

Distribution of Himalayan Grey Langur, *Semnopithecus ajax*, Pocock 1928 in Himachal Pradesh, India

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ABSTRACT

Study on diversity, distribution and abundance of critically endangered species *Semnopithecus ajax* Pocock 1928 commonly known as Himalayan Gray Langur was carried out in Himachal Pradesh, India and it has been observed that out of total twelve districts of the state this species is confined to Chamba districts only. This species was studied from 18 different localities of Chamba district during 2015-18. The largest troop consisting of 89 individuals was recorded from Prangal panchayat of Bharmour block and an isolated single young individual was noticed on Koti Bridge near Sundla. There is seasonal but local migration of grey langur in the study area and species has conflict with human being due to shrinking of habitat and other natural resources.

Key words: Himalayan Gray Langur, Critically endangered, Distribution, Human langur conflict.

INTRODUCTION

India has a rich diversity of fauna and flora due to its diverse geographical and climatic conditions. These rich natural conditions equip Indian land mass to support diverse number of species of non human primates. Fourteen species comprising six species of macaques, five of langurs, two of loose, and one species of gibbon and 39 subspecies of nonhuman primates occur in India (Southwick & Lindburg, 1986; Mir *et al.*, 2015). In population abundance, Rhesus and *Semnopithecus* (Hanuman langur) are considered as largest population of non human primates sharing this distinction with baboon of Africa (Roonwal & Mohnot, 1977). Langurs are important species as they occupy a key position in food chains of many forest ecosystems. In India most of the population of langur comes under genus *Semnopithecus*.

Prior to 2001 *Semnopithecus entellus* was considered only one species with several subspecies like *S. entellus achates* (Plains langur), *S. e. ajax* (Dark-eyed Himalayan langur), *S. e. anchises* (Deccan hanuman langur), *S. e. entellus* (Bengal hanuman langur), *S. e. hector* (Grey langur), *S. e. hypoleucos* (Dark-legged Malabar langur), *S. e. schistaceus* (Central Himalayan langur), *S. e. dussumieri* (Dussumier's Malabar langur), *S. e. priam* (Madras grey langur) and *S. e. thersites* (Grey langur) (Molur *et al.*, 2003). It was in 2001 when these subspecies were recommended for separate subspecies under genus *Semnopithecus*. Accordingly seven different species viz. Nepal grey langur (*Semnopithecus schistaceus*), Kashmir grey langur (*Semnopithecus ajax*), Tarai grey langur (*Semnopithecus hector*), northern plains grey langur (*Semnopithecus entellus*), black-footed grey langur (*Semnopithecus hypoleucos*), Southern plains grey langur (*Semnopithecus dussumieri*) and tufted grey langur (*Semnopithecus priam*) have been recognised (Groves, 2005).

Dark-eyed Himalayan grey langur *S. ajax* is one of the least studied species of langur. This species is distributed in a varied habitat including quite dry

savannah and tropical rain forests. They inhabit between 2200-4000 m amsl in the subtropical, tropical moist temperate, alpine, coniferous, broad leaved forests and scrublands (Nowak, 1999; Hilton & Taylor, 2000). In Indian subcontinent their distribution is reported from Himachal Pradesh and Jammu and Kashmir and adjacently from Pakistan and Nepal. In Himachal Pradesh they are reported from Kalatop-Khajjiar and in State of Jammu and Kashmir noticed in Dachigam National Park and in Bhaderwal district.

This species is reported from different places of the Pakistan (Roberts, 1997) and from Neelum Valley (Machiara National Park and Salkhala Game Reserve), Jehlum Valley (Moji Game Reserve and surroundings), and Hillan and Phalla game reserves in District Bagh of Pak occupied Kashmir (Ahmed *et al.*, 1999; Baig, 2004; Dar, 2006). They are also reported from Lang Tang National Park of Central Province in Nepal (Walker & Molur, 2004).

Himalayan Gray Langur is normally confused with other species of *Semnopithecus* but can be easily identified by its larger size and outer sides of both the fore and hind limbs covered with silvery-dark coloured hair (Wilson, & Reeder 1992). The long tail of this langur always forms a broad arc over their back curving towards the head when on the ground (Jay, 1965).

