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CONSERVATION EVERYWHERE, BLACKBUCK NOWHERE

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Introduction

The blackbuck (*Antelope cervicapra*) once ranged from semi desert to open scrub forests extensively along the foothills of the Himalayas. They occurred from Pakistan through Uttar Pradesh, India and Nepal Terai to Bangladesh (Lydekker, 1924). The blackbuck was so common that Woodyatt (1922) wrote that they can be found everywhere throughout the Indian plains. Blackbuck adults stand 60 – 83 cm at shoulder height, and weigh 25 – 45 kg (O'Regan, 1985). Adult males with their spiral horns and dark brown or black dorsal pelage contrast with hornless females and immature males as both appear to be light tanned. Gregarious blackbuck avoid rugged terrain and forests but adapt readily to marginal land with sparse vegetation and agricultural land. Perhaps, this evolutionary adaptation enables them to avoid interspecies competition for food and space, and easily detect their predators in open areas. But, such adaptation also contribute to their decimation as they are vulnerable in open areas to illicit hunting (poaching).

The purpose of this write-up is to explore the historical distribution of the blackbuck in Nepal, review the repeated failures of its reintroduction in protected areas and to highlight management implications of a small remnant population that has witnessed a few peaks and several break downs.

Blackbuck Distribution in Nepal

In Nepal, scattered populations of blackbuck occurred throughout Kanchanpur, Bardia and Banke Districts in western Nepal (Fig. 1). But, there are no records of sightings blackbuck in Kailali District. Such distribution gap can be explained by the then rapidly growing human settlements, large tract of sal forest (*Shorea robusta*) and absences of blackbuck preferred habitats. In Kanchanpur, I had observed several herds of blackbuck south of Bilauri, and in the present Royal Sukla Phanta Wildlife Reserve in 1954. Several sightings were made along the Rapti River in 1967, in the vicinity of Shamsher Gunj of Banke District. In 1968, the other large population was observed in Mainapokhar, Bardia District. During these years, the blackbuck

populations dwindled down to the level of local extinction. In early seventies, two small herds of blackbuck were reported; four animals from Bhagwanpur, Banke and the nine in Khairapur, Bardia (Dinerstein, 1975; Wegge and Wilson, 1976). In 1975, the last remnant population blackbuck in Nepal, was confined to Khairapur.

Was Blackbuck There in Khairapur Before?

The blackbuck in Khairapur may be the last remnant population of Nepal but Khairapur itself is not the last original blackbuck habitat. Earlier Khairapur was a dense khair – sissoo (*Acacia catechu* - *Dalbergia sissoo*) forest. Therefore, it was not a suitable habitat for the blackbuck and they were never observed there. In late sixties, two events simultaneously happened: 1) the blackbuck population in Mainapokhar, was extirpated through rampant hunting, and 2) the dense khair – sissoo forests in Khairapur, were degraded to scrub vegetation as settlements sprawled. Because of these, the last few blackbucks from Mainapokhar escaped 15 km west into the Khairapur wasteland.

The Unwholesome Scenario

The recent count of 2003 suggests that a population of 90 animals with 30 male, 54 females and 6 young. To understand whether the blackbuck population is viable, three interacting parameters are critical: 1) population phenotype, 2) environment, and 3) population structure and fitness. Population phenotype and environment interact to shape population structure and fitness (Giplin and Soule, 1986) which constitute age structure, sex ratio and distribution of animals over time and space.

A two - year sex ratio of 56 bucks in 1995 and 59 bucks to 100 does in 1996, favored females and the ratio of young to 100 does was 17 and 23 young respectively. These suggest low fecundity and little recruitment (Tamang and Shrestha, 1998). All these elements that determine population growth rate and the saturation density, are

either lacking or incomplete for the blackbuck population vulnerability analysis.

Data are available on the population count for twenty-three years since 1975. But details on age structure, sex ratio, and population growth rate for the entire period, are either missing or fragmentary (Lehmkul, 1980; Bhatta, 1987; Subedi 1991; Nepal 1994; Tamang and Shrestha, 1998; Khanal, 2002). Knowing there is no vital statistics on annual mortality and survival, natality and rearing success, a time series analysis was used to forecast the population until 2010. In this autoregressive integrated moving-average model, the forecast is done by substituting forecast for actual values in the model, and continuing, with adjustment to the confidence limits. The forecasts appear promising as the population is predicted to remain above 80 animals (Fig. 2). However, the lower confidence limit of the prediction could get well below eleven animals after 2006. This prediction carries caution about positive result (population growth) because all data points tend to be near neighboring points rather than randomly scattered across the trend line. Therefore, the model does not take into consideration the "worst-case" eventualities for each predicted year.

