

Snow leopard survey in the Sagarmatha National Park Report November 2006

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During our stay in the Sagarmatha National Park, the areas around Namche, Thyangboche, Pangboche, Phortse, Thore, Gokyo, Phortse Drengka and Thame were searched for signs of presence of the snow leopard and its prey species.

Through a *Garmin e-trex vista* GPS we recorded the entire track log of each day and took note of the total number of Km traveled during our field excursions as well as the minimum and maximum altitudes reached.

Along the routes, scats of the snow leopard were collected and all other signs of presence and markings (pugmarks, scrapes, cheek rubbing, scent sprayed rocks) were recorded as well as prey species such as Himalayan tahr, musk deer, pheasants and livestock.

The same procedure was carried out along known itineraries (transects), which had been previously selected as being optimal habitats for the snow leopard (e.g. ridges) or for representing high density marking spots from earlier sampling.

The results are summarized in tables 1 and 2.

We walked over 130Km in snow leopard country and a total of 72 signs were recorded. Scrapes (37.5%) were the most common sign, followed by scats (28%) and hairs (25%). Overall 20 scats have been collected, of which 15% (n=3) were fresh enough for genetic analyses, whereas, the remaining 85% (n=17) will be used for food habit analyses only. The markings of the snow leopard were concentrated especially around the areas of Namche, Pangboche, Phortse and to some extent the Thame area (Table 1). This pattern follows the prey distribution observed (Table 2), mainly concentrated in the corresponding areas. No signs of presence were found in the Gokyo area, probably because of the absence of prey species. Most likely, this area is marginal to habitual "hot spots" and only used as a buffer zone during movements from one area to another as previous records and samples collected in this area have shown.

Very little, if anything, is known on this cat's territoriality and it is still very unclear to which extent, with which time-interval and frequency each marking site and area are visited. However, taking notes of altitudes was useful to identify the major range within which the leopard signs were found in the Sagarmatha National Park, that is between 3300 m and 4500 m, with scats and scrapes found at the lower altitudes of our study area in the Namche region and hairs, from cheek rubbing on rocks, found at 4479 m along the route from Gokyo to Phortse Drengka.

Although further studies are necessary to clarify these and other unanswered questions, genetic analyses of scats will provide results on the minimum number of individuals in the Sagarmatha National Park and food habit analyses will inform on their diet.

The very low value for the kids:females ratio in the Himalayan tahr population (0.26, i.e. only less than 3 females, out of 10, have a kid) seems to emphasize one conservation problem, already put forward by preliminary scat analyses. If kid recruitment keeps decreasing, it will lead to a great conservation problem with the tahr population. In time, a relatively small, isolated, population as that of tahr in Sagarmatha could become extinct through such a stochastic predation event. With the decrease or disappearance of his main prey species, in the long term this predator could switch mainly to livestock bringing to an inevitable human – predator interaction.

Appropriate information should be given to local communities and institutions. A proper "action plan" should be prepared and undertaken for the future management of the snow leopard to avoid as much as possible serious conservation problems in the near future.

Table 1. Signs of presence of the snow leopard, recorded in Nov 2006 in Sagarmatha National Park.

DATE	PLACE	KM	ALT. MAX	ALT. MIN	SNOW LEOPARD				
					SCATS	SCRAPES	HAIRS	PUGS	SCENT SPRAY
11-Nov	Namche west	8.9	3561	3309	2	5	0	0	0
12-Nov	Namche east	8.3	3643	3419	2	6	0	1	1
13-Nov	Namche upper	7.9	3904	3488	0	1	0	0	0
14-Nov	Namche-Pangboche	14	4091	3313	5	0	2	0	0
15-Nov	Pangboche-Phortse	13.5	4091	3871	3	6	2	0	0
16-Nov	Phortse	5	3800	3800	1	2	0	1	0
17-Nov	Phortse	10	3800	3800	3	2	4	1	1
18-Nov	Phortse-Thore	5.9	4380	3800	1	1	0	0	1
19-Nov	Thore-Gokyo	11.1	4765	4264	0	0	0	0	0
20-Nov	Gokyo-Ph.Drengka	16.5	4763	3631	0	0	6	0	0
21-Nov	Ph.Drengka-Namche	10.5	3977	3631	1	0	1	0	0
23-Nov	Namche-Thame	12.1	3806	3427	0	3	0	0	0
24-Nov	Thame-Namche	11.7	3899	3427	2	1	3	1	0
TOTAL		135.4			20	27	18	4	3

Table 2. Potential prey species of the snow leopard, recorded in Nov 2006 in Sagarmatha National Park.

DATE	PLACE	KM	ALT. MAX	ALT. MIN	LIVESTOCK	TAHR			MONAL		BLOOD PH.	SNOWCOCK	MUSK DEER	
						M	F	KIDS	M	F			SIGHTS	LATRINES
11-Nov	Namche west	8.9	3561	3309	55	3	1	0	8	8	0	0	0	0
12-Nov	Namche east	8.3	3643	3419	30	5	11	2	2	3	0	0	0	2
13-Nov	Namche upper	7.9	3904	3488	36	5	16	3	2	1	14	0	0	0
14-Nov	Namche-Pangboche	14	4091	3313	26	2	12	2	0	0	0	0	0	8
15-Nov	Pangboche-Phortse	13.5	4091	3871	82	2	1	0	11	13	0	0	4	3
16-Nov	Phortse	5	3800	3800	0	0	0	0	0	0	0	0	0	0
17-Nov	Phortse	10	3800	3800	7	4	7	0	0	0	0	0	0	1
18-Nov	Phortse-Thore	5.9	4380	3800	8	1	0	0	0	0	0	0	0	0
19-Nov	Thore-Gokyo	11.1	4765	4264	38	2	4	2	0	0	0	22	0	0
20-Nov	Gokyo-Ph.Drengka	16.5	4763	3631	15	0	0	0	0	0	0	0	0	0
21-Nov	Ph.Drengka-Namche	10.5	3977	3631	28	2	5	0	0	0	1	0	0	0
23-Nov	Namche-Thame	12.1	3806	3427	91	5	6	4	0	2	0	0	0	0
24-Nov	Thame-Namche	11.7	3899	3427	59	7	14	7	2	0	0	0	0	0
TOTAL		135.4			475	38	77	20	25	27	15	22	4	14