Darjeeling Darjeeling	Birth Death	29-Jun-1998 11-Jun-2003	
31.	Tony	00031	Intl.9877	Male	18	20	29-Jun-1998	Darjeeling Darjeeling	Birth Death	29-Jun-1998 1-Sep-1998	
32.	Uma	00032	Intl.9878	Female	18	20	29-Jun-1998	Darjeeling Darjeeling	Birth Death	29-Jun-1998 11-Jun-2003	
33.	Mitra	00033	Intl.99105	Male	21	25	30-May-1999	Darjeeling Darjeeling	Birth Death	30-May-1999 18-Jan-2002	
34.	Mikhi	00034		Female	21	25	30-May-1999	Darjeeling Darjeeling	Birth Death	30-May-1999 11-Dec-1999	
35.	Sibu	00035	Intl.99106	Male	11	15	18-Jun-1999	Darjeeling Darjeeling	Birth Death	18-Jun-1999 4-Feb-2002	
36.	Tania	00036	Intl.99111	Female	11	15	18-Jun-1999	Darjeeling Darjeeling	Birth Death	18-Jun-1999 6-Dec-1999	
37.	Shera	00037	Intl.99113	Male	19	17	22-Jun-1999	Gangtok Unknown	Birth Go LTF	22-Jun-1999 29-Dec-2003	Escaped on 29 Dec 2003
38.	Mickey	00038	Intl.99114	Male	19	17	22-Jun-1999	Gangtok Unknown	Birth Go LTF	22-Jun-1999 29-Dec-2003	Escaped on 29 Dec 2003
39.	Kanu	00039	Intl.99108	Male	18	20	15-Jul-1999	Darjeeling Darjeeling	Birth Death	15-Jul-1999 30-Jan-2000	
40.	Goutam	00040	Intl.99107	Male	18	20	15-Jul-1999	Darjeeling Darjeeling	Birth Death	15-Jul-1999 10-Feb-2002	
41.	Mili 00-0611-0597	00041	Intl.99109	Female	18	20	15-Jul-1999	Darjeeling Darjeeling	Birth Death	15-Jul-1999 25-Sep-2002	
42.	Sagar 00-0611-1058	00042	Intl.00121	Male	18	20	26-Jun-2000	Darjeeling	Birth	26-Jun-2000	
43.	Priyanka	00043	Intl.00122	Female	11	15	30-Jun-2000	Darjeeling Darjeeling	Birth Death	30-Jun-2000 16-Sep-2002	
44.	Ricky	00044	Intl.00124	Male	19	17	4-Jul-2000	Gangtok Gangtok	Birth Death	4-Jul-2000 11-Oct-2000	
45.	Nickey	00045	Intl.00125	Male	19	17	4-Jul-2000	Gangtok Gangtok	Birth Death	4-Jul-2000 19-Nov-2005	

Sl. No.	Home Name	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date	Location	Event	Date	Remarks
46.	Pokraj 00-0610-FD19	00046	Intl.01127	Male	11	15	18-Jun-2001	Darjeeling	Birth	18-Jun-2001	
47.	Neelam 00-0611-956B	00047	Intl.01129	Female	11	15	18-Jun-2001	Darjeeling Singalila	Birth Release	18-Jun-2001 6-Nov-2003	Successfully released in the wild
48.	Sakya 00-0611-30B3	00048	Intl.01130	Male	18	20	28-Jun-2001	Darjeeling	Birth	28-Jun-2001	
49.	Doma 00-0611-30B3	00049	Intl.01131	Female	18	20	28-Jun-2001	Darjeeling Singalila	Birth Release	28-Jun-2001 6-Nov-2003	Successfully released in the wild
50.	Unnamed	00050	Intl.01132	Female	19	17	29-Jun-2001	Gangtok Gangtok	Birth Death	29-Jun-2001 14-Jul-2001	
51.	Unnamed	00051	Intl.01133	Female	19	17	29-Jun-2001	Gangtok Gangtok	Birth Death	29-Jun-2001 15-Jul-2001	
52.	Rahul 0006-B74-149	00052	Intl.02111	Male	19	17	20-Jun-2002	Gangtok	Birth	20-Jun-2002	
53.	Kiran	00053	Intl.02112	Male	19	17	20-Jun-2002	Gangtok Unknown	Birth Go LTF	20-Jun-2002 24-Dec-2004	Escaped on 24 Dec 2004
54.	Siddharta 00-0611-5CCB	00054		Male	11	15	3-Oct-2002	Darjeeling	Birth	3-Oct-2002	
55.	Nakul 0006-B74-149	00055	Intl.0358	Male	48	Unk	22-Jun-2003	Darjeeling Gangtok	Birth Transfer	22-Jun-2003 3-Apr-2007	
56.	Sahadev	00056	Intl.0359	Male	48	Unk	22-Jun-2003	Darjeeling	Birth	22-Jun-2003	
57.	Seetal	00057		Female	18	20	2-Jul-2003	Darjeeling	Birth	2-Jul-2003	
58.	Lucky 0006-B73-47C	00058		Female	Wild	Wild		India Gangtok	Wild Capture Transfer	24-Jan-2005	
59.	Ram	00059		Male	Wild	Wild		India Gangtok	Wild Capture Transfer	24-Jan-2005	
60.	Sahani	00060		Male	48	27	5-Jun-2006	Darjeeling	Birth	5-Jun-2006	
61.	John	00061		Male	Wild	Wild		India Gangtok Darjeeling	Wild Capture Transfer Transfer	24-Jan-2005 3-Apr-2007	
62.	Rigsel 0006-B71-07E	00062		Male	52	58	28-May-2007	Gangtok	Birth	28-May-2007	
63.	Shann	00063		Male	54	57	4-Jul-2007	Darjeeling	Birth	4-Jul-2007	

Sl. No.	Home Name	National Studbook No.	International Studbook No.	Sex	Sire (National Studbook No.)	Dam (National Studbook No.)	Birth Date	Location	Event	Date	Remarks
64.	Kaijal	00064		Male	Wild	Wild		Darjeeling	Wild Capture Transfer	8-Mar-2008	
65.	Unamed 0006-B73-87C	00065		Male	52	58	13-Jun-2008	Gangtok	Birth	13-Jun-2008	
66.	Unamed 0006-B71-A9F	00066		Female	Wild	Wild		Unknown Gangtok	Wild Capture Transfer	12-Feb-2009	

Population Planning and Breeding Recommendations

The red panda conservation breeding program is targeted at producing surpluses for restocking. It has so far restocked 4 females; however the current gene diversity is quite low (0.6584) as shown by analysis conducted using PM2000. The target of maintaining at least 90% of the gene diversity at the end of 100 years cannot be achieved with the current population.

Based on modeling done using PM2000 it is recommended that the population requires the addition of one new founder animal annually to the population for the next 100 years. The details of mean kinship matrix of live individuals are provided as Table 4.

Table 4 Mean Kinship Matrix of Live Individuals

Males						Females				
Stud ID	Mean Kinship	% known	Age	Location		Stud ID	Mean Kinship	% known	Age	Location
00011	0.500	0.0	16	Darjeeling		00013	0.500	0.0	16	Darjeeling
00018	0.500	0.0	14	Darjeeling		00026	0.365	50.0	12	Singalila
00021	0.365	50.0	13	Darjeeling		00027	0.378	50.0	11	Darjeeling
00037	0.321	50.0	10	Gangtok		00028	0.365	50.0	11	Singalila
00038	0.321	50.0	10	Gangtok		00047	0.365	50.0	8	Singalila
00042	0.340	50.0	9	Darjeeling		00049	0.340	50.0	8	Singalila
00046	0.365	50.0	8	Darjeeling		00057	0.353	50.0	6	Darjeeling
00048	0.378	50.0	8	Darjeeling		00058	0.026	100.0	4	Gangtok
00052	0.333	50.0	7	Gangtok		00063	0.375	50.0	U1	Darjeeling
00053	0.321	50.0	7	Gangtok						
00054	0.378	50.0	6	Darjeeling						
00055	0.378	25.0	6	Gangtok						
00056	0.378	25.0	6	Darjeeling						
00059	0.000	100.0	4	Gangtok						
00060	0.388	50.0	3	Darjeeling						
00061	0.500	0.0	0	Darjeeling						
00062	0.154	75.0	2	Gangtok						
00063	0.375	50.0	U1	Darjeeling						

Table 5 provides details of number of breeding pairs required to meet population goals and minimize inbreeding coefficient.

Table 5 No. of breeding pairs recommended each year

Year	# Births	# Pairs
0	18	36.0
1	4.5	9.0
2	6.125	12.3
3	7.65625	15.3
4	9.070313	18.1
5	6.837891	13.7
6	7.422363	14.8
7	7.746704	15.5
8	7.769318	15.5
9	7.444069	14.9
10	7.595613	15.2

Table 6 provide information on the pairing which are recommended for breeding.

Breeding recommendations

Table 6 Pairings recommended for breeding

Males	Females	Inbreeding Coefficients of Progeny	Males	Females	Inbreeding Coefficients of Progeny
00042	00058	F = 0.000	00059	00027	F = 0.000
00042	00066	F = 0.000	00059	00057	F = 0.000
00046	00027	F = 0.500	00059	00058	F = 0.000
00046	00057	F = 0.250	00059	00066	F = 0.000
00046	00058	F = 0.000	00060	00058	F = 0.000
00046	00066	F = 0.000	00060	00066	F = 0.000
00048	00058	F = 0.000	00062	00027	F = 0.083
00048	00066	F = 0.000	00062	00057	F = 0.083
00052	00058	F = 0.000	00062	00066	F = 0.000
00052	00066	F = 0.000	00063	00058	F = 0.000
00053	00058	F = 0.000	00063	00066	F = 0.000
00053	00066	F = 0.000	00064	00027	F = 0.000
00054	00058	F = 0.000	00064	00057	F = 0.000
00054	00066	F = 0.000	00064	00058	F = 0.000
00055	00058	F = 0.000	00064	00066	F = 0.000
00055	00066	F = 0.000	00065	00027	F = 0.083
00056	00058	F = 0.000	00065	00057	F = 0.083
00056	00066	F = 0.000	00065	00066	F = 0.000

The pairing which are not recommended for breeding are listed as Table 7. This has been done to minimize inbreeding.

