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Current Distribution and Status of Himalayan ibex in Upper Neelum Valley, District Neelum Azad Jammu and Kashmir, Pakistan

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Abstract: Nine months field survey was conducted from July 2004 to August 2005 to take the data on the distribution and population status of Himalayan ibex (*Capra ibex sibirica*) in the upper Neelum valley of Azad Kashmir. Survey was carried out using direct (senses) as well as indirect (sampling) methods. 122 animals of different categories were recorded in the study area. Total average population was composed of 31.79% male, 32.79% female, 25.41% young and 9.84% yearling animals. Various threats to the population of ibex in the area were also studied.

Key words: Himalayan ibex, current distribution, status, Neelum valley, Azad Kashmir

INTRODUCTION

Azad Jammu and Kashmir (73°-75° N, 32°-35° E), the part of great Himalayas (Qureshi, 2000), covers about 13,297 km². It is bounded along its northern border by Gilgit Agency, to the west and south by NWFP and Punjab, respectively and to the east by Indian occupied Kashmir. The mammalian fauna of the Neelum valley Azad Kashmir can therefore, be expected to include the elements of both Palaearctic and oriental regions (Qamar *et al.*, 1998). One among these mammals includes Himalayan ibex (*Capra ibex sibirica* Pallas), called as Kel in local and Sheena, while Sakkin in Balti language (Rasool, 1998), is frequently found in high precipitous regions above tree line between 3600 and 6700 m in the Neelum valley (Anonymous, 1984). Himalayan ibex is distributed in Afghanistan and Kashmir to Mongolia and China (Macdonald, 1984). It is found through out the Hindu Kush and Kohe Baba range. The total figure derived for the ibex is 3844 animals (Khan, 1976). Most of their distribution is restricted to the mountain ranges adjacent to Hazara District and Gilgit and from Qumaree to Ganja in Machiara. Some stay for the whole year in the forest zone due to the inaccessibility of its terrain (Anonymous, 1997). It is also distributed in Azad Jammu and Kashmir from Qumaree to Gunja in Machayara and adjacent area (Kaghan valley) (Roberts, 1997).

The wild species of goats, including Himalayan ibex, live in quite rugged, rocky mountains (Mirza, 1998). Ibex live in colder region than that of Markhor. It inhabit sub-alpine and alpine zone coming down as low as two

thousand meters in winter and rising up to cold deserts at about 4000 to 4500 m elevation in summer. Males are larger than the females and the sexes live in separate groups outside the breeding period (Ruckstuhl and Neuhaus, 2002). There is a mid dorsal strip extending from the shoulder to the tail (Habibi, 2003) which becomes more clear as black line when ibex becomes fully mature (Rasool, 1975). The short tail is bushy and covered with long black hair (Habibi, 2003).

Ibex kids are more vulnerable to predation than adult, expected reproducing females either to increase their use of escape terrain or to show higher movement rates when with kids (Ruckstuhl and Neuhaus, 2001).

Himalayan ibex is believed to be the most abundant Caprinae in Pakistan in terms of relative numbers (Anonymous, 1997). Himalayan ibex is distributed in Afghanistan and Kashmir to Mongolia and China (Macdonald, 1984). It is distributed through out the mountainous regions of the Gobi National Conservation Park, Mongolia (Habibi, 2003), Himalayan ibex dispersed in the mountains of Central Asia, Tain Shan and Koh Altai (Habibi, 2003) It is widely distributed at high elevations (3,200 to > 5,000 m) in the dry mountains of Northern Pakistan that include the inner Himalayas, Karakoram and Hindu Kush Ranges.

Total population size in Northern Pakistan is believed to range between 10,000 and 12,000 animals. This is based on a census estimate of 2,573 ibex for N.W.F.P. (Anonymous, 1997) and an estimate of 8,560 ibex for the wilderness parks, game reserves and sanctuaries of Northern Areas (Anonymous, 1997). While the NWFP

estimate is based on actual surveys during the rut (December), the estimate for Northern Areas is based largely unconfirmed reports and restricted only to 16 protected areas, which represent about 15% of the total size of Northern Areas (Anonymous, 1997).

As no recent study on ibex in Azad Kashmir has been conducted due to cross border firing so, this study was done under following objectives: to determine the current distribution and population status after a long period of cross border firing and to study the major threats to its population in the area.

MATERIALS AND METHODS

Nine months field surveys were conducted from July 2004 to August 2005 to get the data on the distribution, population status and habitat utilization of Himalayan ibex (*Capra ibex sibirica*), with the assistance of local people and expert hunters of the area. Survey was carried out using direct as well as indirect methods.

For the convenience, the study area was divided into three main study zones A, B and C, on the bases of geographical features and topographical conditions (valleys, sub-valleys, nullahs etc.). Each zone was divided into localities, which intern was subdivided in to sub localities (sites). The timing of observation in each site was adjusted in a way to avoid the chance of duplication of observing the same animals. The points were selected in the area on the basis of nullahs, valleys and sub-valleys where the surveillance of animal could easily be made with the help of binocular (8x40x) and video camera.

