

## DESTROYING A REMNANT SACRED FOREST

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### KATHMANDU VALLEY

Historians note that Kathmandu Valley had clusters of houses, mimicking small town-like settlements in the second century and the earliest settlements occurred along the Bagmati River near Pashupati Temple, one of the most important shrines for all Hindus in Nepal, India and rest of the world.

Legend has it that Shiva, the supreme deity of the Hindu Trinity (Brahma, the creator; Vishnu, the preserver and Shiva, the destroyer and transformer) found the Kathmandu Valley and came to live in Sleshmantak forest where he disguised himself as a buck. As he would not return home, Vishnu grabbed the buck, shattered the horn, and built a temple with the broken horns as a *linga* at the bank of the Bagmati River. Skanda Puran, an ancient Hindu scriptural text, describes how Shiva spent much of his time being immersed in the wilderness of Sleshmantak Forest. It reads – “As I reside here in Sleshmantak, I will hence be known as Pashupati (lord of animals).”

The Kathmandu Valley and Lumbini, the birthplace of Buddha, are the two cultural World Heritage Sites in Nepal. The Kathmandu Valley comprises of two Hindu temples that include Pashupati and Changu Narayan, two Buddhist shrines – Swayambhu and Boudha and three durbar squares (traditional palace) of Kathmandu, Patan, and Bhaktapur. However, the Valley faces continually a complex set of development problems to preserve heritage areas (Yonzon, 2001) and remnant forest patches take the brunt of it. In 1999, some 20,945 ha of forest (32% of Kathmandu Valley) existed and the natural forest was only 9,580 ha (MOPE, 1999). Majority of the forests were along the hill slopes and not on the valley floor. Thus, only religious forest could survive the onslaught of unplanned urbanization. To this day, Sleshmantak forest remains because it is Pashupati Temple area and the core of Sleshmantak is known as Mrigasthali, the abode of deer where the Pashupati Area Development Trust (PADT) committed erroneous introduction by releasing lowland ungulates (deer and antelope) in the Mid hill environment. This paper is an update with recent field work of the earlier

research by Ghimire and Shrestha (2009) to determine degradation of Sleshmantak forest as trees die-out because of introduced deer and blackbuck, particularly in Mrigasthali.

### PASHUPATI DEVELOPMENT AREA TRUST

The Pashupati Temple dates back to 477 AD with the beginning of Lichhavi kings. In the last 20 years, Pashupati shrine area has gained grips on several cultural and environmental-related issues with establishment of the Pashupati Area Development Trust (PADT) in 1988 to look after its 550 big and small monuments and the integrity of 67 ha of trust land through which the Bagmati River, a tributary of the Ganges, flows (Fig. 1). Since PADT's 10-year master plan began in 2000, over 100 illegal buildings were removed for more open space and sewer water in Bagmati River, has been treated.

The year 2009 was tumultuous for Pashupati for political and religious reasons. Amid concerns over misuse of cash donation made by worshippers which ran into tens of millions of rupees, the erstwhile Maoist led government appointed two Nepali priests as the Bhatta (chief) breaking the long tradition of hiring Indian priests for the job. This became a concern for the Indian Hindus (population: 950 millions) and their political allies vehemently protested. The Maoists backtracked through a Supreme Court stay order. In early September, the new Prime Minister of the coalition government, appointed two Indian nationals and the Maoist affiliated organisations protested against the decision and demanded an end to the tradition of appointing Indian nationals as priests in Pashupati. Meanwhile, PADT promulgated regulations to maintain transparency while appointing priests, clarifying that the main priest can be a Nepali or an Indian. Also, the regulation directed priests to submit all donations (cash and kind) as assets of the Trust. Earlier, all the income through donations to the temple was divided between four Bhattas and 108 Bhandaris (assistant priest).