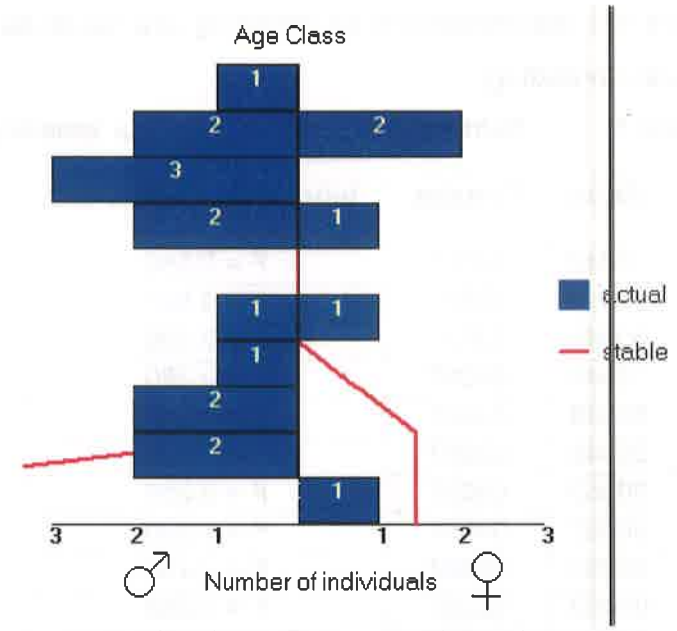
Table 7 Pairings not recommended for breeding

Males	Females	Inbreeding Coefficient of Progeny
00042	00027	F = 0.250
00042	00057	F = 0.500
00046	00027	F = 0.500
00046	00057	F = 0.250
00048	00027	F = 0.250
00048	00057	F = 0.500
00052	00027	F = 0.250
00052	00057	F = 0.250
00053	00027	F = 0.250
00053	00057	F = 0.250
00054	00027	F = 0.500
00054	00057	F = 0.250
00055	00027	F = 0.250
00055	00057	F = 0.500
00056	00027	F = 0.250
00056	00057	F = 0.500
00060	00027	F = 0.625
00060	00057	F = 0.375
00062	00058	F = 0.333
00063	00027	F = 0.375
00063	00057	F = 0.625
00065	00058	F = 0.333

Age Distribution

Age distribution pattern (figure 3) of the known individuals of captive Red Panda population in India zoo was worked out. The pattern was generated with following presumptions.

Current Population Size: 27 New Population Size: 200
Growth Rate: 7.4074 Number of Years: 1
Sex Ratio At Birth: 50% Males and 50% Females

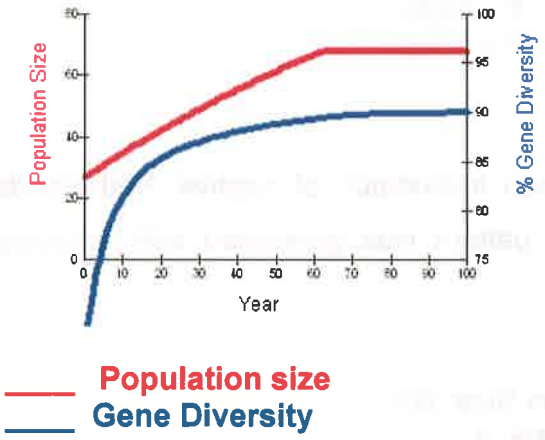


Total Males = 14.0 Total Females = 5.0
Unknown Age Males = 0.5 Unknown Age Females = 0.5

Figure 3 Age Pyramid of known age individuals

Table 8 provides information on the genetic goal setting. A population size of 67 individuals would be required to meet the program objectives of 90% genetic diversity at the end of 100 years.

Table 8 Genetic goal settings



Other variables:
Generation Length = 5.1000
Maximum Potential Population Growth Rate = 0.9930
Current Population Size = 22.0000
Current Effective Size = 9.2000
Ratio of Ne/N = 0.3400
Current Gene Diversity = 0.6584
Maximum Allowable Population Size = 200.0000
New Founders per Addition Event = 1.0000
Year to Start Adding Founders = 1.0000
Year to Stop Adding Founders = 100.0000
Years Between Addition Events = 1.0000
FGE Recruited per New Founder = 0.4000

Demographic Analyses

The year wise trends in census can be inferred from table 8 and figure 2 respectively.

Table 8 Census details

Years	Total	Females	Males	Unsexed	Wild Origin	Captive bred	Lambda
1977	4	2	2	0	4	0	0
1978	3	2	1	0	3	0	0.75
1979	1	1	0	0	1	0	0.333
1980	1	1	0	0	1	0	1
1981	1	1	0	0	1	0	1
1982	1	1	0	0	1	0	1
1983	1	1	0	0	1	0	1
1984	1	1	0	0	1	0	1
1985	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0
1991	4	3	1	0	4	0	0
1992	4	3	1	0	4	0	1
1993	7	4	3	0	4	3	1.75
1994	12	7	5	0	4	8	1.714
1995	12	6	6	0	2	10	1
1996	15	8	7	0	2	13	1.25
1997	12	7	5	0	0	12	0.8
1998	17	11	6	0	0	17	1.417
1999	24	12	12	0	0	24	1.412
2000	26	13	13	0	0	26	1.083
2001	30	15	15	0	0	30	1.154
2002	24	11	13	0	0	24	0.8
2003	18	5	13	0	0	18	0.75
2004	16	4	12	0	0	16	0.889
2005	18	5	13	0	3	15	1.125
2006	18	4	14	0	3	15	1
2007	19	4	15	0	3	16	1.056
2008	21	4	17	0	4	17	1.105

The sex ratio is strongly biased in favour of females in the living population of red panda. The life table for Red Panda obtained from SPARKS 1.54 has been analyzed and provided as table 9. The table suggests that suggests that fecundity (Mx) for males starts in the second year of the animals life peaks in the 6th year and then gradually tapers off by the 13th year. For females fecundity also starts in the 2nd year, reaches peak in the 7th year and then drops down and is negligible by the 12th year. Mortality

(Qx) is highest in the first year of the animal's life for both males and females. Age specific survival (Px) shows a peak in the second year for both males and females and then dips to peak again in the 16th and 17th year of life respectively.

Table 9 Life Table of Captive Red Panda Population in Indian Zoos

Class	Mx Male	NmXm	Mx Female	Qx Male	Qx Female	Px Male	Lx Male	Px Female	Lx Female
1	0	26.51	0	**0.14**	**0.18**	0.86	1	0.82	1
2	**0.151**	25.41	**0.18**	0.08	0.113	**0.92**	**0.86**	0.887	0.82
3	**0.176**	24.42	**0.201**	0.086	0.123	0.914	0.791	0.877	0.727
4	**0.226**	20.4	**0.247**	0.092	0.135	0.908	0.723	0.865	0.638
5	**0.257**	17.42	**0.297**	0.087	0.128	0.913	0.657	0.872	0.552
6	**0.262**	14.94	**0.352**	0.069	0.106	0.931	0.6	0.894	0.481
7	**0.229**	11.3	**0.371**	0.053	0.099	0.947	0.558	0.901	0.43
8	**0.183**	9.04	**0.339**	0.044	0.128	0.956	0.529	0.872	0.388
9	**0.128**	6.88	**0.236**	0.047	0.168	0.953	0.505	0.832	0.338
10	**0.079**	5.05	**0.124**	0.056	0.187	0.944	0.482	0.813	0.281
11	**0.04**	4	**0.041**	0.07	0.177	0.93	0.455	0.823	0.229
12	**0.015**	3.67	**0.008**	0.069	0.167	0.931	0.423	0.833	0.188
13	**0.004**	2.56	0	0.055	0.145	0.945	0.394	0.855	0.157
14	0	2	0	0.028	0.111	0.972	0.372	0.889	0.134
15	0	1.46	0	0.009	0.056	0.991	0.362	0.944	0.119
16	0	0.52	0	0	0.019	1	0.358	0.981	0.112
17	0	0	0	0	0	1	0.358	1	0.11
0	0	0	0	0	0	1	0.358	1	0.11
0	0	0	0	0	0	1	0.358	1	0.11
0	0	0	0	0	0	1	0.358	1	0.11
0	0	0	0	0	0	1	0.358	1	0.11

Mx – Fecundity
QX – Mortality
Px – Age-Specific Survival
Lx – Age-Specific Survivorship

Genetic Analyses

Founder Statistics

The captive Indian Red panda population has received contributions from 3 founders, besides this there is one more potential founder. The details of founder contribution are summarized below in table 10.

Table 10 Founder Statistics

Studbook #	Sex	Age	Representation	Contribution	Allele Retent.	Potential Ret.	Descendants
00009	M	D	0.4744	4.6250	0.8595	0.8595	20.00
00007	F	D	0.4744	4.6250	0.8520	0.8520	20.00
00058	F	4	0.0513	0.5000	0.5000	1.0000	1.00
00059	M	4	0.0000	0.0000	0.0000	1.0000	0.00
00064	M	1	0.0000	0.0000	0.0000	1.0000	0.00
00066	F	0	0.0000	0.0000	0.0000	1.0000	0.00

Based on the above the studbook nos. 00009 and 00007 are over represented in the population.

Inbreeding

The inbreeding statistics of the captive Indian red panda population was analyzed using PM2000 and is presented below in table 11.

Table 11 Inbreeding coefficients of captive red panda population in Indian Zoos

Studbook #	Sex	Age	Location	% Known	F
00001	F	10	Kanpur	100.0	0.0000
00002	M	3	Kanpur	100.0	0.0000
00003	F	10	Kanpur	100.0	0.0000
00004	M	3	Kanpur	100.0	0.0000
00008	F	4	Darjeeling	100.0	0.0000
00009	M	6	Darjeeling	100.0	0.0000
00010	F	4	Darjeeling	100.0	0.0000
00011	M	16	Darjeeling	0.0	0.0000
00012	M	4	Darjeeling	0.0	0.0000
00013	F	16	Darjeeling	0.0	0.0000
00007	F	0	Darjeeling	100.0	0.0000
00016	F	3	Darjeeling	0.0	0.0000
00017	F	9	Gangtok	0.0	0.0000
00018	M	14	Darjeeling	0.0	0.0000
00058	F	4	Gangtok	100.0	0.0000
00059	M	4	Gangtok	100.0	0.0000
00005	M	0	Kanpur	100.0	0.0000
00006	F	0	Kanpur	100.0	0.0000
00014	M	8	Darjeeling	100.0	0.0000
00015	F	12	Darjeeling	100.0	0.0000
00019	M	12	Gangtok	100.0	0.0000

Studbook #	Sex	Age	Location	% Known	F
00020	F	9	Darjeeling	100.0	0.0000
00021	M	13	Darjeeling	50.0	0.0000
00022	F	1	Darjeeling	50.0	0.0000
00023	F	1	Darjeeling	100.0	0.0000
00024	F	5	Darjeeling	50.0	0.0000
00025	F	5	Darjeeling	50.0	0.0000
00026	F	12	Singalila	50.0	0.0000
00027	F	11	Darjeeling	50.0	0.0000
00028	F	11	Singalila	50.0	0.0000
00029	M	4	Darjeeling	50.0	0.0000
00030	F	5	Darjeeling	50.0	0.0000
00031	M	0	Darjeeling	50.0	0.0000
00032	F	5	Darjeeling	50.0	0.0000
00033	M	3	Darjeeling	50.0	0.5000
00034	F	0	Darjeeling	50.0	0.5000
00035	M	3	Darjeeling	50.0	0.0000
00036	F	0	Darjeeling	50.0	0.0000
00037	M	10	Gangtok	50.0	0.0000
00038	M	10	Gangtok	50.0	0.0000
00039	M	1	Darjeeling	50.0	0.0000
00040	M	3	Darjeeling	50.0	0.0000
00041	F	3	Darjeeling	50.0	0.0000
00042	M	9	Darjeeling	50.0	0.0000
00043	F	2	Darjeeling	50.0	0.0000
00044	M	0	Gangtok	50.0	0.0000
00045	M	5	Gangtok	50.0	0.0000
00046	M	8	Darjeeling	50.0	0.0000
00047	F	8	Singalila	50.0	0.0000
00048	M	8	Darjeeling	50.0	0.0000
00049	F	8	Singalila	50.0	0.0000
00050	F	0	Gangtok	50.0	0.0000
00051	F	0	Gangtok	50.0	0.0000
00052	M	7	Gangtok	50.0	0.0000
00053	M	7	Gangtok	50.0	0.0000
00054	M	6	Darjeeling	50.0	0.0000
00055	M	6	Gangtok	25.0	0.0000
00056	M	6	Darjeeling	25.0	0.0000
00057	F	6	Darjeeling	50.0	0.0000
00060	M	3	Darjeeling	50.0	0.2500
00061	M	0	Darjeeling	0.0	0.0000
00062	M	2	Gangtok	75.0	0.0000
00063	M	2	Darjeeling	50.0	0.2500
00064	M	1	Darjeeling	100.0	0.0000
00065	M	1	Gangtok	75.0	0.0000
00066	F	0	Darjeeling	100.0	0.0000