Dark-eyed Himalayan gray langur is basically folivorous and mostly feed on a combination of fruits, buds, leaves, stems, barks, roots and flowers and also observed eating insects. They prefer mature leaves as compared to the other parts of the plants. Average group size of *S. ajax* does not show much variation across seasons. The overall population density of *S. ajax* is about 16.32 to 28.3 individuals/ km² (Bagchi *et al.*, 2003; Minhas *et al.*, 2012; Edgaonkar, 2008). There is not significant variation in the density of langurs across different seasons.

S. ajax is an endangered species according to IUCN red data list but after reassessment in 2004 this species was re-designated as "Critically

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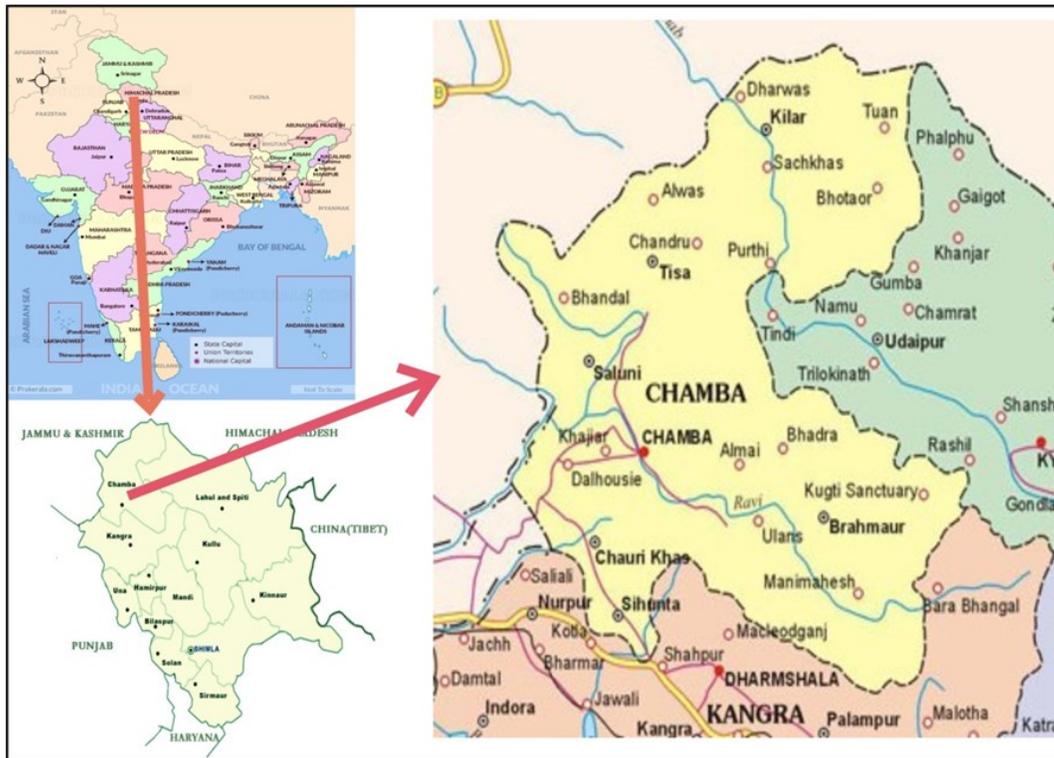


Figure 1. Location of Chamba district and Himachal Pradesh in the map of Indian subcontinent.

Endangered” (IUCN, 2006). It is considered endangered due to its restricted range habitat. In India its range is confined in less than 5,000 square kilometres. They are present in an area of occupancy of less than 500 square kilometres in valleys surrounded by high peaks in Chamba.

There are threats to this endangered species which is struggling for habitat and livelihood in forest ecosystem and unfortunately a very little is known about its exact locations in the forest which is base line for any conservation measurement. Therefore, efforts have been put to unveil the diversity, distribution and abundance of *S.ajax* from Chamba and adjacent areas of district Kangra with similar habitation and climate.

MATERIALS AND METHODS

Chamba district is situated between north latitude $32^{\circ} 11' 30''$ and $33^{\circ} 13' 06''$, and east longitude $75^{\circ} 49' 00''$ and $77^{\circ} 03' 30''$ and Chamba is bounded on North-West by Jammu and Kashmir, on the North-East and east by Ladakh, Lahaul and Bara-Bangal on the South-East and South by the District Kangra of Himachal Pradesh and Gurdaspur District of Punjab (Figure 1). This district has been divided into 6 sub-divisions (Chamba, Churah, Pangi, Bharmaur, Dalhousie and Chowari). The climate of the district varies from semi-tropical to semi-arctic. Winter varies from December to February and summer extends from March to June while July to September is rainy months. The average rainfall in the district occurs from July to September. The average rainfall in the district is about 1952-2000 mm. Snowfall is received in the higher reaches. Average minimum and maximum temperature varies from 0°C and 38°C .

