



Scholars Research Library

European Journal of Zoological
Research, 2012, 1 (1):16-22

(<http://scholarsresearchlibrary.com/archive.html>)



Scholars Research
Library

ISSN: 2278-7356

Vantage points of goral, *Naemorhedus goral* (Hardwick) (Artiodactyla: Bovidae) in Pattan and Keyal Valleys of District Kohistan, Pakistan

Farzana Perveen* and Adnan Husain

Department of Zoology, Hazara University, Garden Campus, Mansehra-21300, Pakistan

ABSTRACT

The goral, *Naemorhedus goral* (Hardwick) (Artiodactyla: Bovidae) has great importance as natural food resource, source for earning, recreation and materials for research. The vantage points of *N. goral* were determined during May-July 2010 in the Pattan and Keyal Valleys, Kohistan, Pakistan. In Pattan Valley, 90 questionnaires were distributed in 8 different sites, i.e., Tankor Janchil, Rasta Dong Janchil, Barho Kandogay, Landai Sar Bohil, Hawery Kamar Bohil, Barho Bohil, Barho Gulkand and Nabaz. In Keyal, 75 questionnaires were distributed in 6 different sites, i.e., Baroon Nala Fagaiel, Galto Fagaiel, Shaig Bhapobanda, Keero Keyal, Balkhun and Rodair. In Pattan, the lowest vantage point was Tankor Janchil while the highest point was Landi Sar Bohil. In Keyal, the lowest vantage point was Baroon Nala Fagaiel while the highest was Shaig Bhapobanda. More vantage points of Pattan were lower in height than Keyal. In Pattan, 21 *N. goral* (13 adults, 6 sub-adult and 2 fawns) were found, while in Keyal valley, total 40 *N. goral* (22 adults, 14 sub-adult and 4 fawns) were found. Due to lack of education, the most of hunters do not know about importance of *N. goral* and wildlife. Education to aware the people by WDP is still needed.

Key words: Keyal Valley, Kohistan, *Naemorhedus goral*, Pattan Valleys, Vantage point.

INTRODUCTION

Kohistan means the land of mountains. It is a district in Pakistan's Khyber Pakhtunkhwa (KP) with a total area of 7,492 Km² and a population of 472,570. It is used for an area from the border with Azad Kashmir extends from the eastern Afghanistan province of Nuristan in the west [1]. Pattan, Keyal and Dubair are the valleys of Kohistan. Pattan lies on the right side of river Indus. It is linked with Karakorum highway through a 20 km long road. Altitude of the valley varies from 3000'-11000' above the sea level. Topographically, the area consists of rocky terrain with steep mountains. Variations and elevation of the mountains has resulted in climatic diversity, therefore, sub-tropical, temperate, sub-alpine and alpine scrubs prevailed there. Main species of flora in the valley are: deodar, kail, fir, quercus, olea, bermi, walnut etc. Pattan Valley supports habitat for important wildlife animals and birds including monkey, black bear, goral, wolf, fox, jungle cat, monal and koklass pheasant. People experience seasonal migration with their livestock. The Keyal Valley is situated in the center of Pattan sub-division of district Kohistan. Similar to Pattan Valley, floral and faunal diversity and environmental conditions are present here. Keyal Valley is selected due to its floral diversity to support goral, *Naemorhedus goral* (Hardwick) population. It is a small goat antelope-like, regarded as a Gaot-antelope. It is sharing characteristics of both goats and sheep, therefore, it is true antelope. At the present, it is found at middle slopes of Himalayas and is endemic to Asia [2] (Fig. 1).