% Known – percentage of pedigree known

F – Inbreeding Coefficient

Table 12 Individual statistics of living animals

Studbook #	Sex	Sire	Dam	Age	Location	Vx	% Known	F	Mk	Kv	Gu - All	Gu - Descend	Prob Lost	Foke	# Offspring	Local Id
00011	M	Unk	Unk	16	Darjeeling	---	---	---	---	---	---	---	---	---	12	Gora
00013	F	Unk	Unk	16	Darjeeling	---	---	---	---	---	---	---	---	---	0	Indira
00018	M	Unk	Unk	15	Darjeeling	---	---	---	---	---	---	---	---	---	11	Omin
00021	M	00011	00015	13	Darjeeling	0.00	50.0	0.0000	0.3235	0.0000	0.0145	0.0745	1.0000	11.00	2	Lalit
00027	F	00011	00015	11	Darjeeling	0.00	50.0	0.0000	0.3382	0.0000	0.0130	0.0405	1.0000	11.50	1	Anne
00042	M	00018	00020	9	Darjeeling	0.00	50.0	0.0000	0.3235	0.0000	0.0310	0.1665	1.0000	11.00	0	Sagar
00046	M	00011	00015	8	Darjeeling	0.00	50.0	0.0000	0.3235	0.0000	0.0170	0.0810	1.0000	11.00	0	Pokraj
00048	M	00018	00020	8	Darjeeling	0.00	50.0	0.0000	0.3677	0.0000	0.0045	0.0185	1.0000	12.50	3	Sakya
00052	M	00019	00017	7	Gangtok	0.00	50.0	0.0000	0.3529	0.0000	0.0150	0.0150	1.0000	12.00	2	Rahul
00054	M	00011	00015	7	Darjeeling	0.00	50.0	0.0000	0.3382	0.0000	0.0095	0.0410	1.0000	11.50	1	Siddharta
00055	M	00048	P00048	6	Gangtok	0.00	25.0	0.0000	0.3677	0.0000	0.2365	0.2365	1.0000	12.50	0	Nakul
00056	M	00048	P00048	6	Darjeeling	0.00	25.0	0.0000	0.3677	0.0000	0.2365	0.2365	1.0000	12.50	0	Sahadev
00057	F	00018	00020	6	Darjeeling	0.00	50.0	0.0000	0.3382	0.0000	0.0125	0.0850	1.0000	11.50	1	Seetal
00058	F	Wild	Wild	4	Gangtok	0.00	100.0	0.0000	0.0588	0.0000	0.2400	-1.0000	1.0000	2.00	2	Lucky
00059	M	Wild	Wild	4	Gangtok	0.00	100.0	0.0000	0.0000	0.0000	1.0000	-1.0000	1.0000	0.00	0	Ram
00060	M	00048	00027	3	Darjeeling	0.00	50.0	0.2500	0.3640	0.0000	0.0000	0.0000	1.0000	12.37	0	Sahani
00061	M	Unk	Unk	0	Darjeeling	---	---	---	---	---	---	---	---	---	0	John
00062	M	00052	00058	2	Gangtok	0.00	75.0	0.0000	0.1863	0.0000	0.0000	0.2600	1.0000	6.33	0	Rigsel
00063	U	00054	00057	2	Darjeeling	0.00	50.0	0.2500	0.3493	0.0000	0.0000	0.0000	1.0000	11.87	0	Unnamed
00064	M	Wild	Wild	1	Darjeeling	0.00	100.0	0.0000	0.0000	0.0000	1.0000	-1.0000	1.0000	0.00	0	Kaijal
00065	M	00052	00058	1	Gangtok	0.00	75.0	0.0000	0.1863	0.0000	0.0000	0.2600	1.0000	6.33	0	Unamed
00066	F	Wild	Wild	0	Unknown	0.00	100.0	0.0000	0.0000	0.0000	1.0000	-1.0000	1.0000	0.00	0	Unamed

Vx – Reproductive value
F – Inbreeding Coefficient
Mk – Mean kinship
Kv – Kinship value
Gu – Genetic uniqueness
Foke – First order kinship equivalents

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Glossary of Terms

Demographic Terms

Age Distribution -- A two-way classification showing the numbers or percentages of individuals in various age and sex classes.

Ex, Life Expectancy – Average years of further life for an animal in age class x.

Lambda, λ (Population Growth Rate) -- The proportional change in population size from one year to the next. Lambda can be based on life-table calculations (the expected lambda) or from observed changes in population size from year to year. A lambda of 1.11 means a 11% per year increase; lambda of .97 means a 3% decline in size per year.

lx, Age-Specific Survivorship – The probability that a new individual (e.g., age 0) is alive at the *beginning* of age *x*. Alternatively, the proportion of individuals which survive from birth to the beginning of a specific age class.

Mx, Fecundity – The average number of same-sexed young born to animals in that age class. Because SPARKS is typically using relatively small sample sizes, SPARKS calculates Mx as 1/2 the average number of young born to animals in that age class. This provides a somewhat less "noisy" estimate of Mx, though it does not allow for unusual sex ratios. The fecundity rates provide information on the age of first, last, and maximum reproduction.

Px, Age-Specific Survival – The probability that an individual of age *x* survives one time period; is conditional on an individual being alive at the beginning of the time period. Alternatively, the proportion of individuals which survive from the beginning of one age class to the next.

Qx, Mortality – Probability that an individual of age *x* dies during time period. Qx = 1-Px
The proportion of individuals that die during an age class. It is calculated from the number of animals that die during an age class divided by the number of animals that were alive at the beginning of the age class (i.e.-"at risk").

Risk (Qx or Mx) – The number of individuals that have lived during an age class. The number at risk is used to calculate Mx and Qx by dividing the number of births and deaths that occurred during an age class by the number of animals at risk of dying and reproducing during that age class.

Vx, Reproductive Value – The expected number of offspring produced this year and in future years by an animal of age x.

Genetic Terms

Allele Retention – The probability that a gene present in a founder individual exists in the living, descendant population.

Current Gene Diversity (GD) -- The proportional gene diversity (as a proportion of the source population) is the probability that two alleles from the same locus sampled at random from the population will be identical by descent. Gene diversity is calculated from allele frequencies, and is the heterozygosity expected in progeny produced by random mating, and if the population were in Hardy-Weinberg equilibrium.

Effective Population Size (Inbreeding N_e) -- The size of a randomly mating population of constant size with equal sex ratio and a Poisson distribution of family sizes that would (a) result in the same mean rate of inbreeding as that observed in the population, or (b) would result in the same rate of random change in gene frequencies (genetic drift) as observed in the population. These two definitions are identical only if the population is demographically stable (because the rate of inbreeding depends on the distribution of alleles in the parental generation, whereas the rate of gene frequency drift is measured in the current generation).

FOKE, First Order Kin Equivalents – The number of first-order kin (siblings or offspring) that would contain the number of copies of an individuals alleles (identical by descent) as are present in the captive-born population. Thus an offspring or sib contributes 1 to FOKE; each grand-offspring contributes 1/2 to FOKE; each cousin contributes 1/4 to FOKE. FOKE = 4*N*MK, in which N is the number of living animals in the captive population.

Founder – An individual obtained from a source population (often the wild) that has no known relationship to any individuals in the derived population (except for its own descendants).

Founder Contribution -- Number of copies of a founder's genome that are present in the living descendants. Each offspring contributes 0.5 whereas each grand-offspring contributes 0.25, etc.

Founder Genome Equivalents (FGE) – The number wild-caught individuals (founders) that would produce the same amount of gene diversity as does the population under study. The gene diversity of a population is 1 - 1 / (2 * FGE).

Founder Genome Surviving – The sum of allelic retentions of the individual founders (i.e., the product of the mean allelic retention and the number of founders).

Founder Representation – Proportion of the genes in the descendant population that derives from that founder. I.e., proportional Founder Contribution.

GU, Genome Uniqueness – Probability that an allele sampled at random from an individual is not present, identical by descent, in any other living individual in the population. GU-all is the genome uniqueness relative to the entire population. GU-Desc is the genome uniqueness relative to the living non-founder, descendants.

Inbreeding Coefficient (F) -- Probability that the two alleles at a genetic locus are identical by descent from an ancestor common to both parents. The mean inbreeding coefficient of a population will be the proportional decrease in observed heterozygosity relative to the expected heterozygosity of the founder population.

KV, Kinship Value – The weighted mean kinship of an animal, with the weights being the reproductive values of each of the kin. The mean kinship value of a population predicts the loss of gene diversity expected in the subsequent generation if all animals were to mate randomly and all were to produce the numbers of offspring expected for animals of their age.

Mean Generation Time (T) -- The average time elapsing from reproduction in one generation to the time the next generation reproduces. Also, the average age at which a female (or male) produces offspring. It is not the age of first reproduction. Males and females often have different generation times.

Mean Kinship (MK) -- The mean kinship coefficient between an animal and all animals (including itself) in the living, captive-born population. The mean kinship of a population is equal to the proportional loss of gene diversity of the descendant (captive-born) population relative to the founders and is also the mean inbreeding coefficient of progeny produced by random mating. Mean kinship is also the reciprocal of two times the founder genome equivalents: MK = 1 / (2 * FGE). MK = 1 - GD.

Percent Known -- Percent of an animal's genome that is traceable to known Founders. Thus, if an animal has an UNK sire, the % Known = 50. If it has an UNK grandparent, % Known = 75.

Prob Lost – Probability that a random allele from the individual will be lost from the population in the next generation, because neither this individual nor any of its relatives pass on the allele to an offspring. Assumes that each individual will produce a number of future offspring equal to its reproductive value, Vx.

