

HUNT FOR HANGUL



Establishing the presence of Hangul outside Dachigam National Park, Jammu & Kashmir

Mansoor Nabi Sofi and Riyaz Ahmed

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An interim report on Hangul survey conducted by Wild Species
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PREFACE

Hangul is to the state of Jammu & Kashmir what tiger is to India. It is an iconic flagship of the valley and it is critically endangered. While a lot of press has been focused on the status of the species in Dachigam, not much is known of the range of the species outside the protected area. In fact even in Dachigam most of the work is in the lower Dachigam, a place that has easier access and more security. To understand the real threat that a species faces one has to forego the confines of the rest house and forest quarters and tramp onwards and upwards. That is , in a nutshell, what this survey intends doing. In Phase I, as this occasional report documents, the summer & winter grounds of hangul have been precisely identified. Not by surveying literature but by painstaking ground surveys. Phase II will now survey these areas of the state in much more detail. What we aim for in Phase III when conservation efforts can start in real earnest outside Dachigam, is to secure a habitat where this endangered deer spends at least two-thirds of its life.

Vivek Menon
Executive Director

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EXECUTIVE SUMMARY

This survey was conducted from October to January 2009 with the aim of collecting information from historical sites reporting presence of hangul from Jammu and Kashmir. The survey excluded Dachigam National Park, where a well established population is already known to exist. The survey team visited 33 sites in the North, South and Central Wildlife Divisions and interviewed local people, hunters and security forces who patrol the area. Further, evidences in the form of antlers also indicated the presence of hangul in those areas. On the basis of the interviews and indirect evidences, the team could gather information about the presence of hangul in 17 sites, some used exclusively in winter and others during summer. Some sites harboured hangul all through the year.

The next pahse of this survey will now concentrate on these sites and through physical surveys, confirm the distribution reports through direct sightings. Efforts will also be made to obtain some forms of abundance so that important sites may be prioritized for protection.



Fig. 1: One of the hangul survey team displaying an antler

BACKGROUND

The hangul (*Cervus elaphus hanglu*) is a critically endangered cervid (IUCN 2004). It assumes significance as the only survivor of the red deer group in the Indian sub-continent. The species is placed in Schedule I of the Jammu and Kashmir Wildlife (Protection) Act, 1978 and the Wildlife (Protection) Act, India 1972. It is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Hangul was once distributed relatively widely in the mountains of Kashmir (Schaller 1969). The known past distribution of hangul was restricted to an arc 65 miles in width; north and east of the Jhelum and lower Chenab rivers, from Shalurah in the north to Ramnager in the south (Lydekker 1924, Holloway 1970). The Gamgul Siya-Behi Sanctuary in Himachal Pradesh, on the state border with Jammu, is the only area outside Jammu and Kashmir that held hangul populations in the known past. The distribution of hangul was limited to the moist temperate forests on the northern side of the Valley of Kashmir and some other adjacent valleys (Prater 1965, Kurt 1978). This deer was also known to be present in the Upper Bringi Valley (Holloway 1971), and in Bandipora, Gurez, Sindh valley, Drass valley, Lidder valley and Desu (Kurt 1978). However the only viable population today is the Dachigam population (Schaller 1969, Holloway 1970, Kurt 1978, Department of Wildlife (Protection) 2004).

Dachigam National Park is divided into two main parts - Lower Dachigam, which comprises a third of the total area, and the Upper Dachigam in the higher reaches towards the east. The summer and winter quarters are separated by about 15 km of temperate forests (Schaller 1969). Most of the Hangul spend the summer months from mid-May to mid-September in the alpine meadows and in the sub-alpine conifer forests at altitudes of 3000 m and above, in the area of Upper Dachigam, perhaps on the upper slopes outside the Park. With the onset of cold weather, they move about 15 km into the valleys, principally the valley of Dagwan river in Lower Dachigam (Schaller 1969). At present, the exact summer grounds of the

hangul are largely unknown (Department of Wildlife Protection 2004). The rut starts towards the end of September and is at peak during the second week of October. After a gestation period of 230-240 days (Walker 1964) most young are born in between middle of May and middle of June (Schaller 1969). There are three main traditional wintering grounds for the Hangul around Dachigam and these are the Sindh valley to the north-east of the Park, the Tral Range in the south-east, and Lower Dachigam in the west (Holloway 1970).

The Dachigam hangul population has shown a decreasing trend from 1940s till 2004. The numbers have declined drastically since 1947 (Gee 1966, Schaller 1969, Holloway 1970, Department of Wildlife Protection 2004). The Dachigam hangul population was about 1000-2000 just before independence but by late 1950's, it was reduced to some 400 individuals (Gee 1966) falling further to 140-170 (Holloway 1970).

After the 1980s the population of hangul showed marked fluctuations, a reflection of either true population fluctuations or inadequacies in population estimations carried out.

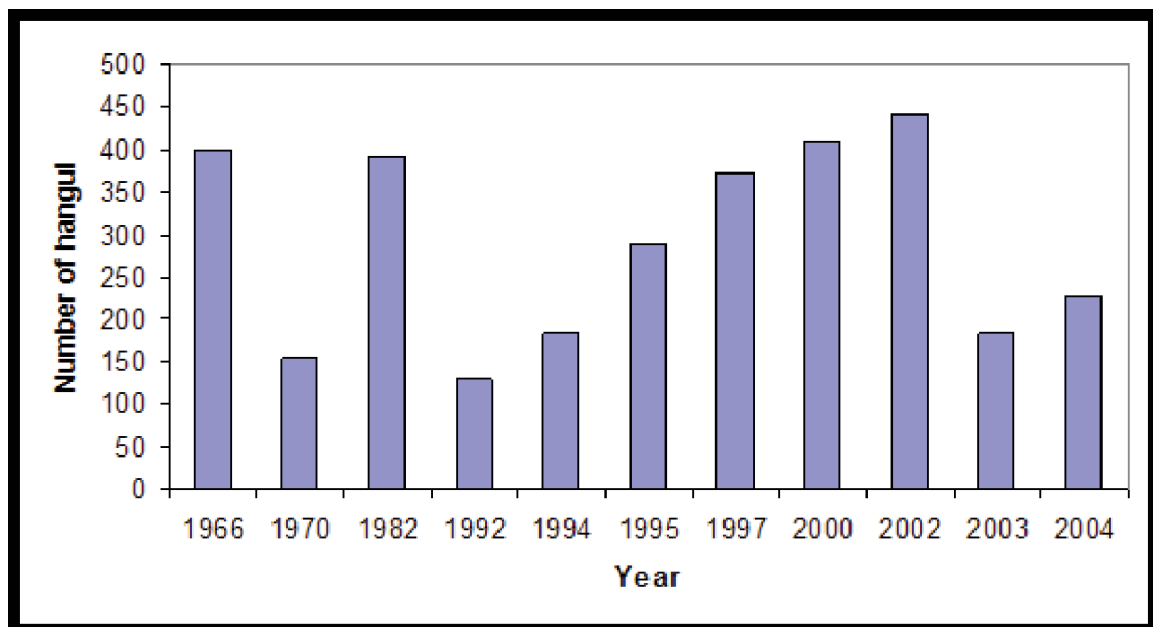


Fig. 2 Population estimates of hangul in Dachigam National Park and its surroundings (Source: Department of Wildlife Protection, J&K)

The young to female ratio in hangul was reported to range between 21 to 51 young/100 females during February and March (Department of Wildlife Protection, 1996, 1997, 2000, 2001, 2002, 2003). Schaller (1969) reported 45 Juveniles to 100 females. The counts from 2000 to 2004 indicate a decreasing trend (Department of Wildlife Protection, 1996, 1997, 2000, 2001, 2002 and 2003). This is alarming and needs to be monitored carefully by the management. The fawning grounds therefore need to be monitored and safeguarded.