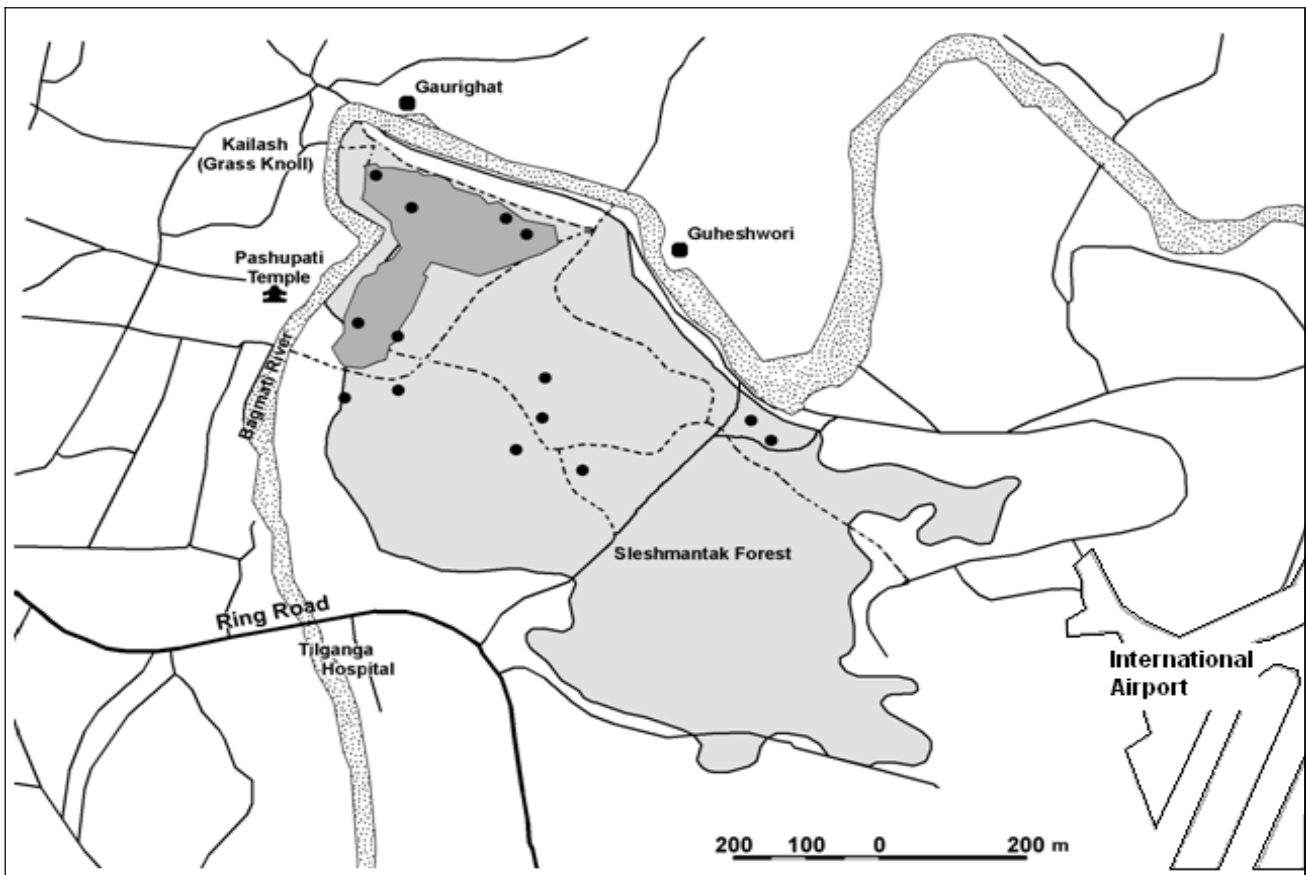


Figure 1. Sleshmantak (light grey), Mrigasthali (dark grey), Sampling Plots (points), Trails (dotted lines) and roads (dark lines).

## CHRONOLOGY OF DEGRADATION

In addition to PADT, the government had formed a 30-member High Powered Committee to rehabilitate Bagmati River in 1995 through sewer line improvement and treatment plants. The Committee under the Maoists government constructed a road right through Sleshmantak in 2007, which is an integral part of the Pashupati temple area. The 7 m wide and 800 m long road runs through Sleshmantak forest, splitting it into two and links Tilganga Hospital and Guheshwari temple. Although this road violates all the norms of UNESCO's World Heritage Site, the road was built with full endorsement of the minister for physical planning and works of the Maoists' government, and the Bagmati Sewer Improvement Committee. Because of growing concern on Sleshmantak as the world heritage site, now one ministry, two government departments and PADT have agreed to survey a 400 m tunnel for vehicles and pedestrians between Tilganga and Guheshwori. No one knows when the tunnel will see the light!