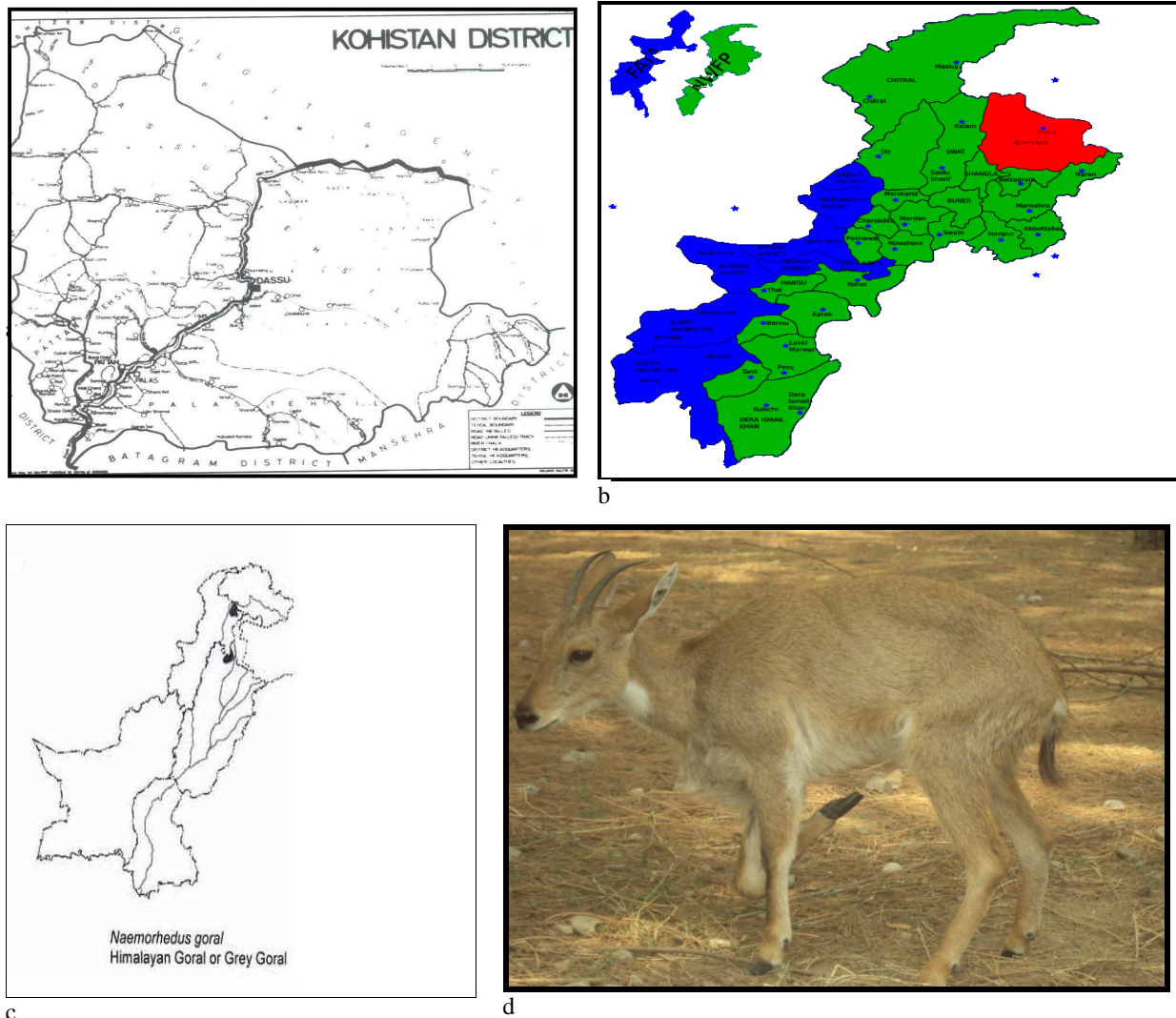


Fig. 1 Map of Kohistan: a; location of Kohistan district (highlighted in red) within Khyber Pakhtunkhwa, Pakistan; distribution map: black dots shows the distribution of grey goral, *Naemorhedus goral* (d) in Kohistan and Margalla Hills, Islamabad, Pakistan [3].