Poaching has been, in the past, identified as the principal cause of decline of the hangul (Gee 1966, Schaller 1969, Holloway and Schaller 1970, Kurt 1978). However, the department undertook an important step by stationing infantry from the Indian Army in Dachigam to tackle the poachers. Poaching seems to have decreased significantly, although the anti-poaching patrols that were operating during the rut and winter months were restricted only to Lower Dachigam (Kurt 1978).



Fig. 3 Landscape of Sonmarg where the team conducted the hangul survey

Poaching by Gujjars, Bakarwals and other shepherds, who take their livestock to Upper Dachigam during summer is still a major cause for hangul decline (Stockley 1936, Gee 1965). This is compounded in

Dachigam, by the large scale biotic interference due to grazing by the State Animal Husbandry Department owned cattle which use Dagwan in Upper Dachigam as a grazing ground. In the vast areas of Nageberan and Marser, thousands of sheep, goat, horses and cattle are grazed by local graziers, gujjars from Kashmir as well as Bakarwals and Banyaris from Jammu. This has created potential competitors and persistent sources of disturbance for hangul during summers. The Dachigam Hangul population decreased from 3000 animals in 1940's to some 200 by 1969 while the sheep introduced in Dachigam NP in 1961 by the State Animal Husbandary Department increased from 20 to some 3000 during the same period. The sheep spend the summer in Upper Dachigam and winter in Lower Dachigam (Kurt 1978).

Information needs:

While hangul conservation has traditionally been centered around Dachigam National Park, historically, there were significant populations occurring outside the DNP. Over the last few decades, much of this population has either dwindled or has not been monitored and thus, Dachigam has been at the centre of hangul conservation. The population of hangul has been dwindling in Dachigam due to a variety of reasons which have not been addressed thus far. Therefore as long as these factors operate, hangul populations may not increase in Dachigam significantly. It is therefore imperative to identify the remnant satellite populations of the species so that these could be conserved. This will create alternate sites where future conservation efforts may be directed and as a result increase the effective distribution range of the species.

We therefore initiated a survey with the following objectives:

- a) Survey of the historical range of hangul to identify significant populations, if any
- b) Rough estimates of the number of hangul found in these populations
- c) Assessment of threats prevalent in the area.

METHODS

Historical accounts (Lydekker 1924, Gee 1966, Schaller 1969, Holloway 1971 and Kurtz 1978) were used to construct a list of sites where hangul occurred in the past. Some recent reports of the occurrence of hangul in areas outside Dachigam were also used to produce a candidate list of survey sites. Two phases of survey were planned – an initial reconnaissance survey with the object of visiting each site to obtain secondary information on the occurrence of hangul by talking to the locals and obtaining evidences, if any, from them. From this, a list of sites offering the strongest evidences of the presence of hangul would be short-listed for more detailed surveys subsequently as the second phase.

The methods employed for the reconnaissance survey were to visit the identified site and interview hunters and other knowledgeable persons, and army personnel who may patrol the areas (if close to the LoC) to obtain information about the actual sites where hangul occur in those areas. The season of their occurrence in those areas was also inquired to assess if these areas were used as wintering or summer areas. Evidences were mainly found in the form of antlers found with the local population. The timing and the mode of antler collection was also determined to assess if the antlers were naturally shed and collected (deduced as wintering areas) or poached.

These surveys were conducted between 22 October and 23 January 2009 during which 33 sites were visited (Table 1). After obtaining information from these areas, a list of sites has been proposed for subsequent surveys to confirm the presence of hangul and their numbers.

Table 1: Areas surveyed for locating sites with hangul populations in Kashmir, Jammu & Kashmir

Site No	Survey area	District	G P S Locations	Elevation (m)
1	DIVER INDERBUG	Kupwara	34°27'00.27"N, 74°27'20.52"E	1760
2	KURHAMA	Kupwara	34°28'55.90"N, 74°28'16.61"E	1945
3	DAPAL	Kupwara	34°42'00.32"N, 74°29'45.61"E	2682
4	CHUNT WARI	Kupwara	34°45'18.01"N, 74°24'20.62"E	2728
5	POSHWARI	Kupwara	34°39'08.70"N, 74°28'31.53"E	2756
6	BANGUS VALLEY	Kupwara	34°20'09.62"N, 74°03'19.50"E	3036
7	GUJJAR PATI ZALOORA	Baramullah	25°04.47"N, 74°23'12.84"E	7758
8.	HARWAN	Baramullah	34°24'1.94"N, 74°23'34.59"E	1653
9.	WAM PORA	Bandi pora	34°37'50.49"N, 74°48'18.97"E	2395
10	DEWAR	Bandi pora	34,37,46.26"N, 74°49'53.49"E	2405
11	AUCHOORACHORWAN	Bandi pora	34°39'39.97"N, 74°55'10.00"E	2957
12	ISMARGI BAKTOOR	Bandi pora	34°40'56.80"N, 74°39'38.11"E	2354
13	MARKOOT	Bandi pora	34°37'51.25"N, 74°51'37.55"E	2443
14	CHAK NALLAH	Bandi pora	34°37'06.87"N, 74°54'31.12"E	3646
15	BARNAYI	Bandi pora	34°36'30.72"N, 74°57'6.16"E	2569
16	BADUGAM	Bandi pora	34°33'53.17"N, 75° 1'13.11"E	2703
17	MALAN GAM	Bandi pora	34°31'55.37"N, 75° 8'43.52"E	2794
18	BADUAAB	Bandi pora	34°31'38.66"N, 75°10'16276"E	2779
19	RAMAN NALLAH	Bandi pora	34°31'6.79"N, 75°11'6.60"E	2848
20	CHAN DAJI	Bandi pora	34°27'24.08"N, 74°32'29.30"E	2144
21	BATA KOOT	Bandi pora	34°28'28.67"N, 74°39'28.71"E	1932
22	SIMLAR	Bandi pora	34°25'5.34"N, 34°25'5.34"N	1753
23	ABDULLAN GUJRAN	Bandi pora	34°32'12.56"N, 75°14'37.84"E	2934
24	SURENDER	Bandi pora	34°24'25.25"N, 74°45'54.66"E	2122
25	YEMBERZAL WARI	Baramullah	34°24'18.13"N, 74°24'01.01"E	2134
26	AKHAL	Ganderbal	34°16'15.79"N, 74°52'36.82"E	1858
27	MAMAR YACHAMA	Ganderbal	34°14'13.37"N, 74°55'47.72"E	1805