Besides direct observation, indirect evidences were also taken into count while determining its presence and assessing its population. Animal's signs, such as footprints, fecal materials, dead remains etc. being some of the major indicators, were also noted and photographed and use for the estimation of current status of the animal. Still camera (Yashica MF-2), Sony (Handicam) video camera and JVC video cameras were used for taking photographs of the footprints, dead remains, fecal dropping and other evidences of the animal.

In order to gather the information about the animal, the questionnaire was developed and tailored for the community observers with their consultations proved to be of great help to collect the information from shepherds, hunters, local people, nomads and knowledgeable persons by the illiterate observers. The surveyors included experienced hunters and locals, well adapted to the local conditions and accustomed to the rigors during their past hunting experience.

RESULTS AND DISCUSSION

The study on distribution and population status of Himalayan ibex carried out in Upper Neelum Valley shows the following results.

District Neelum runs along with river Neelum is not in easy approach. The present study area started from Sharda Division. The whole of the study area was divided into three main zones and each zone is further divided into sub-zones or localities.

Zone A was divided into two sub-zone or localities i.e., Surgan and Gujar Domail. Locality Surgan was further divided into nine sub-localities. These were Bagnowan, Bakwali, Ghamot, Hola, Hola Top, Kalay Jandar, Kundi, Neelum and Saam Gaam. The second main locality (Gujar Domail) of the zone A was divided into three sub-localities. These were Ganeya Wala Nar, Gujar Domail and Rah Wala Nar.

Zone B was comparatively larger than other zones. It was divided into four localities. Locality Patlian Pani was farther divided into four sub-localities; these were Bergi Ray, Hatti, Moreyali Gali and Patlian Pani. Locality Neeli Baraf of the zone B was divided into five sub-localities. This locality comprised on Dellah, Lundi Mali, Neeli Baraf, Pathray and Sillan sub-localities. Third main locality of this zone was Shounther, which was divided into three sub-localities. These were Burjhan, Shounther and Shounther Gali. Fourth main locality of zone B, the Huriparbat, was also divided into four sub-localities. Chitta Katha, Lunda Sar, Lunda Bahak and Punjkathian Top were included in this locality. The Himalayan ibex was distributed in these localities.

The zone C comprised only one locality that was Puldharry. This locality was divided into twelve sub-localities. However, distribution of Himalayan ibex confined to sub-localities such as Bagnowan, Janawai, Machal Purr, Puldharry and Yamgher. There was no population reported in Doga, Dukky, Gagai, Jandar Seri, Sardari, Taobut I and Taobut II sub-localities.

The total numbers of 122 animals of different categories were observed in the study area, which was divided into three main zones, seven main localities and forty-two sub-localities. Total average population was composed of 31.79% male, 32.79% female, 25.41% young and 9.84% yearling animals (Table 3)

Forty two animals were recorded from the zone A of the study area. i.e., 39% of the total population. The first locality was Gujar Domail having density of 2.13 animals km⁻² (Table 2). The locality comprised on 17 animals, which were distributed into its sub-localities, Ganeya Wala Nar, Gujar Domail and Rah Wala Nar. Locality Surgan was the second locality in this zone A.

Table 1: Population and ratios of different groups of Himalayan ibex in upper Neelum Valley Azad Kashmir

Locality	Male	Female	Young	Yearling	Total population	Male/female ratio	Young/female ratio	Yearling/female ratio
Gujar domail	4	5	7	1	17	1:1	1:1	1:5
Huriparbat	2	4	2	3	11	1:2	1:2	1:1
Neeli baraf	7	5	4	0	16	1:1	1:1	0:5
Patlian pani	9	4	6	3	22	2:1	1:1	1:1
Puldharay	5	6	1	0	12	1:1	1:6	0:6
Shounther	4	6	2	1	13	1:1	1:3	1:6
Surgan	8	10	9	4	31	1:1	1:1	1:2

Table 2: Average population, density and altitudinal range of Himalayan ibex at different localities surveyed during 2004-2005

Locality	Altitude of the area (m)	Area surveyed (km ²)	Average population	Population density (Animal/unit area)
Gujar domail	3610-4300	8	17	2.13
Huriparbat	3500-4300	14	11	0.79
Neeli baraf	3000-4600	18	16	0.89
Patlian pani	3900-4400	12	22	1.83
Puldharay	2300-4200	19	12	0.63
Shounther	3510-4500	12	13	1.08
Surgan	2320-4400	18	31	1.72

Population density of this locality was recorded as 1.72 km⁻² (Table 2) with the average population of 31 animals. The population was distributed in its eight sub-localities, e.g., Bakwali, Ghamot, Hola, Hola Top, Kalay Jandar, Kundi, Neelum and Saam Gaam.

The second zone of the study area i.e., zone B has four main localities. Total average population of recorded in this zone was of 62 animals, which was 51% of the total population of the study area.