The species is classified as endangered with decreasing its distribution [4] and measures threatened by the IUCN [5]. It is assigned a status of vulnerable in Pakistan based on information gathered from different parts disseminated [6]. In KP, its range extends from Abbottabad, Mansehra, Mardan, Kohistan, Swat, Dir, Malakand and Nowshera that might form the western border of its distribution range. The main surviving population in Pakistan is probably in the area between the Indus Kohistan, Swat Valley and watershed Kunhar. They belong to the order Artiodactyla or cloven-hoofed mammals [7]. They share the sub-order Ruminantia with deer, antelopes, sheep, goats and belong to family Bovidae [7, 8]. Sub-family, Caprinae (sheep and goats) is characterized by stickily built species, adapted for climbing mountain areas [7, 9]. The genus *Naemorhedus* is presently represented by six species, i.e., *N. crispus*, *N. surnatraensis*, *N. swinhoei*, *N. bailey* (Groves and Grubbs) [10], *N. caudatus* (Zhang) [11] and *N. goral* (Himalayan goral). It is characterized by having broad and bell shaped ears, both sexes having slender and cylindrical horns, which are not divergent but curving backward and bearing inconspicuous annulations or ridges, no beard in males, small sub-orbital glands and females with four mammae [7]. The population of *N. goral* has been divided into two sub-species, i.e., the goral, *N. goral goral* (Hardwickei) and the brown goral, *N. goral hodgsoni* [12]. Roberts [7] called them the grey goral, *N. goral bedfordi* based on accounts in the literature. It is the small size goat like mammal and adults are 65-71 cm. It has at shoulder height, head

and body length average is 105 cm and weighing 25-28 kg [13, 14]. The breast and belly are lighter gray with a white spot in the throat and one or two white spots on the lower muzzle and cheeks. The horns are 12.5-15.5 cm with slender feet [15]. The objective of present research is to determined population status of goral, *Naemorhedus goral* in Pattan and Keyal Valleys, Kohistan, Pakistan.

MATERIALS AND METHODS

Study areas

Two potentially bio-diversified areas, i.e., Pattan and Keyal Valleys (rural), Kohistan, Pakistan were chosen for the present survey. In Pattan, 8 different sites, i.e., Tankor Janchil, Rasta Dong Janchil, Barho Kandogay, Landai Sar Bohil, Hawery Kamar Bohil, Barho Bohil, Barho Gulkand and Nabaz and in Keyal, 6 different sites, i.e., Baroon Nala Fagaiei, Galto Fagaiei, Shaig Bhapobanda, Keero Keyal, Balkhun and Rodair were selected.

Collection of data

Data were collected from May-July 2010. Field survey, direct sighting, informal discussion, interviews with community and use of questionnaire were the major tools of data collection.

Survey methodology

After the guidance and information obtained from the local hunters and villagers, fix point survey was conducted in the valleys. Both direct and indirect sighting were carried out. *Naemorhedus goral* were directly sighted from vantage point through the binocular (Sony Cyber Shot, Tokyo, Japan). Indirect observation was taken by looking their droppings and foot prints. Photographs of their habitat, faecal materials, foot prints and watering spots were taken through digital camera 9.1 mp (Sony Cyber Shot, Tokyo, Japan). The survey was conducted twice in a day that was early morning (06:00-07:00 am) and in evening (06:00-07:00 pm). The observation taken daily during survey was entered into survey form, which was specially designed for *Naemorhedus goral* survey in which sex, numbers and fawns was chalked out. Further, *N. goral* classified on the basis of their age into class-1 (adults), class-2 (sub-adults) and class-3 (fawns).