Site No	Survey area	District	G P S Locations	Elevation (m)
28	GUND	Ganderbal	34°15'28.82'N, 75° 5'19.78'E	2084
29	KULAN RAZEL	Ganderbal	34°15'53.47'N, 75°08'52.51'E	2163
30	WANGHAT NARA NAG	Ganderbal	34°21'12.09'N, 74°58'35.26'E	2256
31	DUKSUM	Anantnag	33°37'18.73'N, 76°28'27.30' E	2365
32	ACHABAL	Anantnag	33°40'26.62'N, 75°15'22.54' E	1817
33	KHIRAM	Pulwama	33°53'12.33'N, 75°11'63.75'E	2068
34	SHIKAR GAH TRAL	Pulwama	33°53'45.72.N, 75°58'36.59'E	1841
35	HAJAN ZOOWESTAN TRAL	Pulwama	34°04'10.05'N, 75°03'52.38'E	2111
36	OVERA PAHALGAM	Anantnag	33°56'38.50'N, 75°15'53.89'E	2104

RESULTS

These results presented below pertain to the first phase of the survey – the reconnaissance survey.

Thirty three sites were visited where interviews were conducted with local people with information about the movement of hangul. Another three sites could not be visited due to road blockage, but information was collected by talking to some local knowledgeable persons. Details about the evidences of the presence of hangul are given in Table-2. Descriptions of the areas are provided below:

1. Diver Inderbug (34° 27' 00.27"N/74°27' 20.52"E)

Diver Inderbug is located in district Kupwara in north Kashmir. The team visited this area on 1st December, 2008. This is the last village in the Lolab valley. The potential habitat for hangul is between 1800m and 2700m and has a mixture of dense and open forests with grasslands and is presently under the department of social forestry. The team interviewed local poachers, villagers and army porters and obtained evidences of

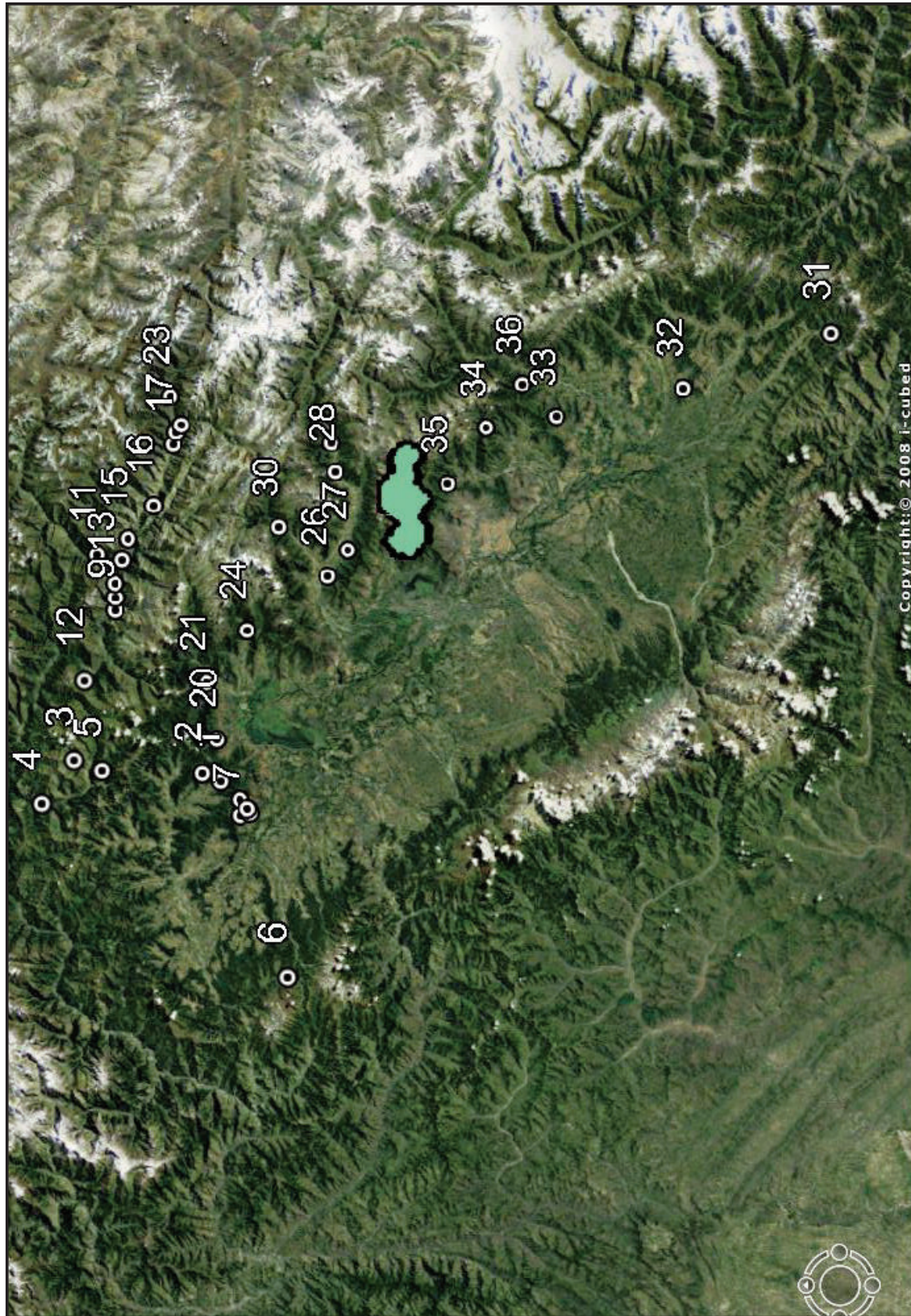


Fig. 4 All sites displayed on a satellite map of Kashmir Valley (for site numbers, refer to the text and Table 1)

■ Dachigam National Park, Jammu & Kashmir

hangul in the area in the form of antlers collected from this area. This area is connected with Chan Daji, Bandi Pora, another potential site for hangul.

According to local villagers, this area is not only a good habitat for hangul, but also for musk deer, leopard, black and brown bear and other species of wildlife. As per the locals, before the turmoil in the Kashmir valley, hangul poaching was common in this area during winters. Some of the villagers believe that the movement of hangul in this area continues throughout the year, while some believe that the hangul appear in winter only. During the period of mushroom collection in April, the villagers sometimes find the antlers of the hangul. In February 2005, a male hangul was seen in an agriculture field due to heavy snow fall in the higher reaches. Unfortunately it was trapped and killed for its meat.

2. Kurhama (34°28'55.90"N/74°28'16.61"E)

The team visited this area on 25th December, 2008. This area is located on the northern side of Dever Inderbug. The team had interactions with local villagers, graziers and poachers who could not confirm the presence of hangul in this area. The team also could not find any antlers from these villages.

3. Dapal Machil (34°44'56.34"N/74°28'16.26"E)

The team visited this area on 2nd December, 2008. This area is connected with Ismargi, Guriaz valley through Hathi Nowshera. The team had interactions with the local poachers, army porters and villagers who informed us that hangul use this area in summer and as a fawning ground. However, the team could not trace any antlers from this village.