Believing all kinds of deer and antelopes can bring purity and ambience as the mythology goes, PADT enclosed 4.8 ha of *Schima-castanopsis* forest (Mrigasthali) in 2004 where 2 barking deer (*Muntiacus muntjak*) and 10 Chital (*Axis axis*) and 20 blackbuck (*Antelope cervicapra*) were introduced with the technical

assistance of Nepal Trust for Nature Conservation. Except for the barking deer (elevation range: 150 – 3,000 m) (Yonzon, 1978; Nagarkoti and Thapa, 2005), both chital and blackbuck are non-native species to Mid-hills like Kathmandu. Chital, also called spotted deer, occurs in Terai and are gregarious (Yonzon, 1979). The blackbuck is from the plains (Nepal, India and Pakistan) and not from mountains (Tamang, 2003). They live in groups and feed on grasses and scrub.

## WHAT IS SUCCESS?

Both introduced male and female barking deer died in 2006 - 2007 because grasses were wiped out. However, barking deer has increased to 10 animals as people bring them for release. Only one barking deer birth was reported in 2006. On the contrary, the introduced population of deer and blackbuck of 32 animals has increased to 122 animals (10 barking deer, 59 chital and 53 blackbuck) (Fig.2). This has happened largely because of these two non-native ungulates were safe from predators such as leopards and stray dogs and they were artificially fed in the absence of natural food. As a matter of fact, the annual feed amounts to 44 ton with a cost of NPR 1.5 million. As birth rates in both chital and blackbuck are growing with low death rate, the population growth appears to be linear (for both

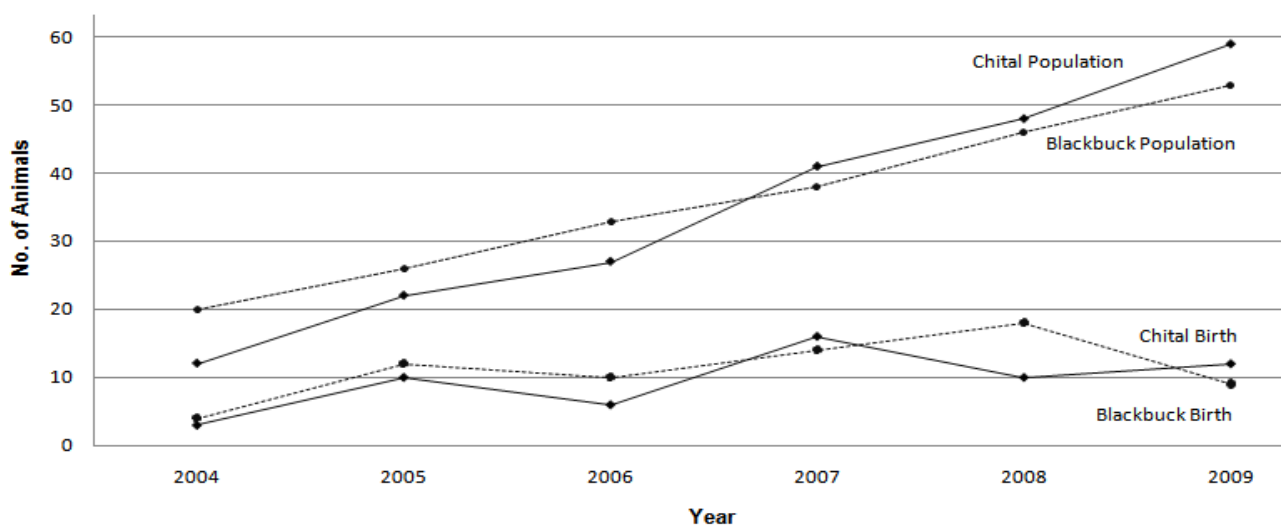


Figure 2. Population growth of introduced chital and blackbuck in Mrigasthali.

Year		2004	2005	2006	2007	2008	2009
Chital	Birth	3	10	6	16	10	12
	Death	1	0	1	2	3	1
Blackbuck	Birth	4	12	10	14	18	9
	Death	4	6	3	9	10	2

Table 1. Chital and blackbuck Birth and death between 2004 -2009.