RESULTS

Table 1 Vantage points and its coordination in Pattan and Keyal Valleys for the population status of goral, *Naemorhedus goral* was being observed in the survey during May-July 2010

Vantage points ^a	Date	North bearing	East bearing	Altitude (feet)
a: Pattan Valley				
Tankor Janchil	22/06/2010	35 04' 55.7"	72 57' 34.0"	4675
Rasta Dong Janchil	23/06/2010	35 05' 32.6"	72 57' 54.2"	6900
Barho Kandogay	23/06/2010	35 06' 05.2"	72 57' 35.5"	7302
Landai Sar Bohil	24/06/2010	35 06' 31.6"	72 57' 18.8"	8183
Hawery Kamar Bohil	24/06/2010	35 06' 50.7"	72 57' 53.8"	7083
Barho Bohil	25/06/2010	35 06' 16.5"	72 57' 55.5"	7084
Barho Gulkand	25/06/2010	35 06' 26.3"	72 58' 16.8"	4838
Nabaz	26/06/2010	35 08' 03.6"	73 00' 58.5"	7400
b: Keyal Valley				
Baroon Nala Fagaiei	29/06/2010	35 08' 08.4"	73 02' 07.4"	6075
Galto Fagaiei	29/06/2010	35 07' 55.3"	73 01' 49.1"	7340
Shaig Bhapobanda	30/06/2010	35 08' 08.3"	73 00' 56.6"	8460
Keero Keyal	30/06/2010	35 04' 64.3"	73 01' 79.1"	7183
Balkhun	01/07/2010	35 08' 68.3"	73 66' 53.6"	8194
Rodair	01/07/2010	35 09' 65.4"	73 02' 69.2"	7539

^aVantage points have been selected after obtaining the guidance and formal knowledge from the local hunters and villagers of Pattan and Keyal Valleys.

Vantage points and its coordination

Firstly, 8 and 6 vantage points were taken in Pathan and Keyal Valleys, respectively. Geographic Positioning System (GPS) meter was used to take three readings such as the north, east and height of every vantage point. The height of 8 different sites of Pathan in descending order is: Landai Sar Bohil: 8183 feet > Nabaz: 7400 feet > Barho Kandogay: 7302 feet > Barho Bohil: 7084 feet > Hawery Kamar Bohil: 7083 feet > Rasta Dong Janchil: 6900 feet > Barho Gulkand: 4838 feet > Tankor Janchil: 4675 feet. The height of 6 different sites of Keyal in descending order is: Shaig Bhapobanda: 8460 feet > Balkhun: 8194 feet > Rodair: 7539 feet > Galto Fagaiei: 7340 feet > Keero

Keyal: 7183 feet > Baroon Nala Fagaiel: 6075 feet. The details of vantage points of Pattan and Keyal were shown in Table 1 a and b.

Directly sighting

In Pattan Valley, 08 vantage points were selected where gorals were directly sighted. In these vantage points, 21 *N. goral* were found. Out of 21 of them 13 were adult, 6 sub-adults and 2 fawns (Table 2a). In Keyal Valley, 6 vantage points were selected where *N. goral* were directly sighted. In Keyal Valley, total 40 *N. goral* were found, among them 22 adults, 14 sub-adult and 4 fawns (Table 2b).

Table 2 Directly sighted goral, *Naemorhedus goral* in Pattan and Keyal Valleys, was being observed in the survey during May-July 2010

Vantage points*	Date	Class ^a			Total
		1	2	3	
a: Pattan Valley					
Tankor Janchil	22/06/2010	1	-	-	1
Rasta Dong Janchil	23/06/2010	4	1	1	6
Barho Kandogay	23/06/2010	2	-	1	3
Landai Sar Bohil	24/06/2010	3	1	-	4
Hawery Kamar Bohil	24/06/2010	2	2	-	4
Barho Bohil	25/06/2010	-	1	-	1
Barho Gulkand	25/06/2010	-	-	-	-
Nabaz	26/06/2010	1	1	-	2
	Total	13	06	2	21
b: Keyal Valley					
Baroon Nala Fagaiel	29/06/2010	4	4	1	9
Galto Fagaiel	29/06/2010	3	1	1	5
Shaig Bhapobanda	30/06/2010	4	2	0	6
Keero Keyal	30/06/2010	3	3	1	7
Balkhun	01/07/2010	5	2	0	7
Rodair	01/07/2010	3	2	1	6
	Total	22	14	4	40