4. Choont Wari (34°45'18.01"N/74°24'20.62"E)

We visited this area on 3rd December, 2008 which is located very close to the LoC. They team interacted with local poachers and army porters who confirmed the presence of hangul in this area. According to them, hangul use this area during summer. Presence of antlers of hangul in the villages close by lends credence to the information.

5. Poshwari (34°39'08.70"N/74°28'31.53"E)

The team visited Poshwari area on 4th December, 2008. Poshwari is located between Hathi Nowshara and Dapal. The team interviewed local villagers who believed that hangul were present in the area. Villagers stated that they occasionally came into contact with hangul during summer.



Fig. 5: Hangul survey team searching evidence of hoof mark and pellets

6. Bangus Valley (34°20'09.62"N/74°03'19.50"E)

The team visited this area between 7 – 10th December, 2008. This valley lies close to the Kaj-i-Nag National Park. The team interacted with local villagers especially old people and they informed that there were no Hangul in this valley. The team also could not find any antlers of hangul from this area. However, the villagers informed about the presence of musk deer, markhor, black and brown bear and goral in this area.

7. Gujjarpati Zaloor (34°25'04.47"/74°23'12.84"E)

The team visited this area on 26th December, 2008. The area lies in the Baramula district, the range of the habitat being 1800m-2750m. This area

is connected with the mountain of Dever Inder Bug, Yaberzal Wari, Chan Daji and Razdan and is located north of Sopore. The team interacted with the local villagers and local forest officials. The locals were of the opinion that the hangul often used this area in winter especially during the snow fall period. They however said that the movement of hangul had decreased due to increased human disturbance in these areas. Before disturbance, this was a route for Hathi Nowshera grazers. Grazing has now been stopped in this area.

The team while conducted surveys in the Bangus valley on 7-10th December, 2008, was informed by the poachers and grazers of that area that they found hangul antlers in Gujjar Pati Zalloora. They also informed us that these areas were once used as the hunting spot of hangul and other species during winters.



Fig. 6 Survey team with a hangul antler in Kupwara area

8. Harwan (34°24'1.94"N/74°23'34.59"E)

This area is located between Gujjarpati Zaloor and Yaberzal Wari. The team had interaction with local villagers and poachers but could not confirm the presence of hangul in this area either through local reports or antlers. The team visited this area on 26th December, 2008.

9. Wampora (34°37'50.49"N/74°48'18.97"E)

The team visited this area on 24th October, 2008. This was amongst the few wildlife survey teams to have visited this place in the last 20 years, after the onset of militancy in the state. This area is located in the Gurais and Telial valley. The team had interactions with local villagers and poachers, and they stated that few hangul were seen in this area. However, they were not certain as to the season when the hangul used this area. The team also could not find any hangul antlers from this area.

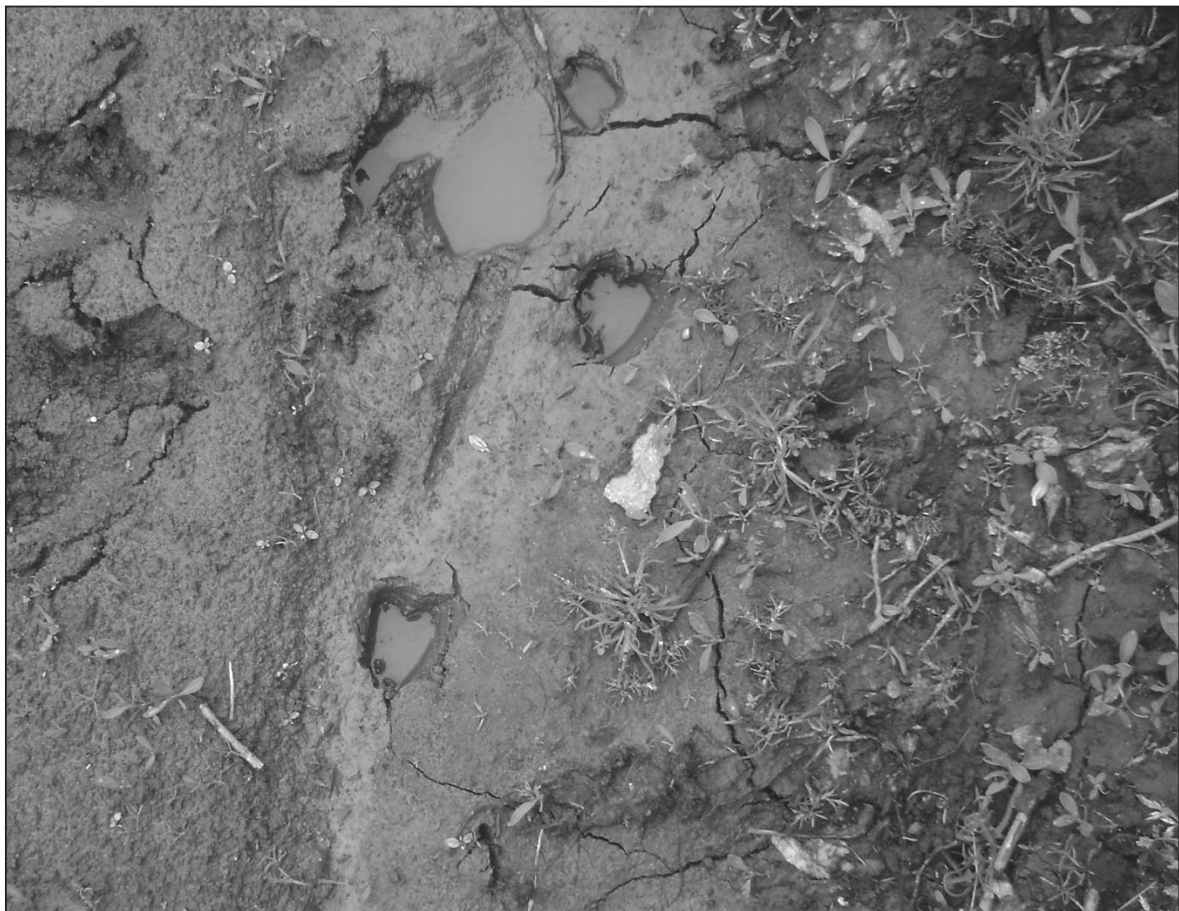


Fig. 7: Hoof marks of hanguls found during the survey

10. Dewar (34°37'46.26"N, 74°49'53.49"E)

The team visited this area on 24th October, 2008. This area is located between Wampora and Markoot of Guraiz valley. The team interviewed local villagers and security personnel. The local villagers did not give any information about the presence of hangul but the army stated that they sighted 20 hangul during October 2007. They also described about their rutting behaviour. However, the villagers did not show us any antlers since there appears to be high poaching activity in this area.

11. Auchoora-Chorwan (34°39'45.77"N/74°54'03.94"E)

The team visited these areas on 27th October, 2008. This area is located near LOC in the Guraiz valley. The team interviewed local villagers, poachers and army porters. According to them hangul is distributed in Ranjit-I and Ranjit-II areas. They also stated that hangul use this area during summers when the hinds give birth to the young ones. The general altitude of the area is between 2800 m – 4,000 m and comprises of sub-alpine forest and alpine grasslands.