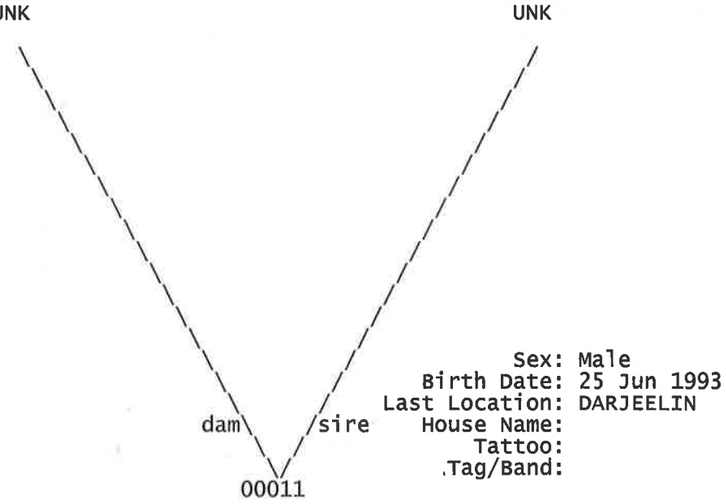
Annexure I

Pedegree Chart Report of Live Captive Red Panda

11RDPND

Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00011



Sex: Male
Birth Date: 25 Jun 1993
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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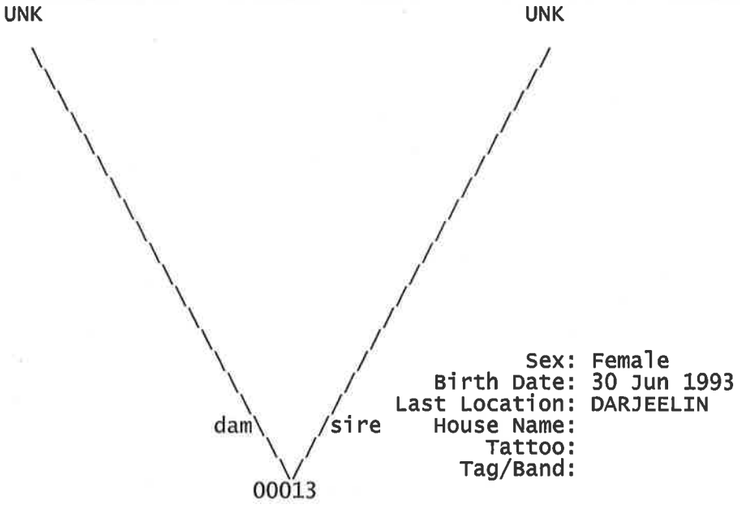
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00013



Sex: Female
Birth Date: 30 Jun 1993
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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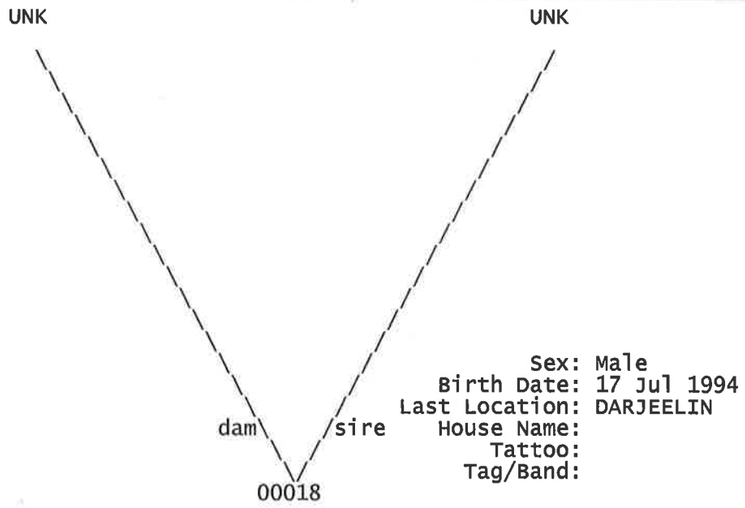
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00018



Sex: Male
Birth Date: 17 Jul 1994
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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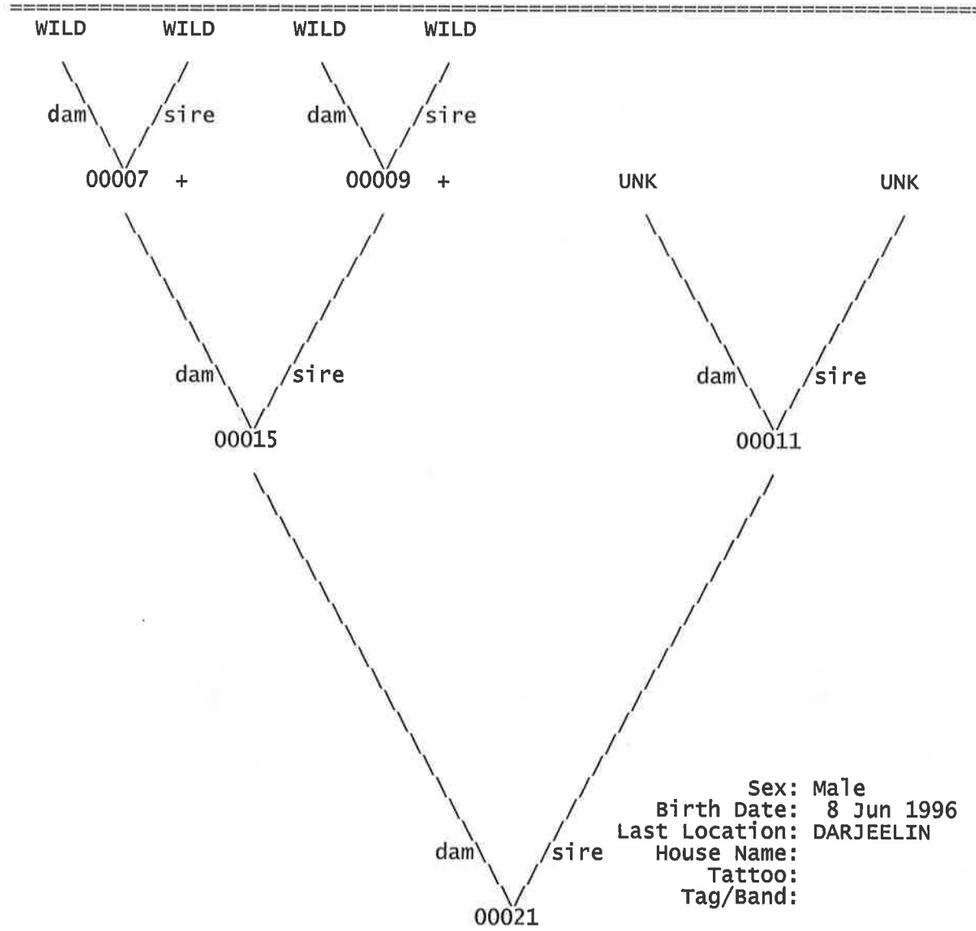
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00021



Sex: Male
Birth Date: 8 Jun 1996
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

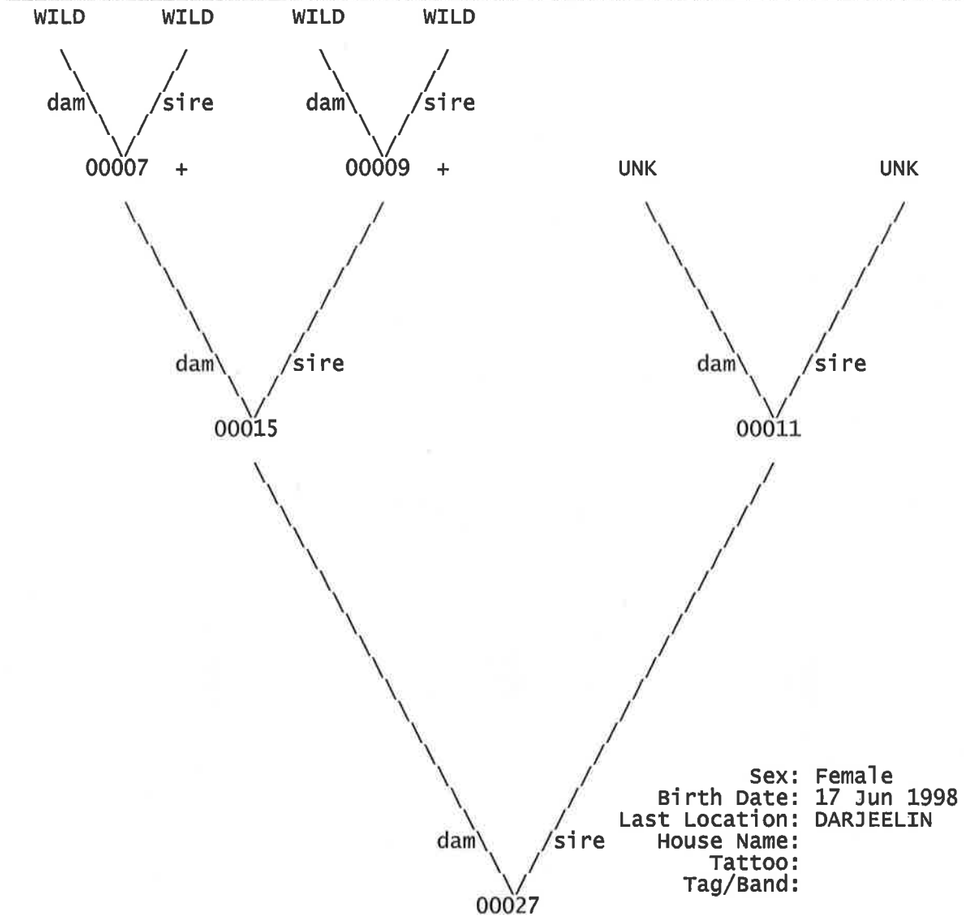
+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

27RDPND

Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00027



Sex: Female
Birth Date: 17 Jun 1998
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

\+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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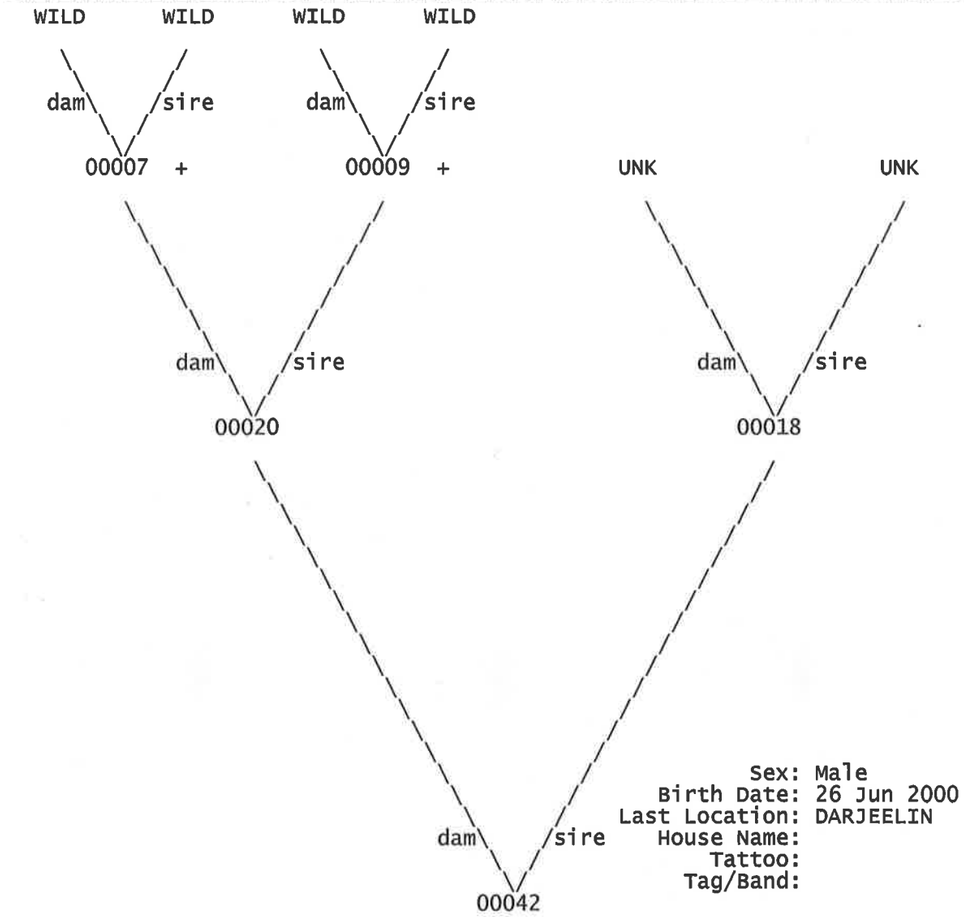
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00042