The Good News Scenario

Since blackbuck habitat is critical as it provides food, shelter and escape routes, knowing land use changes is central. For this purpose, land resource utilization maps of 1978 and 1996 FINNIDA maps were compared. In addition, a 2002 map was prepared based on the field book (Bhandari, 2002) where the blackbuck area boundary was determined by 184 GPS (global positioning system) reference points, grassland by 75, forest by 29 and settlements by 114 references. Analyses suggest drastic changes had occurred by 1996 whereby forest had been

degraded, and agriculture land had increased (Fig. 3, Table 1). If all these have had happened over a couple of years, then it does explain the 1993 population dip as land encroachment reached all time high after the advent of the 1990 multiparty democracy. His Majesty's Government (HMG) of Nepal began its effort to protect blackbuck in 1996. HMG has initiated the acquisition of 5.25 km² of land for black buck conservation and relocated a number of households from the area. At present, more grassland occur than forest and no agriculture. This situation may enhance blackbuck number. But there is a hitch. Within the blackbuck area, there are 175 households who occupy nearly 95 ha without land ownership certificate (Pradhan et al., 1999).

Why Reintroduction Failed?

In 1980, eight captive animals: five males and three females were released in Bagoraphanta, Royal Bardia National Park (Bista, 1981). The blackbuck release area is an open grassland surrounded by sal forest, once used as a royal hunting ground. After the first reintroduction failed, a second attempt was made by releasing twenty six animals in the same area in 1992. Out of four males and twenty-two females from the Central Zoo, eighteen animals died within 75 days and rest disappeared gradually. There are no blackbuck in Bagoraphanta now. All these suggest that Bagoraphanta is not suitable for blackbuck as their habitat requirements are totally different.

Perspectives in Black and White

Three key issues are outstanding if Nepal's last remnant population is to survive: 1) securing the last blackbuck population, 2) maintaining blackbuck habitat, and 3) setting up a second population through re-introduction.