Chamba district presents an intricate mosaic of mountain ranges, hills and valleys. It is primarily a hilly district with altitudes ranging from 600 m to 6400 m amsl. Physiographically this area has high peaks ranging

in height from 3000 to 6000 m amsl. It is a region of complex folding, which has under gone many orogenesis. The topography of the area is rugged with high mountains and dissected deep by river Ravi and its tributaries.

Extensive field surveys for distribution and abundance of langur were conducted in Chamba district from December 2015 to March 2018. Surveys were carried out using modified line transect method (Burnham, *et al.*, 1980; NRC, 1981; Strushsaker, 1997) and direct spot observation method (Geissman *et al.*, 2010). Transects were laid in the existing forest trails in a stratified random manner to cover all representative areas (Mueller-Dombois *et al.*, 1974). Most of transects were visited late morning and evening hours. Individual interviews were also conducted to unveil the exact localities and status this species with slight modification of methods proposed by Hill, 1997 and Regmi *et al.*, 2013.

RESULTS AND DISCUSSION

During the present study, Himalayan Gray Langur was reported from 18 localities of district Chamba (Table 1). The field area was visited during the different seasons of the year and all the eighteen localities were identified and observed for certain parameters. In a few localities direct observations of *S. ajax* were conducted and troop were analyzed, while in some localities indirect information from local inhabitants was collected.

During the study, individual troops of large number were recorded. The largest troop consisting of 89 members was recorded from Prangal panchayat of Bharmaur block while at the Koti Bridge near Sundla an isolated young individual was noticed. It is a rare chance to encounter an isolated individual of *S. ajax*. It looked like that this individual was separated from the troop and it was also visible from its behaviour. Similarly a troop of *S. ajax* was observed at Dalhousie. It was large troop

Table 1. Different localities in district Chamba with other physical parameters witnessed the presence of *S. ajax*.

Sl. No.	Locality	Block	Coordinates	Altitudes	No. of individuals recorded
1.	Dihur	Salooni	32°43'58.24"N 76° 2'57.72"E	1423 m	37
2.	Shinga	Salooni	32°45'34.03"N 76° 7'28.32"E	1894 m	34
3.	Kihar	Salooni	32°45'38.26"N 75°58'13.02"E	1573 m	38
4.	Sundla (Koti)	Salooni	32°40'31.03"N 76° 2'32.84"E	847 m	1
5.	Gajnoi	Chamba	32°31'50.79"N 76° 4'53.81"E	1646 m	33
6.	Chamba	Chamba	32°33'16.69"N 76° 7'31.23"E	932 m	37
7.	Pukhri Khajjar	Chamba	32°33'30.07"N 76° 3'48.27"E	2008 m	39
8.	Khajjar	Chamba	32°32'53.42"N 76° 3'29.40"E	1984 m	47
9.	Auda	Chamba	32°32'44.29"N 76° 4'52.50"E	1928 m	53
10.	Gate	Chamba	32°31'19.59"N 76° 4'14.86"E	1902 m	23
11.	Kalatop	Bhattiyat	32°33'5.55"N 76° 1'6.01"E	2347 m	46
12.	Dalhousie	Bhattiyat	32°32'13.30"N 75°58'17.77"E	2015 m	69
13.	Jot	Bhattiyat	32°29'13.37"N 76° 3'33.63"E	2429 m	29
14.	Kugti	Bharmour	32°26'58.80"N 76°36'53.28"E	2138 m	58
15.	Prangala (Hadsar)	Bharmour	32°27'11.13"N 76°36'52.63"E	2087 m	89
16.	Satarundi	Tissa	32°59'28.62"N 76°12'36.55"E	3538 m	44
17.	Banjraru	Tissa	32°50'12.63"N 76° 9'1.79"E	1768 m	52
18.	Kalhel	Tissa	32°44'12.91"N 76° 6'41.46"E	1165 m	57

having more than 69 individuals. There were nearly 27 young individuals in the troop and at least five infants were carried by their mothers (Figure 2).