Sex: Male
Birth Date: 26 Jun 2000
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

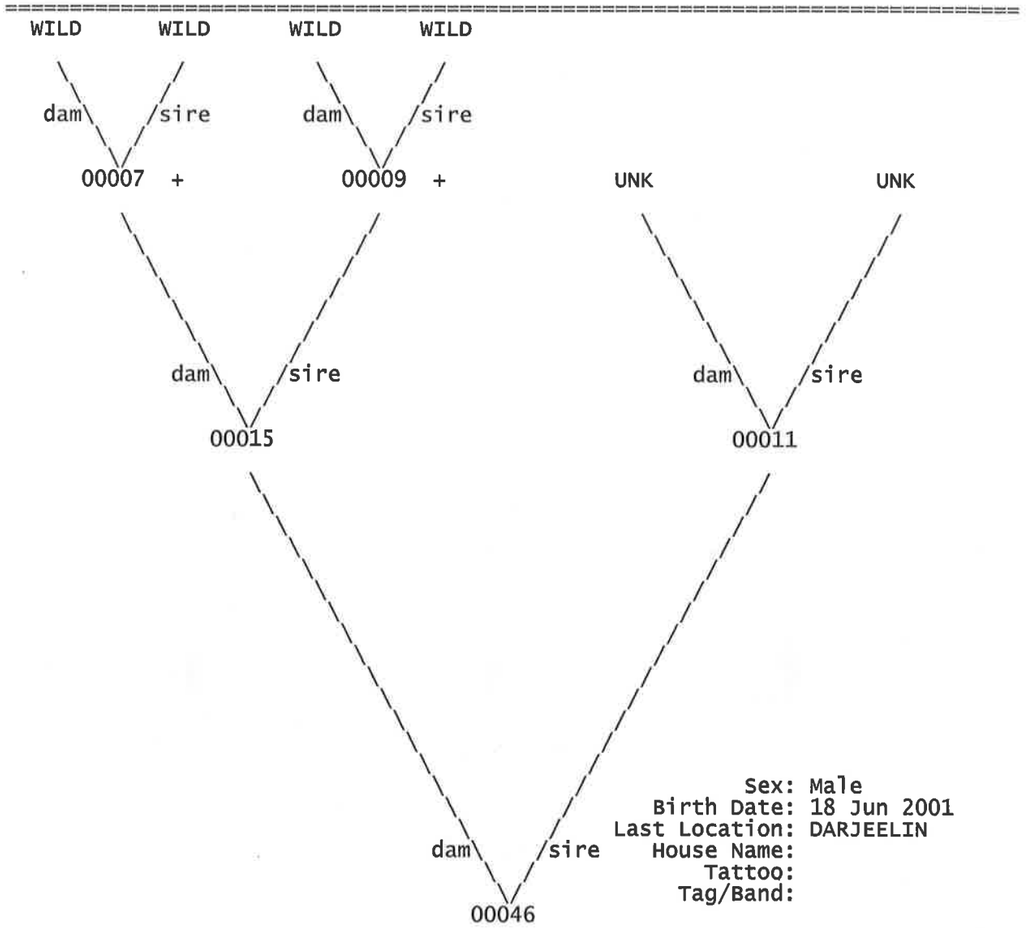
+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

46RDPND

Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00046



Sex: Male
Birth Date: 18 Jun 2001
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

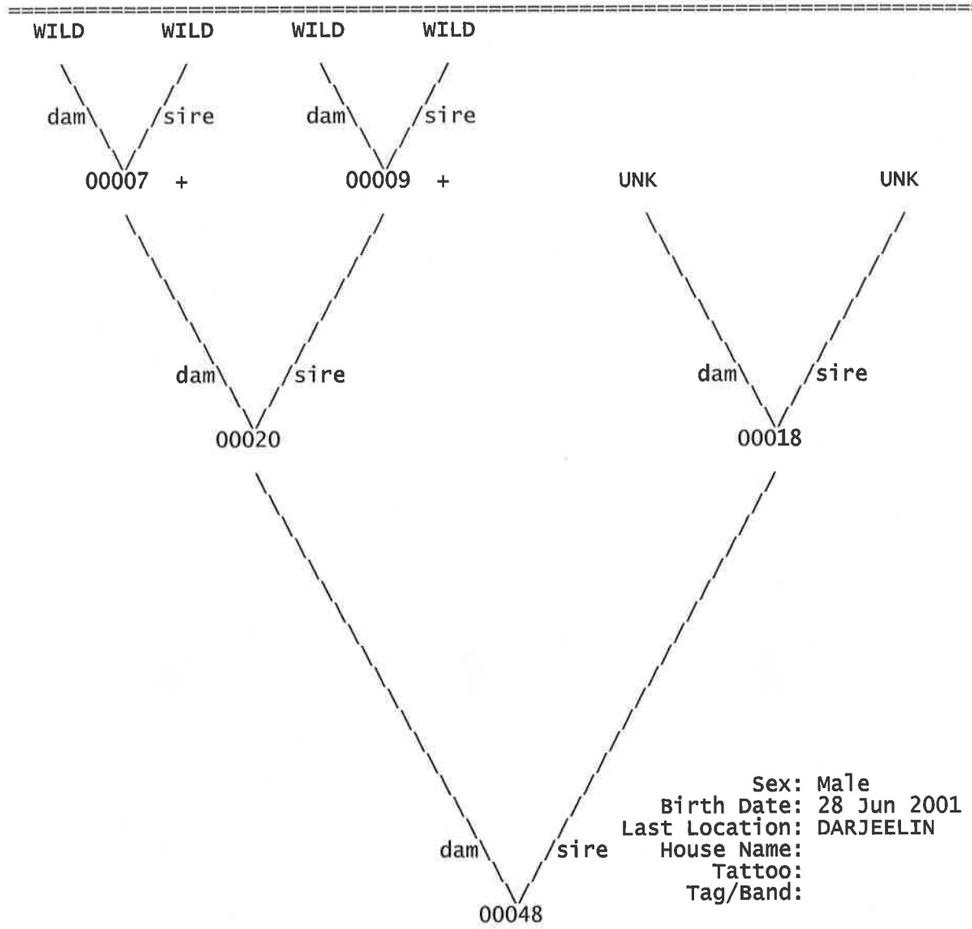
+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

48RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS Studbook Number: 00048



Sex: Male
Birth Date: 28 Jun 2001
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

+ Wild-caught...

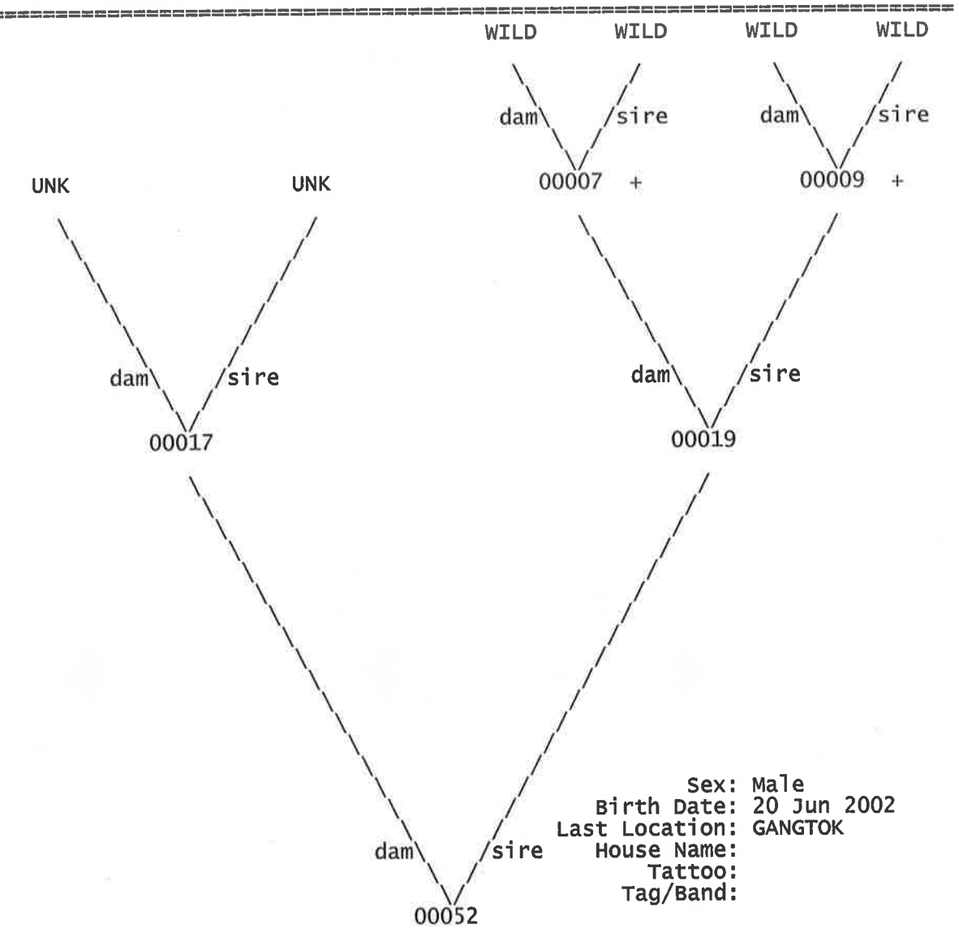
Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

52RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00052



Sex: Male
Birth Date: 20 Jun 2002
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

+ Wild-caught...

