

# Site Specific Conservation Action Plan for Blackbuck in Shuklaphanta Wildlife Reserve, Nepal **2016-2020**



Government of Nepal  
Ministry of Forest and Soil Conservation  
Department of National Parks and Wildlife Conservation





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Site Specific Conservation  
Action Plan for Blackbuck  
in Shuklaphanta Wildlife  
Reserve, Nepal  
2016-2020

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Nepal, 2016-2020**

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## FOREWORD

Nepal's biodiversity is a reflection of its unique geographic position, wide altitudinal variations and diverse climatic conditions that result in different physiographic zones within a short north-south span of about 150 kilometers. Nepal has established an impressive system of protected areas for the conservation of biodiversity, focusing on species, ecosystems, habitats and biomes. A wide array of biodiversity conservation policies, plans and legislative instruments has been formulated providing opportunities to maintain habitats, and/or reduce the population decline of important species. Despite these efforts, ecosystems are being degraded at an alarming rate due to forest fire, habitat destruction, growing human population, overharvesting, unmanaged tourism, pollution, overfishing, poaching, indiscriminate product extraction, infrastructure expansion and climate change.

The blackbuck (*Antelope cervicapra*) is protected in Nepal under the National Parks and Wildlife Conservation Act 1973. It is confined in a semi-wild state to an area of 15.95 sq. km in the Blackbuck Conservation Area (BCA), Khairapur of Bardia district. Since, this is the only wild population there is a risk that the population may crash at any time due to disease or stochastic events. Currently there are 248 blackbucks in the BCA, an increase from 9 individuals in 1975. Based on past learning, in 2012 the Government of Nepal made a national effort to establish a second viable population in Shuklaphanta Wildlife Reserve (SWR) in collaboration with the United States Agency for International Development (USAID)-funded Hariyo Ban Program and the National Trust for Nature Conservation (NTNC). Blackbucks were translocated from the Central Zoo and Nepalgunj Mini Zoo to Hirapur Phanta in SWR. The translocated blackbucks are kept in an enclosure in order to slowly naturalize them so that they can eventually survive in the wild. In order to ensure the survival of the translocated population of blackbuck and to establish a viable wild population, **Site Specific Conservation Action Plan for Blackbuck in Shuklaphanta Wildlife Reserve (2016–2020)** has been prepared. The action plan will open avenues for collaborative efforts on conservation and management of reintroduced blackbuck. It will also provide a platform to raise funds, generate financial and technical resources and to implement actions in order to achieve its objectives.

I would like to express sincere thanks to NTNC for initiating the action plan preparation work. My sincere thanks also go to Dr. Naresh Subedi, Dr. Manish Raj Pandey, Mr. Rishi Ranabhat, Mr. Megh Dhoj Adhikari, Mr. Binod Basnet, Mr. Baburam Lamichhane, Mr. Hemant Kumar Yadav and Mr. Shyam Kumar Thapa for their inputs in the action plan. Thanks are due to Mr. Ganga Jang Thapa, Dr. Shant Raj Jnawali, Mr. Bed Kumar Dhakal, Mr. Gopal Prakash Bhattarai, Dr. Maheshwar Dhakal, Ms. Judy Oglethorpe and Mr. Krishna Prasad Acharya for reviewing the action plan. In addition, I would like to express my sincere thanks to USAID and the Hariyo Ban Program for financial and technical support for the translocation of blackbuck to SWR.

  
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Fanindra Raj Kharel  
Director General



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## ACRONYMS AND ABBREVIATIONS

BCA	Blackbuck Conservation Area
BZ	Buffer Zone
CARE	Cooperative for Assistance and Relief Everywhere
CBAPU	Community Based Anti-Poaching Unit
CBO	Community Based Organization
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CR	Critically Endangered
DNPWC	Department of National Parks and Wildlife Conservation
FECOFUN	Federation of Community Forest Users Nepal
GIS	Geographic Information System
GPS	Global Positioning System
Ha	Hectare
I/NGO	International/Non-Governmental Organization
IUCN	International Union for Conservation of Nature
MoFSC	Ministry of Forest and Soil Conservation
NPR	Nepali Rupee
NT	Near Threatened
NTNC	National Trust for Nature Conservation
SWR	Shuklaphanta Wildlife Reserve
USAID	United States Agency for International Development
WWF	World Wildlife Fund
SCP	Shuklaphanta Conservation Program
Sq. Km	Square Kilometer
ZSL	Zoological Society