12. Ismargi Baktoor (34°40'59.10"N/74°4'04.65"E)

The team visited this area of Guraiz, district Bandipora between 27- 28th October, 2008. This area is located near LOC in Guraiz valley between 2700m to 2900 m and it has connectivity with Dapal through Hathi Nowshara. The team interacted with ex-poachers and army porters in this area. According to them hangul can be seen in this area after middle of April and spend the summer here before disappearing from the area before the snowfall.

The people here have shown considerable support for hangul conservation and are interested in conserving this threatened species.

13. Markoot (34°37'51.25"N, 74°51'37.55"E)

The team visited this area on 24th October, 2008. This is the last village of the Gurais valley. About 80% of the people of this village are involved in poaching of musk deer and Ibex. The team had interactions with the

local villagers and poachers and were informed that hangul were found in groups of two to four animals during summer.

14. Chak Nallah (34°36'27.23"N/74°54'15.52"E)

This site is located in the Guraiz *tehsil* of Bandipora district between 2800 m and 4,000 m. The location is close of the LOC between Markoot and Barnayie and is thus rarely visited by locals. The team visited this area on 25th October, 2008. There is no village in this area. The team had interaction with security personnel and they said that they often found the hangul in large herds during summer.

15. Barnayi (34°36'30.72"N/ 74°57'6.16"E)

The team visited this area on 25th October, 2008. This area is the first village of the Telail valley. Interestingly, most of the people of this village are involved with poaching of musk deer and ibex. The team talked with the local villagers and poachers about possible hangul distribution in the area. However, they tried to avoid the subject saying that there were none now but had been distributed in this area 50 years ago. However, this area may be an important habitat of hangul since it is connected with Chak Nallah.



Fig. 8 Survey team interviewing local people about sighting of hanguls

16. Badugam (34°33'53.17"N/ 75°1'13.11"E)

The team visited this area on 26th October, 2008. This area is also located in the Telail valley. The local people who the team spoke with provided no evidences of the present of hangul in the area. However, a well known hunter of this area stated that the hangul were found here. A villager of Vajri thal, located near Badugam, also informed that hangul was present in these areas throughout the year.

17. Malan Gam (34°31'55.37"N, 75° 8'43.52"E)

This village is located near Baduaab. The team had interaction with the army porters who informed that hangul are found in Idem Beg Nallah.

18. Baduaab (34°31'38.66"N/ 75°10.1' 62.76"E)

The team visited this area on 26th October, 2008. This village is located in the Tilail valley. The team had interactions with local villagers, forest guards, army porters and some poachers. They stated that few hangul were still found in summer in this area. However, poaching of musk deer and ibex is prevalent.

19. Raman Nallah (34°31'6.79"N, 75°11'6.60"E)

This area is located near Baduaab. The team had interaction with local villagers and army porters. Though the local villagers denied presence of hangul, army personnel thought that they were present here. Interestingly, the poachers of Badugam, Markoot and Malan Gam stated that there was higher possibility of finding hangul in Raman Nallah. Kaw Bal, another area near Raman Nallah, also appears to be an important habitat of hangul during summer.

20. Chan Daji (34°27'24.08"N, 74°32'29.30"E)

The team visited Chan Daji area on 22th December, 2008 and sought information on hangul from local villagers and army porters. All said that hangul were present in the area. According to the locals, they had often complained to the Department of Wildlife Protection about the loss of their grass stock within the forest area to grazing by hangul. In February 2005, one hangul died due to heavy snow slide after which the villagers

apparently suggested to the wildlife department to notify some of the area as Hangul Conservation Reserve.

21. Bata Koot (34°28'28.67"N, 74°39'28.71"E)

At Batkoot, the team had interaction with local villagers and ex-poachers. According to a local of Bata Koot village, hangul were commonly found in Bata Koot and Chatter Nar till 1948. These areas were used for hunting of hangul. However, this species is now locally extinct. The last sighting of hangul locally as reported by locals was in Nov-Dec 1954. The team was also shown a trophy of a hangul stag which the locals claim was 60 years old.

22. Simlar (34°25'5.34"N, 74°25'5.34"E)

The team visited Simlar, located on the river bank of the Arn Nallah. According to local villagers, hangul were not found in the area.

23. Abdullan Gujran (34°32'12.56"N, 75°14'37.84"E)

This area is the last village of the Tilail valley. Though the team could not visit this area, information on hangul distribution was collected by talking to some people of that area. According to them, hangul was present in this area. The locals also mentioned of antlers of hangul with local people.

24. Surrender (34°24'25.25"N, 74°45'54.66"E)

This area is located between Ajas Wildlife Sanctuary and Gurais valley. The team could not visit this area due to heavy snow fall which blocked the road. Hence the team could not collect information from this area. However, while discussing the distribution of hangul in Simlar, locals of that area said that hangul might be present in Koodora Jaban and Surrender area.

25. Yemberzal Wari (34°24'18.13"N/ 74°24'01.01"E)

Yemberzal Wari is connected with mountains of Gujar Pati, Zoolara, Diver Inderbug and Chand Daji. This area was designated as a Conservation Reserve by the Maharaja of Kashmir in 1945 to conserve hangul and

other species of wildlife. In 1998, this area was proposed as the Chakor Conservation Reserve. Though the team could not visit this area due to road blockage, presence of hangul was confirmed from our discussions with the villagers of Gujar Pati and Harwan. Unfortunately, the J&K government has proposed to construct a road connecting Olisa Bandi pora with Lolab valley through this area in 2005.

26. Akhal (34°16'15.79"N/74°52'36.82"E)

The team visited this area on 8th January, 2009. This area is located on the southern boundary of the Dara/Khimber Conservation Reserve. The team had interaction with the local villagers and forest officials. They informed that the hangul try to cross the Sindh nallah during April. In winters, the hangul moved to Gutul Bag area and Rangil area which are the main sources of water supply to Srinagar. The team could find several broken hangul antlers in the villages. The main threat to this area is timber smuggling. In March 2008, a hangul stag fell into a water canal in Preng. It was subsequently killed for meat. According to some villagers, hangul remain in this area through the year.



Fig. 9: Hangul pellets found in a habitat during the survey

27. Mamar Yachama (34°14'13.37"N/ 74°55'47.72"E)

This area is located adjacent to Dachigam National Park. The team interacted with the local grazers and senior villagers who stated that the hangul were found in groups of two to six in the upper reaches of this area. Hangul antlers are often found in the forest area and are picked up by local Gujjars. Locally, these antlers are known to have medicinal value.

28. Gund (34°15'28.82"N, 75° 5'19.78"E)

This area is located between Sarfrow, Sumbal and Kulan. The local villagers and ex-poachers here stated that this area was a part of the migratory route of the hangul and their movement takes place after April until snow fall at the onset of winter. Antlers were present with the local villagers.