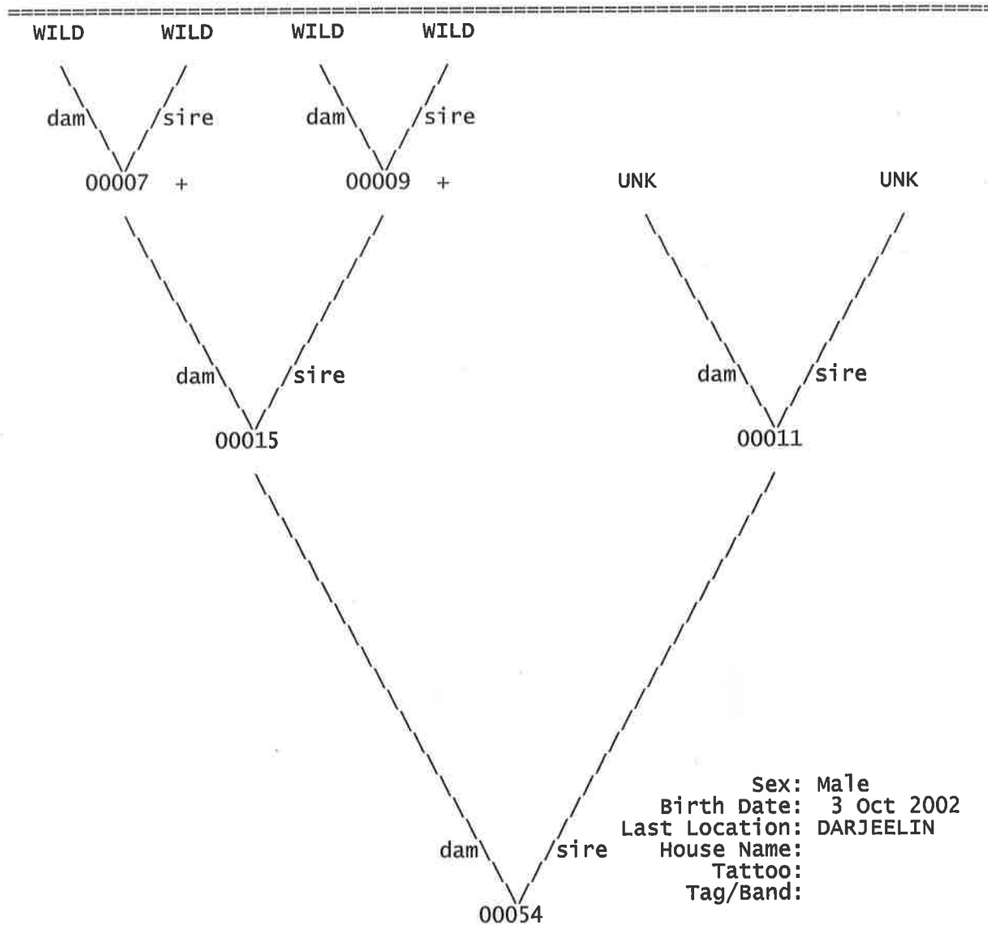
Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

54RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00054



Sex: Male
Birth Date: 3 Oct 2002
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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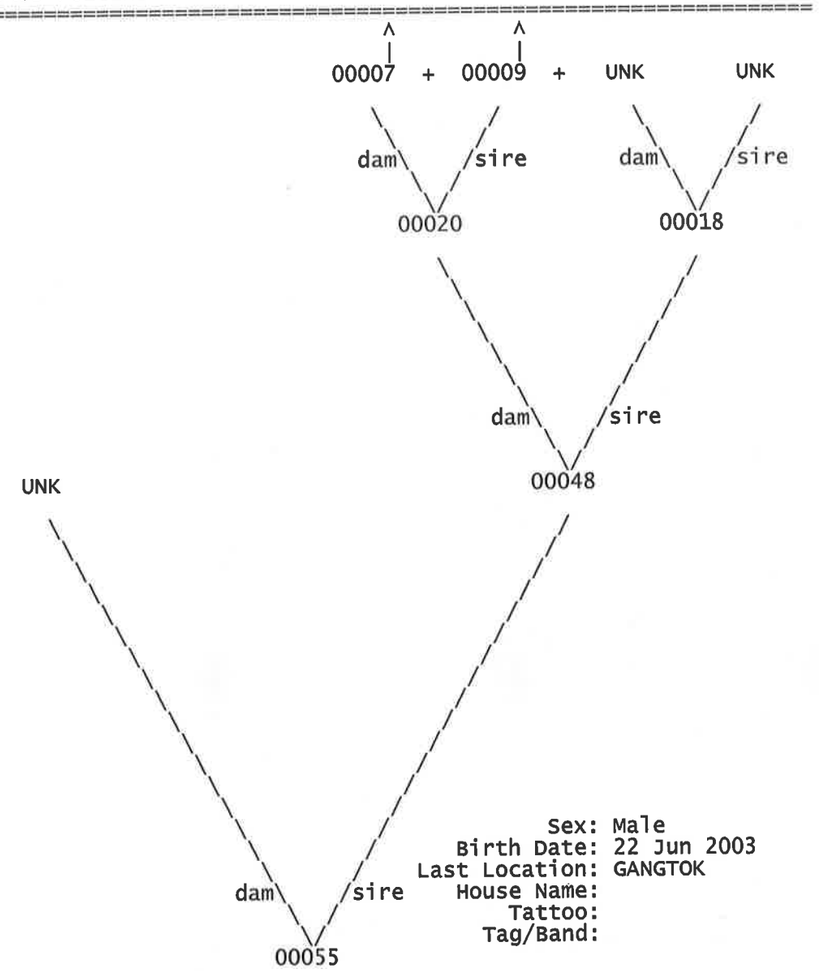
Pedigree Chart Report
RED PANDA Studbook

Page 1

Taxon Name: AILURUS FULGENS

Studbook Number: 00055



Sex: Male
Birth Date: 22 Jun 2003
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

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Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

Pedigree Chart Report
RED PANDA Studbook

Page 2

Taxon Name: AILURUS FULGENS

Studbook Number: 00055

+ Wild-caught...
^ Pedigree continues beyond top of page...

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Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54
□□

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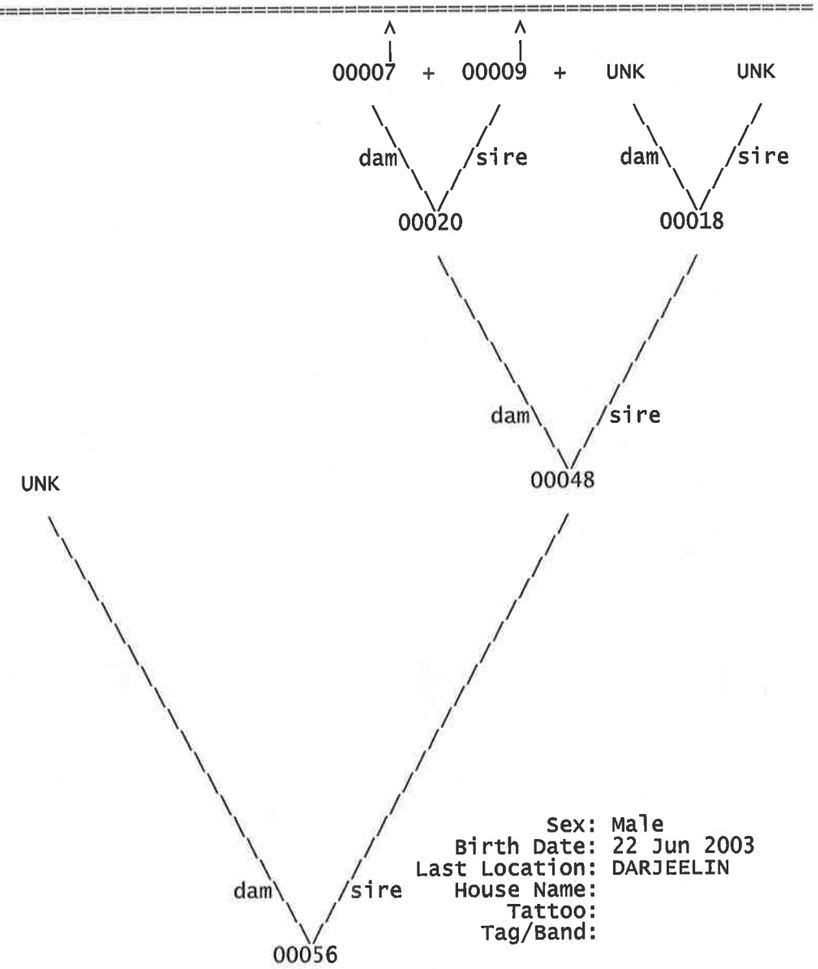
Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00056



Sex: Male
Birth Date: 22 Jun 2003
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00056

+ Wild-caught...
^ Pedigree continues beyond top of page...

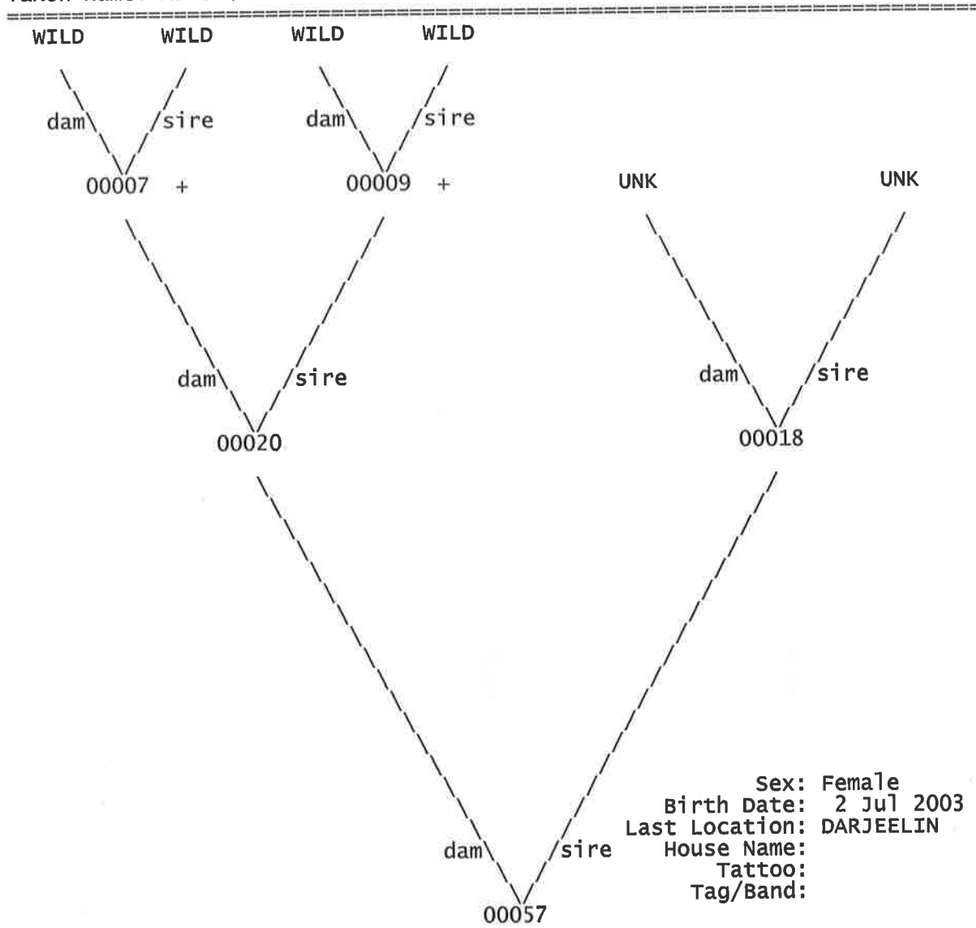
Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

57RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00057



Sex: Female
Birth Date: 2 Jul 2003
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

+ Wild-caught...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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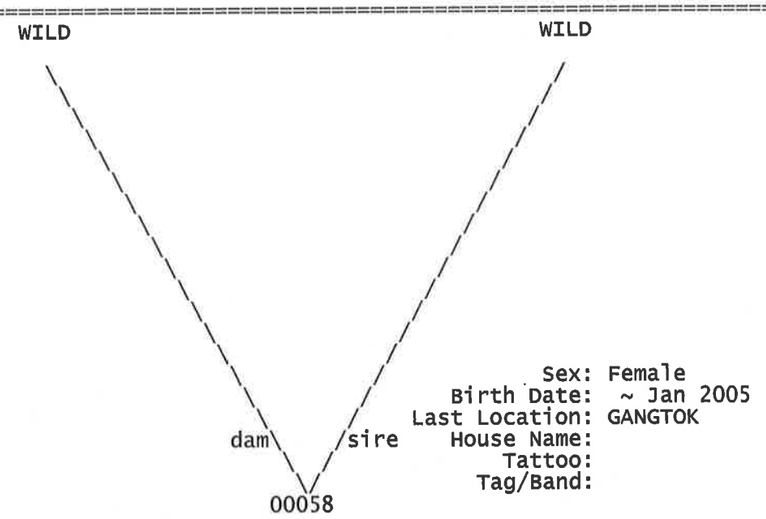
Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS Studbook Number: 00058