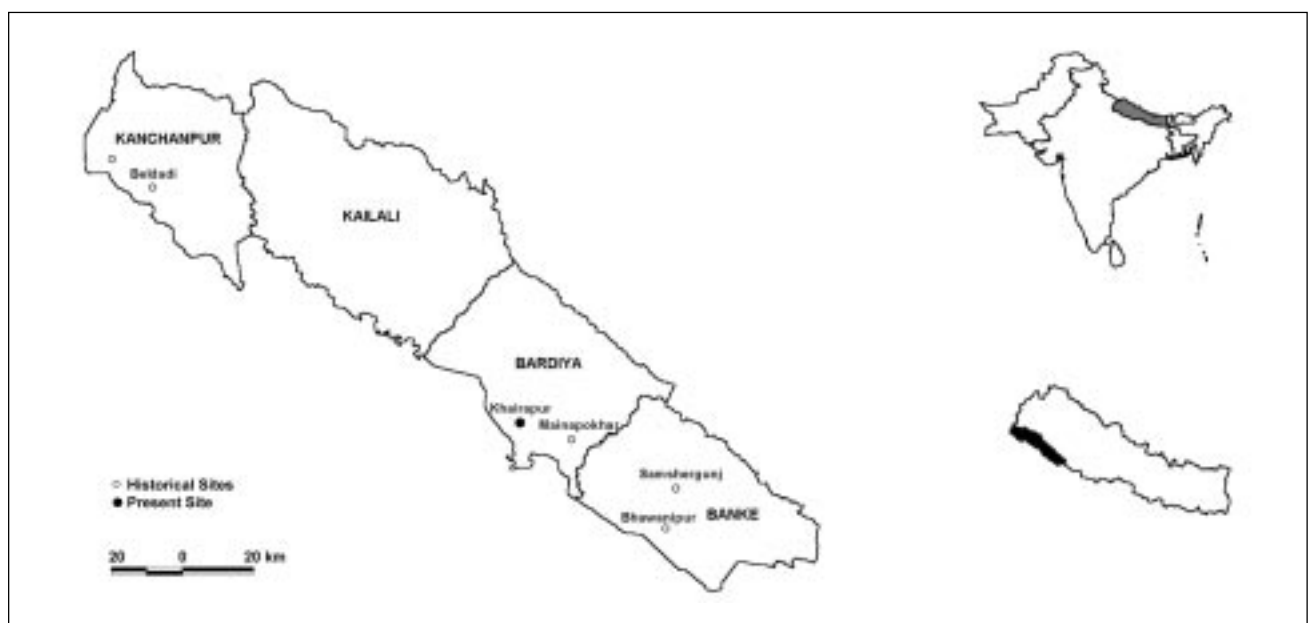


Figure 1. Location of Nepal, and past distribution of the blackbuck in three districts of Nepal.

Landuse	Year (area in km ²)		
	1978	1996	2003
Agriculture Land	2.20	2.81	-
Dry River	0.67	0.50	0.52
Forest	2.38	-	1.42
Shrub	-	1.90	-
Grassland	-	0.04	3.31

Table 1. Landuse changes in Khairapur, Bardia.

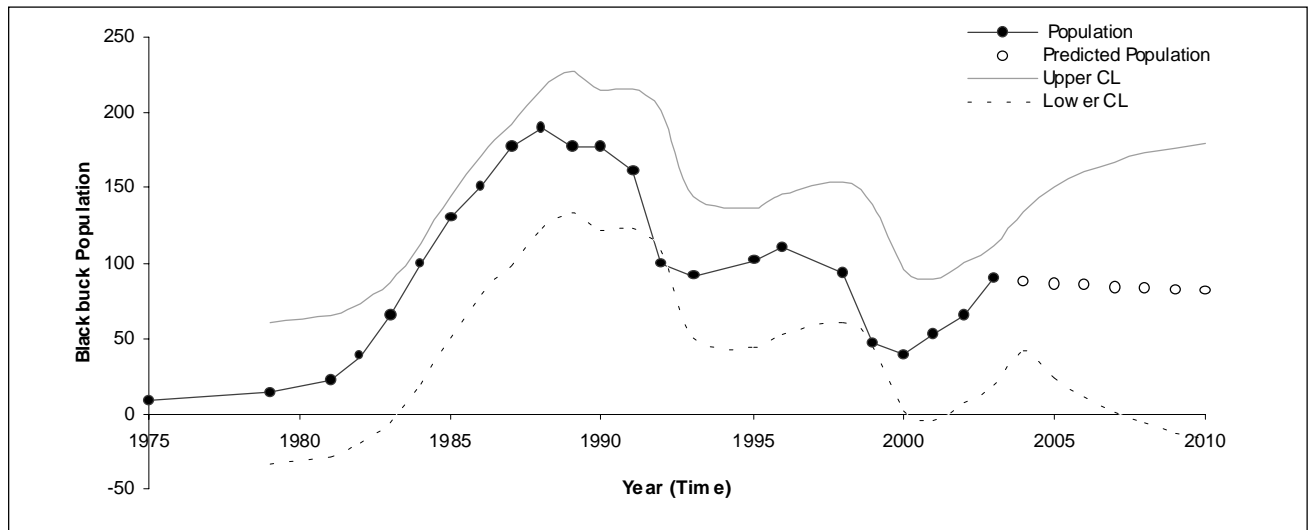


Figure 2. Blackbuck population (1975 - 2003) and population prediction.

The blackbuck population rose from a mere nine to 190 animals between 1975 and 1988. Then, it crashed to 90 animals in 1993 and further went down to 40 surviving animals in 2000. The Khairapur population has witnessed three huge slumps so far and there are no explanations from the management. This is a matter of neglect in conservation. The blackbuck habitat at Khairapur is too small for its long term survival and welfare. The key to the survival of blackbuck is the maintenance of its habitat.

The blackbuck population is limited by several factors. Fourteen blackbucks were killed by dogs in a period of four months in early 1995. These figures do not include the animals killed during the night when the dogs remain quite active. Apart from actual deaths, the blackbucks when pursued by dogs, stray over 5 - 10 km into the Indian border and Tarataal villages.