# EXECUTIVE SUMMARY

The goal of the **Site Specific Conservation Action Plan for Blackbuck in Shuklaphanta Wildlife Reserve (2016–2020)** is to re-established free roaming wild population of blackbuck in Shuklaphanta Wildlife Reserve (SWR) so as to conserve and manage the blackbucks reintroduced to SWR in 2012 as part of a national effort to establish a second viable population in Nepal. As of 2016, the reintroduced population is kept in a fenced enclosure of 17 hectares in Hirapur Phanta of SWR to ensure its survival before releasing the animals in the wild. The current population of blackbuck in SWR is small and could crash at any time due to disease or a stochastic event. Besides this, some key issues need to be addressed including: the size of enclosure given the growing population; limited experience of best practices for blackbuck translocation and reintroduction; livestock pressure on the habitat of SWR; widespread poverty and high expectation of the

local communities for increased wealth; risk of unprecedented climatic events e.g. drought, flood; and financial sustainability. Realizing the need for a coordinated and collaborative effort to address the aforementioned issues in managing the translocated blackbuck, this site specific conservation action plan has been prepared for blackbuck in SWR.

The action plan is divided into two sections. The first section presents the overall status of blackbuck in Nepal, and the reintroduced population in SWR, along with current management issues. The second section presents the action plan with a logical framework for the long-term effective conservation and management of blackbuck.

In order to achieve the action plan goal, the objectives and strategies of the plan are:

Objective	Strategy
<b>Objective 1: Manage blackbuck population for long term viability in SWR</b>	<ol style="list-style-type: none"> <li>1. Ensure adequate breeding and foraging space by expanding existing enclosure</li> <li>2. Closely monitor habitat condition and manage scientifically</li> <li>3. Improve veterinary services</li> <li>4. Ensure animal safety</li> <li>5. Ensure effective coordination among stakeholders including private sector</li> </ol>
<b>Objective 2: Manage habitat in SWR to support blackbuck population in the long term</b>	<ol style="list-style-type: none"> <li>1. Improve habitat quality through habitat management interventions and develop mechanism for information sharing</li> <li>2. Use cutting-edge technology in habitat research and monitoring</li> <li>3. Apply best available management tools for habitat management</li> </ol>

Objective	Strategy
<b>Objective 3: Strengthen community engagement for blackbuck conservation</b>	<ol style="list-style-type: none"><li data-bbox="850 260 1341 321">1. Engage local communities in conservation through alternative livelihood options</li><li data-bbox="850 321 1382 382">2. Develop alternative forest resources in private and community lands</li></ol>
<b>Objective 4: Establish sustainable financing mechanism</b>	<ol style="list-style-type: none"><li data-bbox="850 407 1409 468">1. Develop and implement mechanism to grow and sustain the fund</li><li data-bbox="850 468 1360 564">2. Foster coordination and collaboration with potential conservation partners for resource leverage</li></ol>





## CONTEXT

### 1.1 Introduction and background

Blackbuck (*Antelope cervicapra*) is native to parts of Nepal, India and Pakistan. There are four subspecies of blackbuck, namely: *Antelope cervicapra cervicapra* in Nepal and North India; *Antelope cervicapra centralis* in Central India; *Antelope cervicapra rajputanae* in Western India; and *Antelope cervicapra rupicapra* in South India. Prior to the nineteenth century, blackbuck was one of the most abundant ungulates in the Indian subcontinent, with an estimated population of around 4 million (Long 2003). However, hunting and habitat loss caused a substantial decline in population, with less than 80,000 animals remaining by 1964. The native population in India is stable, with an estimated

50,000 individuals in the recent past (Mallon 2008). The species is now listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), classed as 'near threatened' in the International Union for the Conservation of Nature (IUCN) Red List, and protected under the National Parks and Wildlife Conservation Act 1973 in Nepal. It is nationally assessed as **Critically Endangered** (CR) in Nepal (Jnawali et al. 2011).