Sex: Female
Birth Date: ~ Jan 2005
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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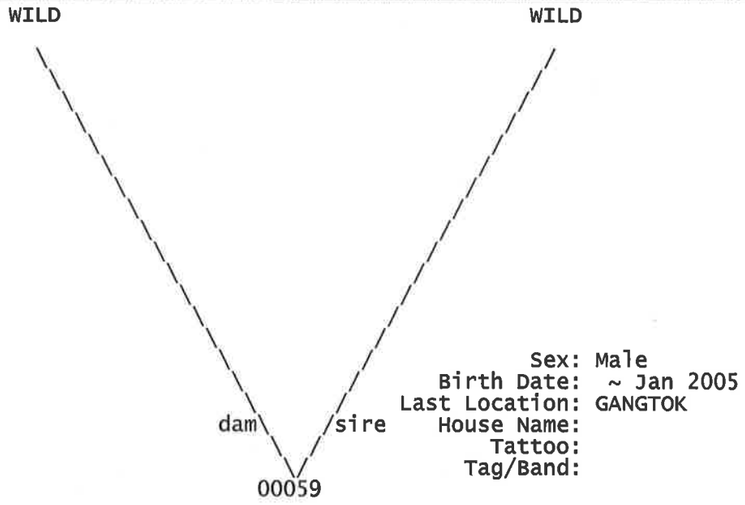
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00059



Sex: Male
Birth Date: ~ Jan 2005
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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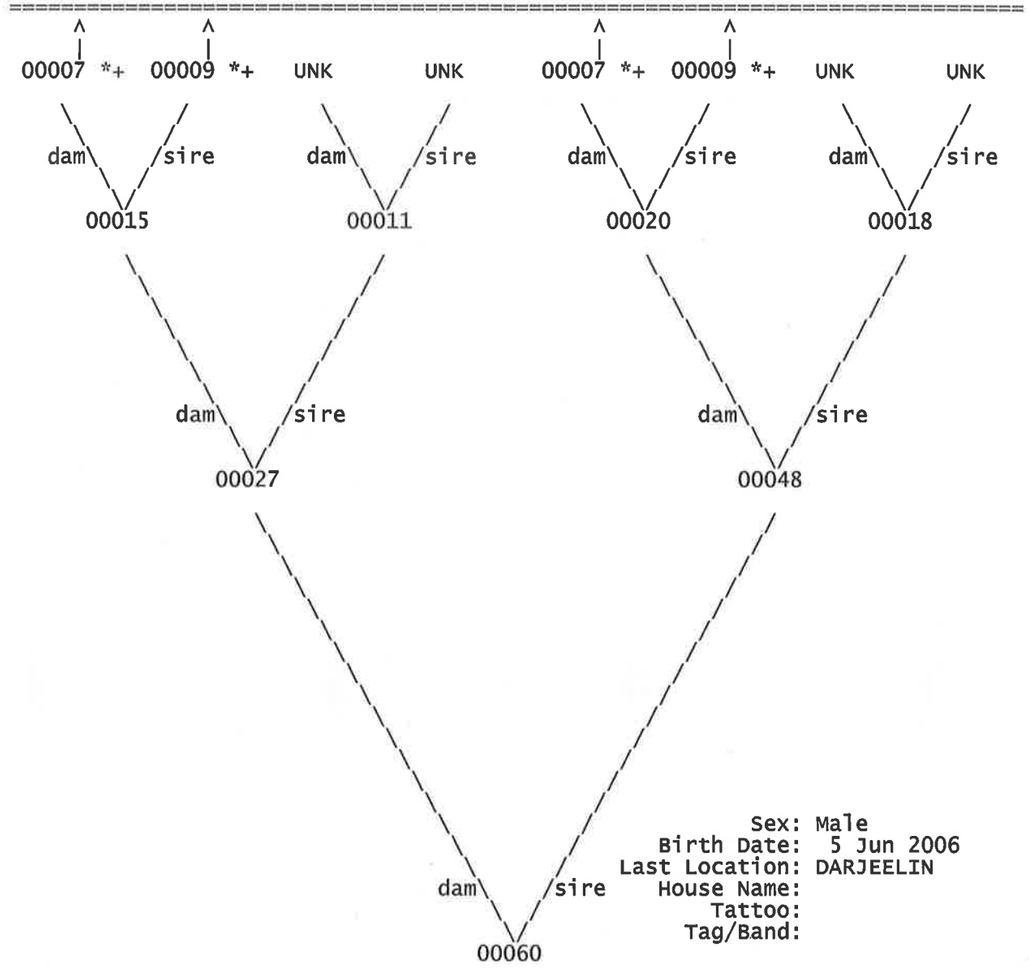
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00060



Sex: Male
Birth Date: 5 Jun 2006
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

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Pedigree Chart Report
RED PANDA Studbook Page 2

Taxon Name: AILURUS FULGENS Studbook Number: 00060

Page 1

+ Wild-caught... * Appear more than once...
^ Pedigree continues beyond top of page...

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□□

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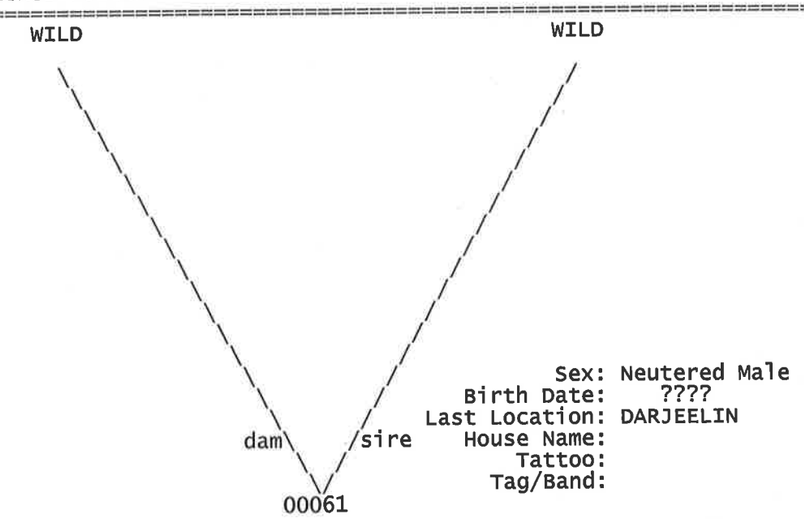
Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00061



Sex: Neutered Male
Birth Date: ????
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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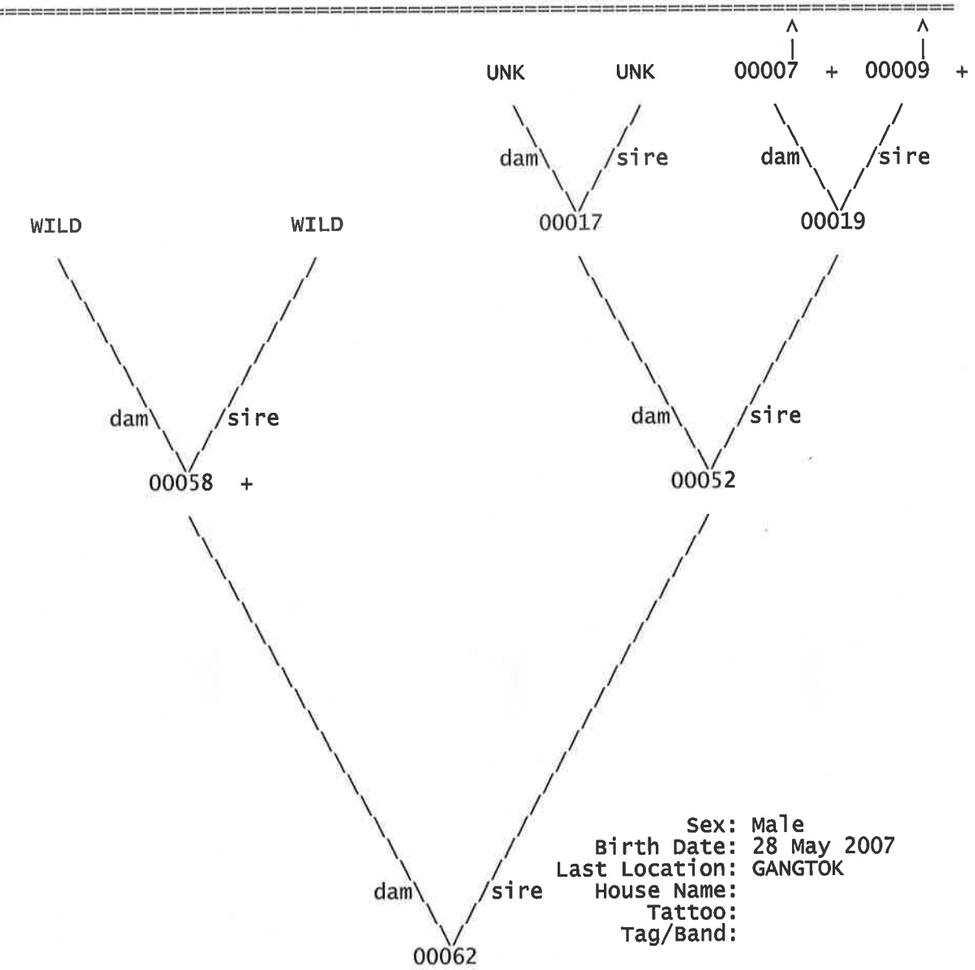
Pedigree Chart Report
RED PANDA Studbook

Page 1

Taxon Name: AILURUS FULGENS

Studbook Number: 00062



Sex: Male
Birth Date: 28 May 2007
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

+ Wild-caught...
^ Pedigree continues beyond top of page...