29. Kulan Razel (34°15'53.47"N/ 75°08'52.51"E)

The team visited this area on 10th January, 2009. This area is proximate to the Thajwas and Overa-Aru Wildlife Sanctuaries. During winter, this area remains cut off due to heavy snow fall. The team was informed by the local villagers and wildlife staff that the hangul use the '*Hangul Dub*' and '*Haput Dub*' areas for fawning. In April 2008, a staff member of the Department of Wildlife Protection, J&K found a carcass of snow leopard at Gagangir, apparently killed in an avalanche.

30. Wangat/ Nara Nag (34°21'12.09"N/ 74°58'35.26"E)

The team visited this area on 11th January, 2009. This area comes under the Wangat Conservation Reserve for protection of the Hangul. It is located in the south-west to the Raman Nallah, Tulail Valley. The team had interaction with the local grazers and wildlife staff. According to them, this is one of the suitable habitats of hangul, musk deer and ibex. However, over grazing, timber smuggling and poaching seem to be the major problems in this area.

31. Duksum (33°37'18.73"N/ 76°28'27.30" E)

This area was protected as a game reserve for hangul during the

Maharaja's period, prior to 1948. In 1981, this area was upgraded to Rajparain Wildlife Sanctuary. The team had interaction with the local villagers and ex-poachers. According to some ex-poachers, hangul is present in the sanctuary throughout the year. They stated that sighting of hangul is possible in the month of April / May in small herds of 6 to 10 animals. This area is included in the annual hangul census conducted by the Department of Wildlife Protection.

In 1970, the Government of Kashmir constructed Sheep Breeding Farm on 1300 hectares of prime wintering area of hangul. According to some of the local villagers this sheep breeding farm and non-local grazing has had an adverse affect on the movement of hangul in this area.

Table-2: Evidence of hangul found during questionnaire survey

Site No.	Survey area	District	Evidence on hangul	
			Distribution confirmed by the villager and ex-poacher	Presence of hangul antler in the village
1	DIVER INDERBUG	Kupwara	Y	A
2	KURHAMA	Kupwara	N	
3	DAPAL	Kupwara	Y	
4	CHUNT WARI	Kupwara	Y	
5	POSHWARI	Kupwara	Y	
6	BANGUS VALLEY	Kupwara	N	
7	GUJJAR PATI ZALOORA	Baramullah	Y	A
8	HARWAN	Baramullah	N	
9	WAM PORA	Bandi pora	Y	
10	DEWAR	Bandi pora	Y	
11	AUCHOORA/CHORWAN	Bandi pora	Y	
12	ISMARGI BAKTOOR	Bandi pora	Y	
13	MARKOOT	Bandi pora	Y	

14	CHAK NALLAH	Bandi pora	Y	A
15	BARNAYI	Bandi pora	N	
16	BADUGAM	Bandi pora	Y	
17	MALAN GAM	Bandi pora	Y	
18	BADUAAB	Bandi pora	Y	
19	RAMAN NALLAH	Bandi pora	Y	
20	CHAN DAJI	Bandi pora	Y	A
21	BATA KOOT	Bandi pora	N	
22	SIMLAR	Bandi pora	N	
23	ABDULLAN GUJRAN	Bandi pora	N	A
24	SURENDER	Bandi pora	N	
25	YEMBERZAL WARI	Baramullah	N	
26	AKHAL	Ganderbal	Y	A
27	MAMAR YACHAMA	Ganderbal	Y	
28	GUND	Ganderbal	Y	
29	KULAN RAZEL	Ganderbal	Y	
30	WANGHAT NARA NAG	Ganderbal	Y	
31	DUKSUM	Ahantnag	Y	A
32	ACHABAL	Ahantnag	N	
33	KHIRAM	Pulwama	Y	A
34	SHIKAR GAH TRAL	Pulwama	Y	
35	HAJAN ZOOWESTAN TRAL	Pulwama	Y	
36	OVERA PAHALGAM	Ahantnag	Y	

32. Achabal (33°40'26.62"N/ 75°15'22.54" E)

This area was once designated as the Game Reserve by the then Maharaja of Kashmir. The water holes made by the Maharaja of Kashmir can still be found in the area, meant for the conservation of the hangul. In 2008, this area was upgraded to Achabal Wildlife Sanctuary.

The survey team had interaction with local villagers and ex-poachers. According to them, this area was used as the winter ground by the hangul. During early 60s', timber smuggling resulted a loss of large chunk of the forest which was the prime habitat of the hangul. The last sighting here, of the hangul, was in March 1964.

33. Khiram (33°53'12.33"N/ 75°11'63.75"E)

This area is located in between Shikar Gah Conservation Reserve and Overa Aru Wildlife Sanctuary. According to local villagers and wildlife officials, this area comes under the migratory route of the hangul. In March 2002, a male hangul got trapped in a fence at the Khusra Kalan Horticulture Farm and received severe injuries. Though the wildlife department rescued and offered medical care, it died after 20 days. In April 2008, a villager found a hangul antler while he was collecting mushrooms, and later handed it over to the wildlife department. Thereafter some evidences have appeared from here from time to time.

34. Shikargah, Tral (33°53'45.72"N, 75°58'36.59"E)

The Shikargah is adjacent to the Khiram Conservation Reserve and is managed by the Department of Wildlife Protection. The local villagers here are certain about the distribution of the hangul in this area. They often hear hangul calls in the mornings and evening hours regularly. Recently, two male hangul were also seen by army personnel while they were patrolling the area. A local villager also found 13 individuals of hangul during the rutting season.

35. Hajan Zoowestan Tral (34°04'10.05"N/75°03'52.38"E)

This area is connected with the Upper and Lower Dachigam and Khrew/ Khanmoh Conservation Reserve. The team interacted with the local villagers and senior wildlife officials. According to them, this area is an ideal habitat for hangul. Before the disturbance in Kashmir, hangul was very common in this area and found throughout the year especially during fawning season. But grazing pressures have adversely affected on the fawning ground of hangul. Till 1988, grazing was strictly regulated in the Nagberen area of upper Dachigam. It is however now out of control.

36. Overa Pahalgam (33°56'38.50"N/ 75°15'53.89"E)

This area forms the catchment of the Lidder river. According to the local people and wildlife officials posted here, this area was once used as a hunting ground of hangul. Though it is very easy to find a male hangul