*Vantage points have been selected after obtaining the guidance and formal knowledge from the local hunters and villagers of Keyal Valley; Class-1: adults; 2: sub-adults; 3: fawns

The vantage points of *N. goral* were the places having lush vegetation with high altitude and latitude where numbers of *N. goral* were viewed. These vantage points of both valleys were mentioned in Materials and methods. Each one of them of both valleys, Landi Sar Bohil of Pattan and Shaig Bhapobanda of Keyal have been shown in Fig. 2 a and b, respectively. The faecal materials of *N. goral* were black small ball of waste undigested materials. These were observed in different vantage points of both valleys (Fig. 2 c and d). The foot prints of them were also found in different vantage points of both valleys (Fig. 2 e and f) during survey May-July 2010.



a



b



Fig. 2 The vantage points, faecal materials and foot print of goral, *Naemorhedus goral* were being observed in Pathan (a, c and e) and Keyal (b, d and f) Valleys, respectively, in the survey during May-July 2010.

DISCUSSION

The present survey was conducted in Kohistan, Pakistan during May-July 2010. The suitable season for goral survey is winter, but due to academic schedule, it was impossible to conduct it in for-mentioned season. That's why, it was conducted in summer. Due to hot season, watchers and hunters also went upward in the hills, therefore, correct population status could not be found. This survey could not be compared with previous data because such type of survey was not conducted before. Abbas [16] suggested that of *N. goral* still persisted at favorable altitudes of Mardan, Buner, Central Kohistan, Abbotabad, western Mansehra, Margalla Hills and the central and southern parts of the Azad Kashmir. The present findings went to line with the general remarks of Roberts [7] suggested that the main *N. goral* population was present in Indus Kohistan, between Swat and Kunhar Valleys and a limited population in Margalla Hills, Islamabad, Pakistan. Although, *N. goral* was also found in the most of places of Kohistan but only two valleys were selected for the present survey. These valleys were Pattan and Keyal, Kohistan, Pakistan.

For the survey, first Pattan Valley had been visited, contacted to local hunters, watchers and villagers, and obtained the guidance and formal knowledge, and then 08 vantage points were selected from Pattan Valley. These vantage points were Tankor Janchil, Rasta Dong Janchil, Barho Kandogay, Landai Sar Bohil, Hawery Kamar Bohil, Barho Bohil, Barho Gulkand and Nabaz. The highest vantage point was Landi Sar Bohil while the lowest was Tankor Janchil. In these vantage points 21 goral were found. Out of 21 gorals 13 were adult, 6 sub-adults and 2 fawns. In Pattan Valley, numbers of adults of *N. goral* were more as well as more vantage points of Pattan were lower in height than Keyal.

Another place, Keyal Valley was also visited. This valley supported *N. goral* population due to its floral diversity. Six vantage points were selected in this valley which were: Baroon Nala Fagaiel, Galto Fagaiel, Shaig Bhapobanda, Keero Keyal, Balkhun and Rodair. The highest vantage point was Shaig Bhapobanda while the lowest was Baroon Nala Fagaiel. In Keyal Valley total 40 *N. goral* were found, among them 22 adults, 14 sub-adult and 4 fawns (data was not shown). It was found greater in number in Keyal than Pattan. Therefore, it is clear that *N. goral* likes to live in higher than lower places due to some reasons, firstly that people want to kill them easily in lower places. Thus they were protected in higher places. Secondly, biodiversity was found more in the higher places than lower. Finally, higher places were more natural than lower that is why more natural food sources were available in higher places.