Blackbuck has been introduced into the United States, Argentina and Australia. It was first released in Texas in 1932, with repeated releases in subsequent years for hunting purposes. In 1988, the Texas Parks and Wildlife Department

estimated the blackbuck population to be 21,232 (Willard et al. 1995). In Argentina, blackbuck was first introduced in 1906 (Long 2003) and is now established over a large area. In Australia, blackbuck was first introduced into Western Australia in the early 1900s (Allison 1970). By 1929, wild populations near Perth were described as reaching pest proportions and were culled (Csurhes and Fisher 2010).

Blackbuck primarily inhabits short grassland and open woodland, and requires some cover. In India, it is also found in wet coastal areas and western deserts. More than 80 percent of the introduced blackbuck in Texas, United States inhabit open grassland and brush that provide both forage and cover. Blackbuck prefers to graze selectively on short to mid-length grasses but also browses shrub species, and eats crops. Forage selection is primarily determined by food availability. It lives either in groups (single or mixed sex, numbering anywhere from 15 to several thousand animals) or as single animals at densities of 0.5–3 per hectare. Blackbuck are normally sedentary, but may travel long distances in search of food and water during the end of the dry season. During the rut the males are strongly territorial, driving other males from their territories. Further information on life history, food, habitat requirements and appearance are given in Annex 2.

Habitat loss, fragmentation, degradation and human-blackbuck conflict are the key threats to the species. Climate induced disasters such as flood and drought are also perceived as major threats. The high flood in Babai nearly exterminated the source population in Khairapur in 2014, when 40 out of 300 individuals were drowned.

## 1.2 Status of blackbuck in Nepal

Blackbuck was once widely distributed across the Terai region in Nepal. Scattered populations of blackbuck occurred in Kanchanpur, Bardia and

in the old floodplain areas of the Rapti River in Banke districts till late the 1960s (Pradhan et al. 2001). After the eradication of malaria during the mid-1950s, forest and grassland in Terai were cleared for cultivation and wildlife species including blackbuck were poached. Blackbuck was considered extinct from Nepal in 1972, but in September 1975, 9 individuals of unknown sex were reported in Khairi-Panditpur, near the headquarters of Bardia district. The District Forest Office, Bardia, and Bardia National Park deployed one to four security guards for the conservation of blackbuck in this area in 1976 (DNPWC 1989).

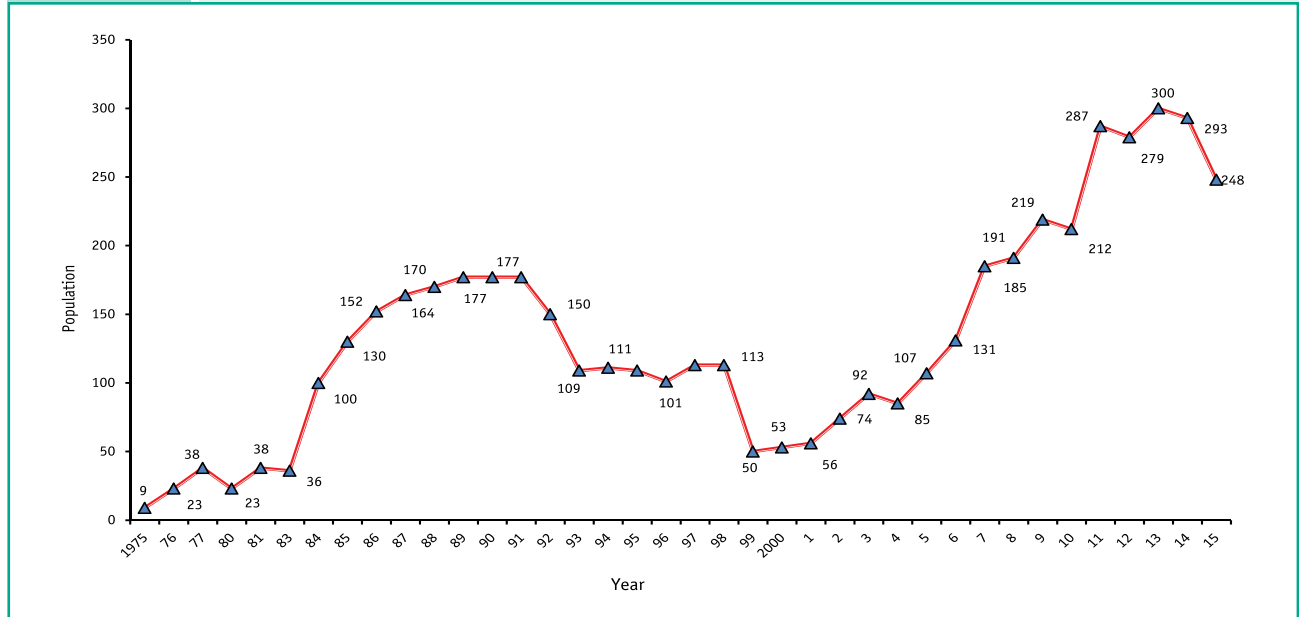
An area of about 16 sq. km was declared as Blackbuck Conservation Area (BCA) in 2009 and fence was erected, aiming to avoid risk of disease transmission from livestock as over 1,000 livestock grazed every day in BCA. With the deployment of guards, the population in Khairapur increased gradually from 9 individuals in 1975 to 300 individuals in 2013, but declined to 248 in 2015 due to an abnormally high flood in the Babai River (Fig. 1).