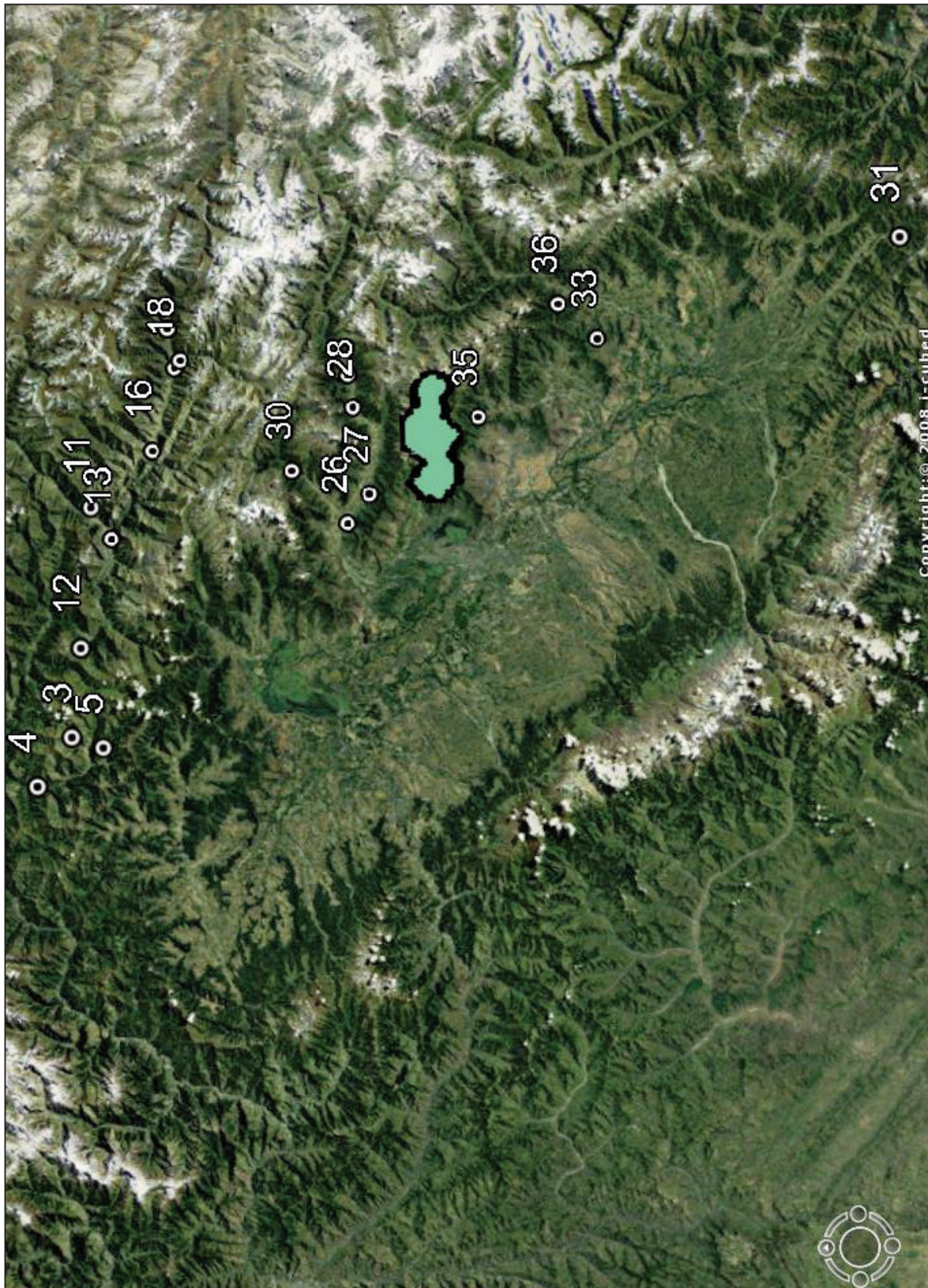


Fig. 10: Sites used by hangul in summers
(for site numbers refer to Table 2)

Dachigam National Park, Jammu & Kashmir

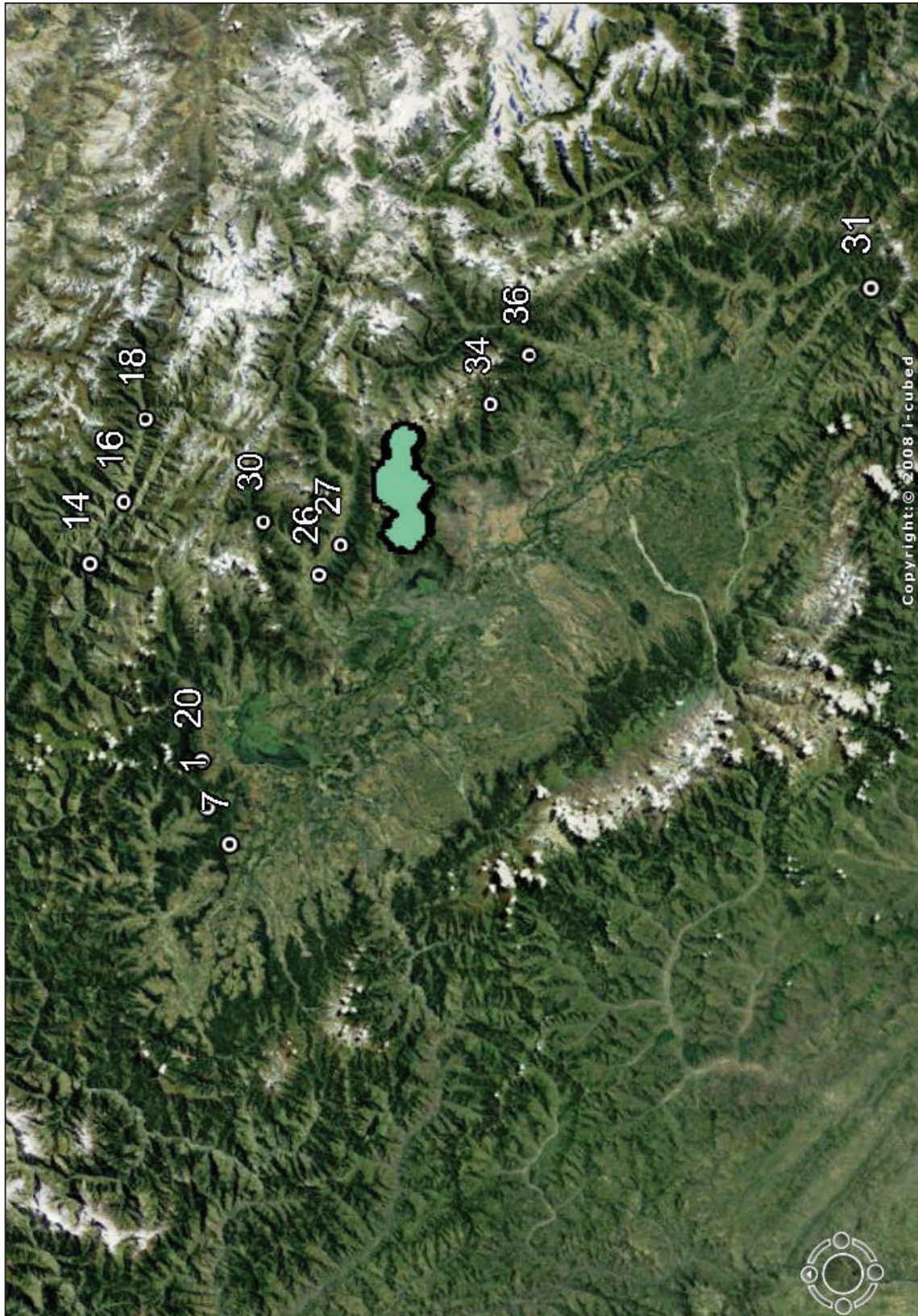


Fig. 11, Sites used by hangul in winter (for site numbers refer to Table 2)

during winter, they belief that the hangul can be found here throughout the year. In June 2008, a professor from the California University saw a female with two fawns.