Although, more vantage points, i.e., 8 were selected in Pattan compared 6 vantage points in Keyal. However, numbers of *N. goral* were less in Pattan than Keyal. Because the main difference between those valleys was their height. There were not more differences in other physical, geological, ecological and bio-diversified characteristics in each valley. There were three methods of hunting of *N. goral*, which were used by the hunters of these valleys. First, one was special little yellow dogs were used to hunt *N. goral*, when they see them they did not flee. Second, white cloth of one meter was encircled around them then the hunters easily captured them. The color of cloth had been changed with yellow in summer while dark brown in winter. When they showed these colors to *N. goral*, thus goral stopped to run and hunted by the hunters. Third, whistling by mouth was also a technique to hunt *N. goral*. Another method which was prohibited but rarely used by the hunters, i.e., gun shoots or bullets which was not easily damage their coat because coat of *N. goral* was very hard (Discussion with community, 2010).

The peoples of the study area were very religious who told everything very clearly and firmly. They said that they also saw heard of *N. goral* which was consisting of 12-18 *N. goral*. Every hunter hunted at least 4-5 *N. goral* per day in winter due to which the population status of *N. goral* is dropped down. They were not caring about the wildlife of the areas (interviews and informal discussion). However, if any hunter hunted *N. goral*, then he couldn't escaped from wildlife department (interviews and discussion with community). Children like to hunt birds as well as *N. goral* in their childhood. It was because they like to use guns for shooting targets. Their natural attachment with gun also play great role to spoil the wildlife.

In winter season, numbers of *N. goral* were victimized by a disease due to which many of them were died. In this disease, the eyes of *N. goral* were affected very much. Goral couldn't open their eyes. Thus it was impossible for them to get food and water. Due to lack them, they were died. If they alive, it was very easy to capture or kill them. Some people brought them in ill condition. The peoples said that this disease was not transmitted to the meat eaters of *N. goral* (informal discussion with community). However, they are the natural food resource in very backward area of Kohistan, Pakistan.

Acknowledgments

The authors are grateful to Mr. Iftikhar-uz-zaman, DFO and Mr. Masood Ali, Range Officer, Wildlife Kohistan, Pakistan for providing all possible information and cooperation during the survey. The experiments comply with the current laws of the country in which they were performed.

REFERENCES

- [1] H Biddulph, *Sang-e-Meel Publications, Lahore, Pakistan, 2004*, 2, 1-8.
- [2] L Zhiwotschenko, *McGraw Hill Publishing Company, New York, UK, 1990*, 5, 506-507.
- [3] I U C N , *IUCN-Pak, 2003*, 100-264.
- [4] JI Mead, *Mam Sp, 1989*, 335, 1-5.
- [5] DM Shackleton, *Intl Uni Cons Nat, 1997*, 1-390.
- [6] MK Sheikh and S Molur (eds), *Intl Uni Cons Nat, 2005*, 1-344.
- [7] TJ Robert, *Ern Benn Ltd Lond Tonb UK, 1977*, 200-542.
- [8] EPF Walker, I Warrick, J Kenneth, HE Lange and FW Patricia, *Mam Worl, 1964*, 3, 50-140.
- [9] E Halt and T North, *HB Zool Berlin, Germany, 1963*, 32 (8), 1-167.
- [10] CP Groves, and P Grubb, *Croom Helm NY, USA, 1985*, 71-76.
- [11] C Zhang, *Croom Helm Lond, UK, 1987*, 213-223.
- [12] RI Pocock, *J Bomb Nat Hist Soc, Ind, 1908*, 19, 807-821.
- [13] R Lydekker, *Rowland Ward, London, UK, 1907*, 10-246.
- [14] AM Primrose, *J Bomb Nat Hist Soc, Ind, 1911*, 21 (1): 11-246.

[15] G Stockley, *Lond Const Symp Kalisp, Mont, USA, 1928*, 1-179.

[16] F Abbas, *PhD Thesis, Deptt Zool, Uni Punj, Laho, Pak, 2006*, 1-179.