Third main zone (zone C) of the study area consisted lowest ibex population and comprised of one locality only. Average population of 12 animals was recorded in this zone that constitutes 10% of the total population. Locality Puldharry was divided into twelve sub-localities. Population density index of this zone was 0.63 animals km⁻² (Table 2). Maximum population was recorded in two sub-localities, Bagnowan and Puldharry and minimum population was recorded at Muchhal Purr. Janawai and Yamgher sub-localities have equal average population of 2 animals in each sub-locality and there was no population recorded in other sub-localities such as Doga, Helmut, Gagai, Jandar Seri, Sardari, Tao Butt I and Tao Butt II. Male/female ratio and young/female ratio was recorded as 1:1 and 6:1 respectively (Table 1) while no yearling was recorded in this zone. Detailed Phyto-sociological analysis was carried out at potential habitats of seven main localities of study area by using Quadrant Method during the study period.

The first potential habitat of Himalayan ibex was locality Patlian Pani, where maximum population was recorded as 22 animals. This locality was further divided into three sub-localities. Population of Himalayan ibex was equally distributed in two sub-localities, Bergi Ray and Patlian Pani with 6 individuals, while minimum population was recorded in sub-locality Hatti with 5 animals. Locality

Table 3: Percentage of different groups of Himalayan ibex surveyed during 2004-2005

Males in the population (%)	Females in the population (%)	Young in the population (%)	Yearlings in the population (%)
31.79	32.79	25.41	09.84

Patlian Pani has the population density index of 1.83 animals km⁻² (Table 2). Male/female ratio was found approximately 2:1 (Table 1).

Second potential habitat of the Himalayan ibex in this zone was the locality Neeli Baraf. This locality has density index 0.89 animals km⁻² (Table 2) with the average population of 16 animals. Population was found scattered in five sub-localities, where maximum population was recorded in sub-locality Pathray. The population was found equally distributed in three sub-localities i.e., Dellah, Neeli Baraf and Sillan with 3 animals in each and minimum population was recorded in sub-locality Lundi Mali. Male/female ratio and female/young ratio was noted approximately as 1:1 while no yearling population was found in this locality (Table 1).

The main locality of the zone B, Shounther proved to be the third potential habitat of the Himalayan ibex. This locality has density index 1.08 animals km⁻² (Table 2) with the average population of 13 individuals. The locality was divided into three sub-localities, where maximum population was recorded in Shounther Gali while minimum in other sub localities Shounther and Burjhan. The male and female ratio was recorded as 1:1 and female ratio in relation to young and yearling was recorded as 3:1 and 6:1, respectively (Table 1).

Fourth potential habitat of the ibex in zone B was locality Huriparbat. Density index of this locality was 0.79 individuals km⁻² with the average population of 11 animals (Table 2). This locality was divided into four sub-localities. The maximum population was recorded in sub-locality Lunda, while minimum population was observed in two sub-localities Lunda Sar and Punj Kathian Top each and 3 animals were found in Chitta Katha sub-locality. Male/female ratio was found 1:2 in the locality Huriparbat and female ratio in relation to yearling and young was recorded approximately 1:2 and 1:1 respectively (Table 1).

Phyto-sociological habitat comparison of dominant and co-dominant vegetation showed that the plant

species *Poa wallichianum*, *Poa bactriana*, *Bistorta affinis*, *Bergenia stracheyi*, *Polygonatum verticillatum*, *Inula grandiflora*, *Allium humil*, *Ranunculus heritallus*, *Iris hookeriana*, *Phlomis bractoesa*, *Sassurea lappa*, *Phytolach latebenia* and *Picrorhiza kurrooa* were common and characteristics of each habitat

Earlier record shows that the population of Himalayan ibex in Neelum valley was 375 animals (Ahmed *et al.*, 1998). Qamar *et al.* (2000) reported considerable decline in population during 2000, when they estimated the population was between 170 and 200 animals in the area. During current study a total of 122 animals were recorded in the study area, indicating further decline in the population.

Qamar *et al.* (2000) causing decline in the population. Reading *et al.* (1999) illustrated that decline might be caused by poaching and approach of domestic livestock. It was reported from shepherds and the hunters of the study area that livestock compel ibex to their undesired habitat.

CONCLUSIONS

During the present study a population of 122 animals was estimated in the study area distributed in different localities and sub-localities of three main zones. Locality Surgan has maximum population followed by Patlian Pani and Gujar Domail. However, the maximum (2.13 animals km⁻²) value of density index was recorded at Gujar Domail and minimum (0.63 animals km⁻²) at Puldharry. It is recommended that the a community based program must be stated by the government for the conservation of wildlife species specially the endangered species of the area such as Snow leopard, Brown Bear, Himalayan Snow Cock, Snow Partridge. Further, the government of A J and K and Conservation agencies should consult political leaders and civil administrative authorities of Chillas to stop invaders from their area. To minimize the impact of local inhabitants, it is necessary to provide alternate source of income other than livestock raisings. Quantity of livestock can reduce by introducing the improved domestic breeds of livestock. Education campaign should be started in Neelum Valley.

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