During the visits it has been observed that *S. ajax* is present in the certain area only during the some parts of the year. They change their position/locality during the different seasons of the year depending upon the availability of food and environmental conditions. These langurs come to the areas of agriculture fields during the harvesting time of crop and move away in the deep forest on the other time period of the year. This tendency was more visible in the area of Kala top and Khajjar areas.

Generally Himalayan gray langur is known to be present in the deep forest and less frequently in the cultivated land or near human habitat but it seems to be more dependent on agricultural land particularly in the Khajjar area especially during the harvesting season. Their mode of raid to agriculture field is different from the *Rhesus*, which is very violent and aggressive in nature. On the other hand *S. ajax* raid the crop in a silent way. However it is the general perception of the natives that this species is also no shy and violent encounters are frequent in the area. It has been observed during the study that the troop of *S. ajax* keep changing their troop

position in the different times of the day. They move near the human habitat or agriculture fields during the morning hours and move to the deep valleys during the night times.

During one of the visits to Dalhousie it was noticed that one of the troops was looking disturbed; members of troop were sitting on the dead trees near human settlement as a local vendor was trying to scare away the langurs with air gun.

During the study there were various discussions with the local people. It was general view of the people in all the localities that *S. ajax* was not visible in the human habitats in the past. People opined that *S. ajax* rarely raided the cultivated fields in the past but presently these incidents are frequent. One of the respondents told that these animals are now no shy. Kugti panchayat is a part of Kugti Wild Life Sanctuary is exception where Himalayan gray langur commonly known as 'Goyali' present near the human habitation and surprisingly *Rhesus* who frequently raid the crops in past which was absent after their invasion.

This species of langur was earlier reported from district Chamba specifically from Khajjar Wild life sanctuary but present study confirmed its distribution from



Figure 2. A female grey langur holding baby underneath at Prangala (Hadsar), Chamba district of Himachal Pradesh.

other parts of the districts also. A good number of troops are also present in Kugti Wild life sanctuary. Earlier their distribution was reported by (Groves, 2001) who first reported Kashmir gray langur in Kashmir while Brandon-Jones *et al.*, (2004) established its presence in Kishtwar National Park. Mir *et al.* (2015) studies their distribution from Dachigam National Park, Kashmir while Sharma and Ahmed (2017) reported their presence from Bhaderwah sub-district of Jammu and Kashmir. They are also reported from the adjacent localities of Neelum Valley (Machiara National Park and Salkhala Game Reserve), Jehlum Valley (Moji Game Reserve and surroundings) and Hillan and Phalla game reserves in District Bagh (Ahmed, 1999; Baig, 2004; Dar, 2006).

Himalayan gray langurs are normally recorded from higher altitudes even up to 3228 to 3800 m (Sharma & Ahmad, 2017; Minhas *et al.*, 2012). During the present study these langur were recorded from a height of 3538 m but they were also recorded from the quite low ranges from two localities during the present study. These two records are from Chamba city near Millennium gate and Koti of Sundla. This observation of Millennium gate was not a planned one but encountered incidentally. Both the records are from winters. These localities are not permanent habitat but troops were migrating from one habitat to other and came to lower elevations.

S. ajax is having a limited range of occupancy in peculiar habitat. They change their locality in different seasons. During the summer season they migrate upwards into the subalpine deep forests and in some localities even further into the alpine zone. In most of the habitats, they prefer moist temperate forests with dominant deciduous vegetations (Minhas *et al.*, 2010). In the present study it was observed that *S. ajax* change their locality during the different seasons of the year depending upon the availability of food and environment conditions and come closer to areas of agriculture fields during the harvesting time of crop and move away on the other times of the year.

In the present study it has been reported that conflict between Himalayan gray langur and human is growing in the area with increasing incidents of crop raids in some localities. Other studies from different localities

have also showed the similar concerns. This is mainly due to the destruction of natural habitat and reduction in the natural food resources of this species from the forest. In the present study it has been observed that they are becoming more dependent on agricultural land especially in Khajjiar and Kugti. District Chamba was most favourable natural habitat for *S. ajax* now affected by human activities causing continuous decline in habitat and space (Groves & Molur, 2008). Agriculture, construction of roads and Hydro-electrical projects are mainly responsible for this degradation. In Chamba district various minor and large hydro electrical project are being constructed resulting in the mass scale of habitat destructions as well as other ecological damages (Singh & Thakur, 2012). This understanding of the specific identity of *S. ajax* in the present study area opens ventures for more species specific research in the region and paves way for species specific conservation strategies.

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