Although without any study, it is difficult to infer

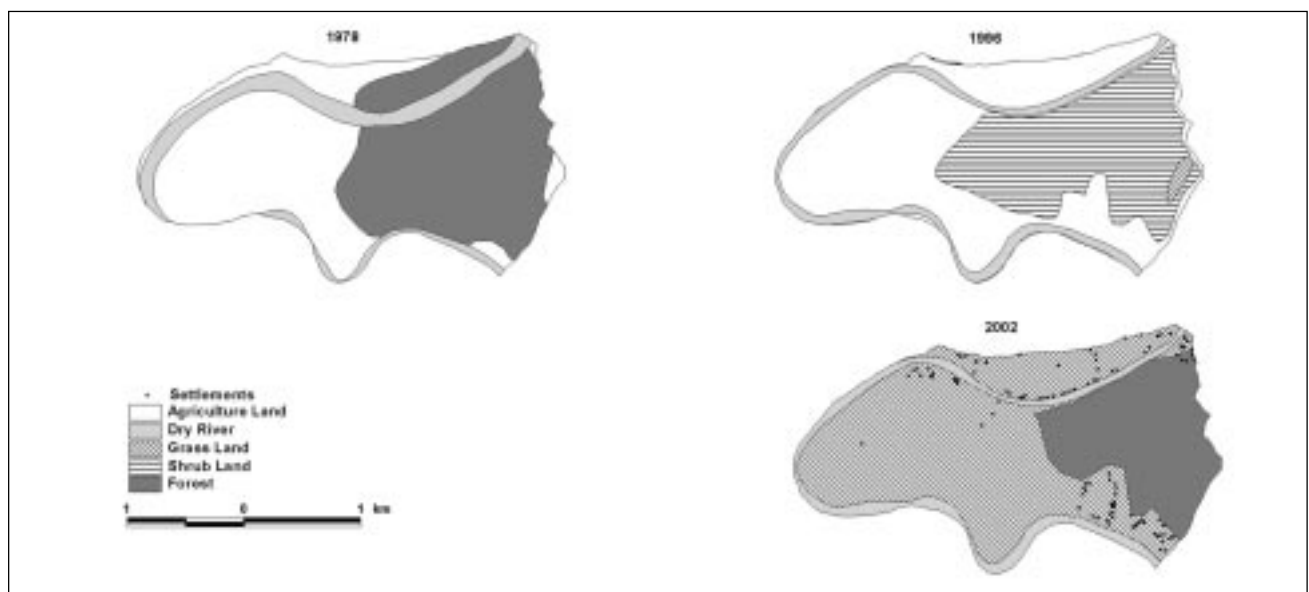


Figure 3. Landuse changes in the blackbuck habitat in Khairapur.

inbreeding, the need is utmost to know if "inbreeding" in blackbuck necessarily involve increased homozygosity. If so, a deleterious effect is in the offing. Also, the blackbuck and livestock mingle closely. Hence, livestock epidemics can not be ruled out. Sadly, case studies are either lacking or ignored until now. Competition for food and space between livestock and blackbuck is intense. The blackbuck graze on the stubble and consumed grasses such as *Chrysopogon aciculatus* normally considered less palatable. Although cattle grazing to some extent, may help in keeping the vegetation low and open, the land can not sustain the intensity of grazing at present. If cattle grazing is regulated, crop raiding by blackbuck may decrease with the availability of more forage in its habitat.

All blackbuck depend on seasonal cereal crops grown in the surrounding villages to supplement their diet.

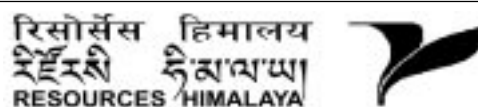
Therefore, surrounding agriculture farms provide food, shelter and space. Crop - related damages have increased over the years and will continue. This part can down play all conservation efforts about the blackbuck unless properly addressed.

While all rhino translocations from Chitwan to Bardia and Suklaphanta were successful, blackbuck reintroduction has failed. Other than Bagoraphanta, reintroduction of the blackbuck elsewhere in Nepal, is immediate. Release of blackbuck raised in captivity, is not recommended. The only suitable stock that is available for introduction at present, is from Khairapur. All feasibility schemes and habitat surveys for translocation of the blackbuck, must bear in-depth biological investigations. Therefore, reintroduction must guarantee the survival of translocated population and assure that past mistakes are not repeated.

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