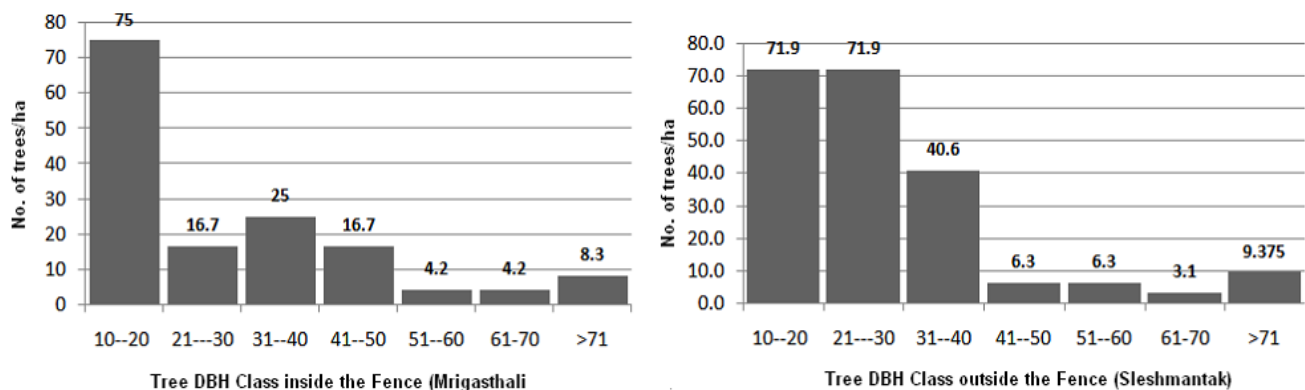


Figure 3. DBH age-class of trees in Mrigasthali and Sleshmantak.

species,  $r^2: 0.997$ ) which suggests more animals in future (Table1, Fig. 2). Is this success?

### COSTS OF IGNORANCE

To know the impacts of large number of ungulates in the last 6 years, entire Sleshmantak forest (43 ha) was surveyed using grid lines and randomized sampling plots. Mrigasthali (4.8 ha) is the sacred area of Sleshmantak where deer are kept and the entire area is fenced with steel bars and gabion wires (Fig.1). Inferring data from 14 sample plots (6 inside the fence, 8 outside) (Table 2), tree species, tree density ( $n= 14$ ,  $t= 0.78$ ,  $df= 12$ ,  $p= <0.05$ ) and tree biomass ( $n= 14$ ,  $t= 0.65$ ,  $df= 12$ ,  $p= <0.05$ ) inside and outside the fence were no different. The contrast came sharp when counting dead

and damaged trees. Of 623 trees inside the fence, 190 (30%) trees were damaged by deer and 93 (15%) were dead or dying because damages inflicted by deer. All age class tree were damaged (DBH: 17 – 100 cm) (Fig.3) as their bark were eaten, trees were injured with antlers and horns during rut season and base of large trees were dug out as salt licks, exposing tree roots. Therefore, Mrigasthali is a dying patch of forest.

### SEEING IS BELIEVING

Both shrubs and herbs differed markedly where deer occurred (Table 2). Only 8 shrub and 2 herbs occurred inside the fence. Largely, they were unpalatable suggesting deer have overgrazed Mrigasthali. But,

Plants	Species		Density (no./ha)		Biomass (kg/ha)		Palatable spp.	
	Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside
Tree	10	11	150	209	15630	15635	-	-
Shrub	8	34	4600	36775	-	-	2	12
Herb	2	27	39167	1350000	-	-	0	14

Table 2. Comparison of plant density, biomass and palatable species.

shrubs and herbs outside Mrigasthali (fence), has high species richness and more palatable species. Statistically, there is a marked density difference within and outside the fence in shrub ( $n=28$ ,  $t=2.594$ ,  $df=26$ ,  $p=0.05$ ) and herbs ( $n=28$ ,  $t=2.988$ ,  $df=26$ ,  $p=0.05$ ). Inside the fence, there is no ground cover because both palatable herbs and shrub species have been overgrazed/browsed by introduced ungulates over the past 6 years. Same implies for tree regeneration. Degradation is razing.

### MUST LEARN THINGS

It may take hundreds of years for trees to be viable biologically but this message is not getting across the PADT. Mature forest and well protected environment add more to the sanctity of sacred, religious areas. As if ecological colossal loss from introduced deer was not enough, PADT is planning to establish Mrigasthali

as deer park by adding some species of birds and animals in the enclosed area, construct a bridge to reach the Kailash – a tiny grass knoll, expanding the enclosure and constructing a pavement around the enclosure at a cost NPR. 2 million. To conserve the environment by maintaining greenery in the area, the PADT's deer park plans to: 1) support the government target of bringing more than one million foreign tourists in the Tourism Year 2011; and 2) earn revenue through introducing entry fee to Mrigasthali. Thus, one more mistake is in waiting.

Overall, introduction of chital and blackbuck and artificial diets are top issues in Mrigasthali. Also, Sleshmantak has been fragmented. Given the government arrogance of road building and ignorance of the management in wildlife conservation, forest degradation in Pashupati area in no time, can lose its status from the abode of deer to animal cage culture.

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