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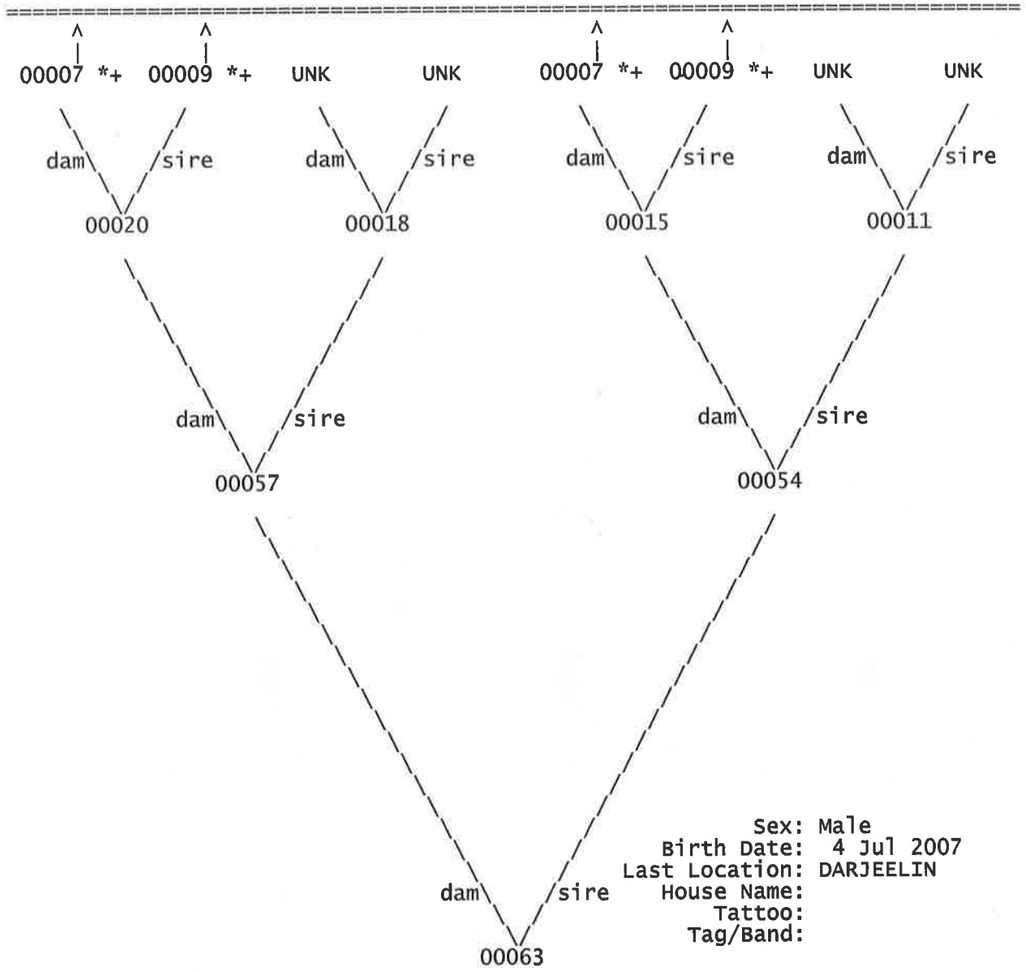
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54
□□

63RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00063



Sex: Male
Birth Date: 4 Jul 2007
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

Taxon Name: AILURUS FULGENS

Studbook Number: 00063

+ Wild-caught... * Appear more than once...
^ Pedigree continues beyond top of page...

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54
□□

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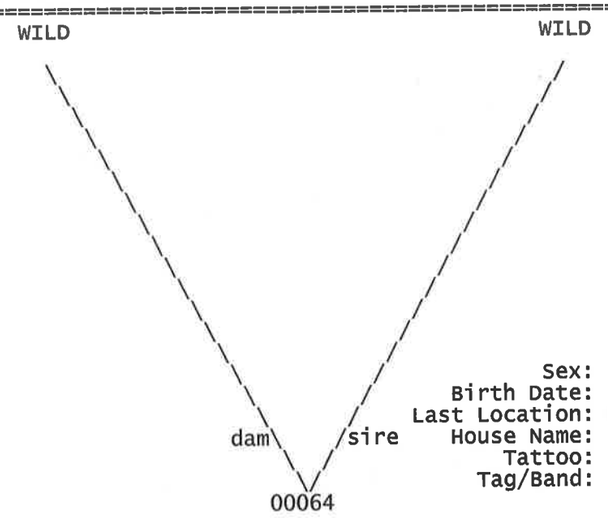
Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS

Studbook Number: 00064



Sex: Male
Birth Date: ~ 2008
Last Location: DARJEELIN
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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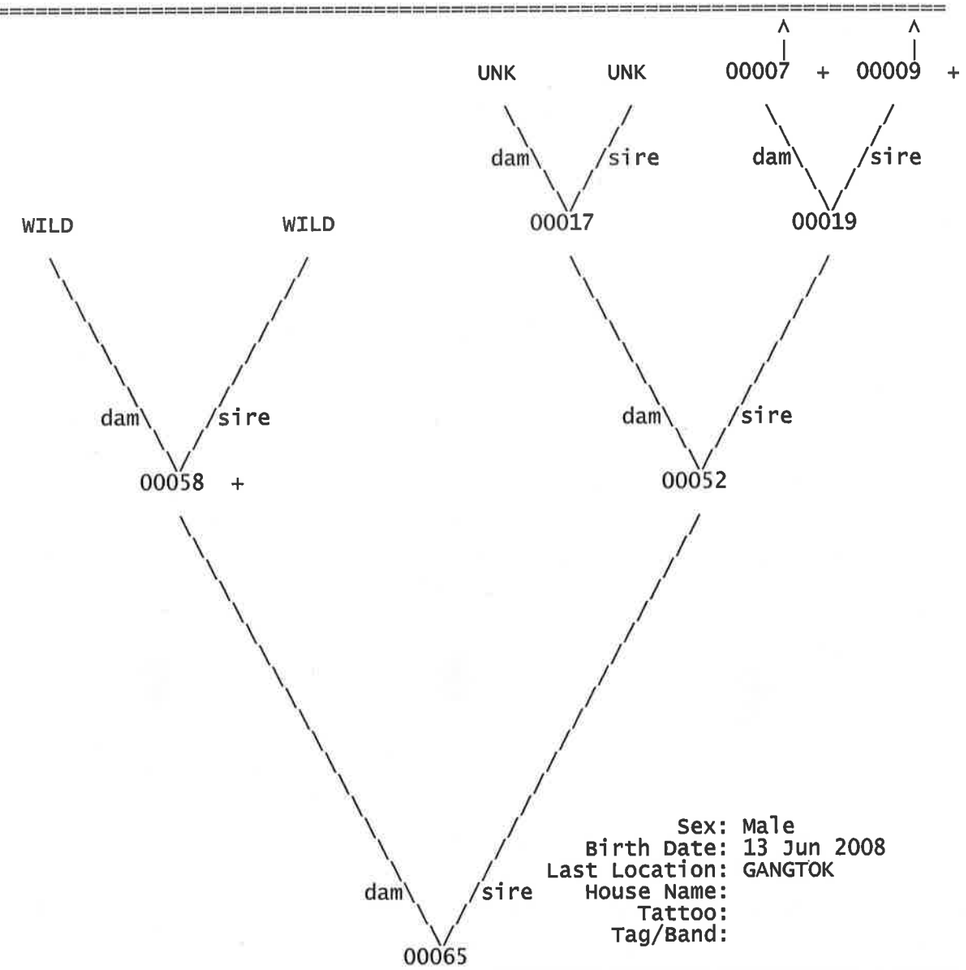
Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00065



Sex: Male
Birth Date: 13 Jun 2008
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

Pedigree Chart Report
RED PANDA Studbook Page 2

Taxon Name: AILURUS FULGENS Studbook Number: 00065

+ Wild-caught...
^ Pedigree continues beyond top of page...

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Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54
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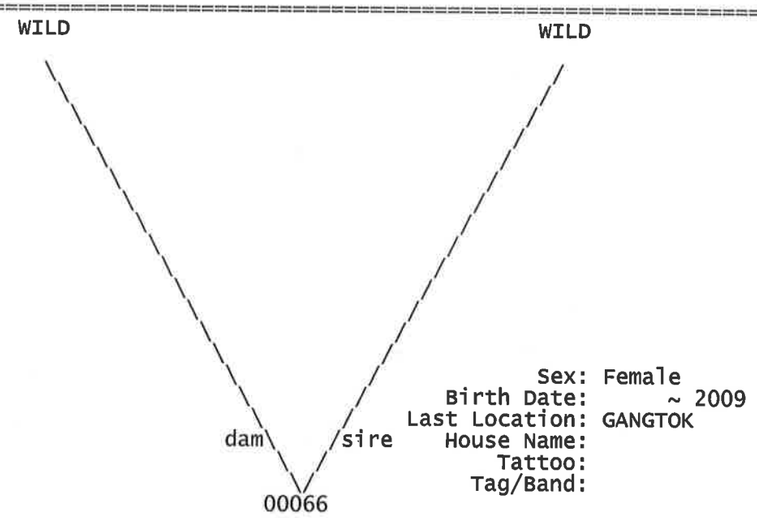
66RDPND

Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS Studbook Number: 00066



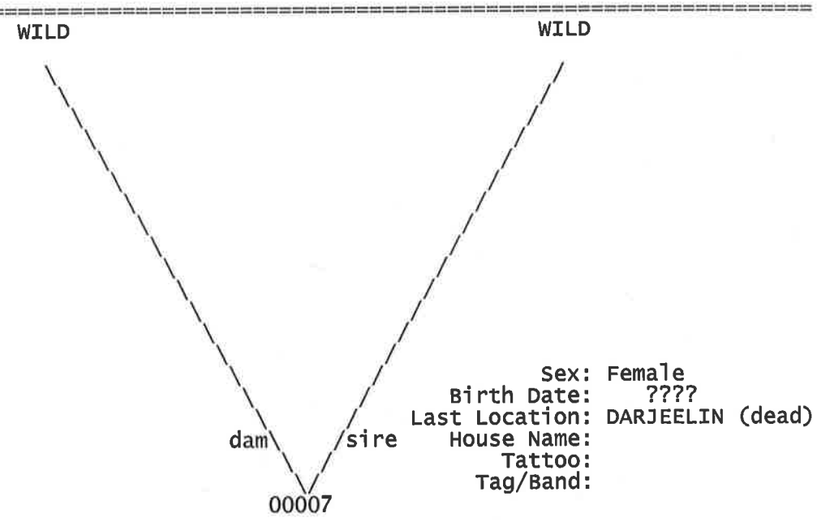
Sex: Female
Birth Date: ~ 2009
Last Location: GANGTOK
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

7RDPND

Pedigree Chart Report
RED PANDA Studbook Page 1

Taxon Name: AILURUS FULGENS Studbook Number: 00007



Sex: Female
Birth Date: ????
Last Location: DARJEELIN (dead)
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54

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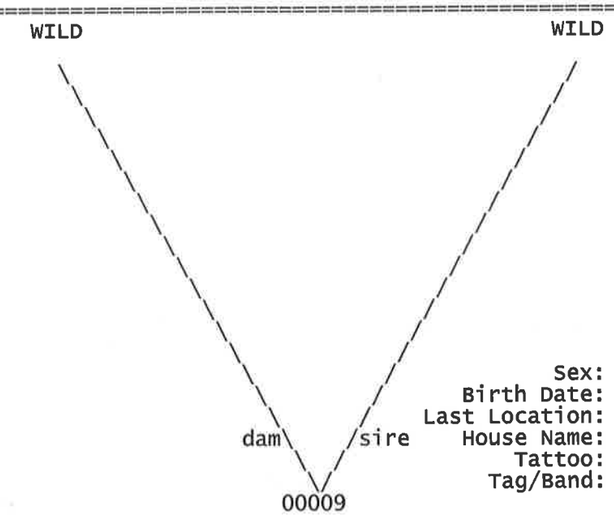
Pedigree Chart Report
RED PANDA Studbook

Taxon Name: AILURUS FULGENS Studbook Number: 00009



Sex: Male
Birth Date: ~ 1991
Last Location: DARJEELIN (dead)
House Name:
Tattoo:
Tag/Band:

Compiled by: Anupam Srivastav thru Wildlife Institute of India
Data current thru: 31 Mar 2009 Indian region
Printed on 3 Jun 2009 using Sparks v1.54