Fig. 12: A view of Nagbaren, Upper Dachigam

SOME INFERENCES AND IDENTIFICATION OF SITES FOR DETAILED SURVEYS

Of the 36 sites listed for survey and presented in Table 1, 33 were actually visited by the team. The sole purpose of this exercise was to identify areas which had reasonably sound evidences of hangul and which could be revisited subsequently for a more detailed survey. We have banked on four forms of evidence while judging the presence of hangul in an area: a) past history b) present reports by locals c) sightings d) other evidences in the form of heads, antlers etc. Whereas no direct sightings occurred, as no attempts were presently made to visit hangul habitats and the surveys remained confined to interviews and interactions with villagers

close to probable habitats, other forms of evidences could be collected. On the basis of these we strongly believe that hangul does occur in area outside, some known and under the jurisdiction of the Department of Wildlife Protection and others under the forest department (different wings). Some of the sites like the areas around Dachigam National Park like Shikargah, Khiram, Khonmoh-Khrew, Overa and Rajparian are already known to have hangul and are also under the control and administration of the Department of Wildlife Protection.

Other areas like the Guraiz valley, which we believe has been surveyed for hangul after nearly two decades presents an interesting possibility. While the local poachers in the area were not too positive about the presence of hangul here, others including villagers, army porters and graziers provided positive information about the presence of hangul in Ismargi, Achoora, Chorwan, Chak Nalla, Abdullan and Baduab, all adjacent to the LoC. These valleys remain cut off for six months from the outside world.

From old locals, some historical information could be obtained about the hangul in this area. Before the division of Kashmir, hangul hunting was very common in these valleys. After independence in 1947, these areas fell close to the line of control between India & Pakistan. In May 1978, 60 hangul were found dead after an avalanche. Local villagers stated that they had sighted the hangul in these valleys as recently as in the month of April to October in 2008. In Ismarg area, villagers stated that they used to often kill hungul during May to October for fun, meat and antlers. But the militancy in the valley has now reduced the amount of hunting. Presently, frequent poaching of musk deer and Ibex occurs in this area.

In Kupwara and Bandipora, several sites have been identified which the locals suggested had hangul. We also sought information about the seasonality of the use of those areas by hangul. Whereas several areas were suggested as summer grounds by locals, some were identified specifically as wintering grounds. This has implications on future survey of the identified sites. Hangul migrate to lower altitudes in winters when

Table- 3 : List of areas shortlisted for surveye in Phase –II.

Site No	Survey area			Forest area under the Jurisdiction of	Types of threat to the forest	Hangul distribution	
	Name of the site	District	Location			Seasonality of habitat use	Source of information
1	Diver Inderbug	Kupwara	34°27'00.27"N 74°27'20.52"E	Social Forest	Deforestation & poaching	Winter (Oct to March)	Antler, reported by ex-poacher and villagers
2	Dapal/ Chunt wari/ Poshwari Machil	Kupwara	34°44'56.34"N 74°28'16.26"E	Forest Department	Border Shelling & poaching	Summer/ Fawning	Reported by poachers
3	Chan Daiji	Bandi Pora	34°27'24.08"N 74°32'29.30"E	Forest Department	Army camps, poaching & grazing	Winter	Antlers, reported by local and grazer
4	Ismarg Baktoor	Bandi Pora	34°40'59.10"N 74°4'04.65"E	Forest Department	Border Shelling & border fencing	Summer (April to October) & Fawning	Reported by poacher, army porters & army personals
5	Achoora/ Chorwan	Bandi Pora	34°39'45.77"N 74°54'03.94"E	Forest Department	Poaching & border shelling	Summer (April to October)	Reported by local grazers & poachers
6	Chak Nallah	Bandi Pora	34°36'27.23"N 74°54'15.52"E	Forest Department	Fencing	March to November	Reported by army personals
7	Baduaab telail	Bandi Pora	34°31'38.66"N 75°10'16.276"E	Forest Department	Poaching, grazing & border fencing	Year long	Reported by Poachers, army porters and army personals
8	Abdullan Gujran	Bandi Pora	34°32'12.56"N 75°14'37.84"E	Forest Department	Poaching	Summer	Antlers and reported by poachers
9	Gujjarpati Zalloora Harwan	Baramullah	34°25'04.47"N 74°23'12.84"E	Forest Department	Encroachment & poaching	Winter (Jan to Feb)	Antler and reported by ex-poacher

Survey area				Forest area under the Jurisdiction of	Types of threat to the forest	Hangul distribution	
Site No	Name of the site	District	Location			Seasonality of habitat use	Source of information
10	Rajpirain Wildlife Sanctuary, Duksum	Anantnag	33°37'18.73"N 76°28'27.30' E	Wildlife Department	Sheep Breeding Farm & non local grazing	Year long but not confirmed	Antler and reported by poachers
11	Overa Wildlife Sanctuary	Anantnag	33°56'38.50"N 75°15'53.89'E	Wildlife Department	Grazing by migratory grazers	Year long	Reported by WL staff & locals
12	Khiram Conservation Reserve	Anantnag	33°53'12.33"N 75°11'63.75'E	Wildlife Department	Local & non local grazing	April-May	Antler and reported by wildlife staff
13	Shikar Gah Conservation Reserve	Pulwama	33°53'45.72.N 75°58'36.59'E	Wildlife Department	Army movement	Winter	Reported by ex-poachers & locals
14	Hajin Zoweestan Conservation Reserve	Pulwama	34°04'10.05'E 75°03'52.38'E	Wildlife Department	Non local grazing & unlimited livestock movements	April- May	Reported by WL staff and grazer
15	Akahal	Ganderbal	34°16'15.79"N 74°52'36.82'E	Forest Department	Deforestation, encroachment and Poaching	Year long	Antlers and reported by locals
16	Mamar Yachama	Ganderbal	34°14'13.37"N 74°55'47.72'E	Forest Department	Non local grazing & poaching	Year long	Antler and reported by locals
17	Kulan Rezel	Ganderbal	34°15'53.47"N 75°08'52.51'E	Wildlife Department	Grazers route	Summer/ Fawning	Reported by locals
18	Wanghat Naranag	Ganderbal	34°21'12.09"N 74°58'35.26'E	Wildlife Department	Non local grazing, encroachment & poaching	Year long	Reported by local grazers

heavy snow at higher altitudes drives them down. During this period, they are found in large herds, making them relatively easy to spot and count. In spring, the males disperse to higher altitudes, thus making it difficult to encounter them since the dispersal areas are large.

Three main areas have been identified for surveys in winter – Inderbug, Chan Daji and Gujjarpati Zaloora, all falling in the North Kashmir Division. All these three probable habitats are under the forest department. Two other areas suggested for immediate survey is Akhal area near Ganderbal and Naranag/Wangat in the Sind valley near Kangan.

The rest of the sites identified in Table 3 are summer grounds and may be surveyed between the months of May-October.

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While hangul conservation has traditionally centered around Dachigam National Park, historically there have been significant populations outside the park. The hangul population, meanwhile, has been dwindling in Dachigam. It was, therefore, imperative to identify remnant satellite populations of the species for conservation. The survey found that five sites around Dachigam indeed have some hangul. Other areas too present possibilities. Three probable habitats have now been identified for surveys in winter.



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