The BCA was established in the old floodplain created by the Babai River and is vulnerable to flooding. Risk of inbreeding, food scarcity for the increasing population and other environmental stresses such as prolonged drought are other serious threats to the isolated population in BCA. Realizing this, the DNPWC recently translocated some individuals with an aim to create a new viable breeding population in the species' former range in SWR. A total of 28 animals have been reintroduced in the Hirapur Phanta in the reserve. Creation of separate populations is an important step in protecting Nepal's blackbuck from stochastic and climate change-related extreme events.

Blackbuck are also kept in two wildlife facilities: in the Central Zoo; and in an enclosure within the premises of the Pashupati Development Trust in Kathmandu. Twenty-five animals

**Figure 1**

Population trend of blackbuck in Blackbuck Conservation Area of Khairapur, Bardia, Nepal between 1975 and 2015.



were translocated from the Central Zoo to stock Pashupati in 2009. This number has now increased to more than 40.

in the new area, mainly due to predation and unsuitable habitat dominated by tall grass species (Pradhan et al. 2001).

### 1.3 Reintroduction efforts in Nepal

The blackbuck reintroduction effort in Nepal dates back to 1977 when 8 blackbucks (5 males and 3 females) were translocated for the first time from Khairapur to Baghaura Phanta in Bardia National Park. This effort continued until 1992. In 1987, a second attempt was made by translocating 17 animals from Khairapur followed by an additional 27 individuals from the Central Zoo to Baghaura Phanta. However, the translocated blackbuck could not survive

The recent translocation to Hirapur Phanta in SWR was based on the recommendations of several feasibility studies, including Khanal et al. (2002). A total of 28 blackbucks (22 from Nepalgunj Mini Zoo and 6 from Central Zoo, Lalitpur) were reintroduced in SWR in 2012 as part of a national effort to establish a second viable population in Nepal (Table 1). translocation program was supported by USAID funded Hariyo Ban Program through the NTNC. Soon after translocation, the animals started to breed and new births were observed.

**Table 1:** Date, source, age and sex composition of blackbuck reintroduced in SWR in 2012.

Source	Date of Translocation	Male		Female		Yearling	Total
		Adult	Sub-adult	Adult	Sub-adult		
Mini Zoo, Nepalgunj	2012.09.18	2	1	4	1	-	8
Mini Zoo, Nepalgunj	2012.09.20	-	3	8	3	-	14
Central Zoo	2012.10.01	3	-	2	-	1	6
<b>Total</b>		<b>5</b>	<b>4</b>	<b>14</b>	<b>4</b>	<b>1</b>	<b>28</b>

As of June 2015, the blackbuck population in SWR comprised 35 individuals (15 males, 13 females and 7 yearlings) managed in a 17 ha enclosure (Fig. 2).

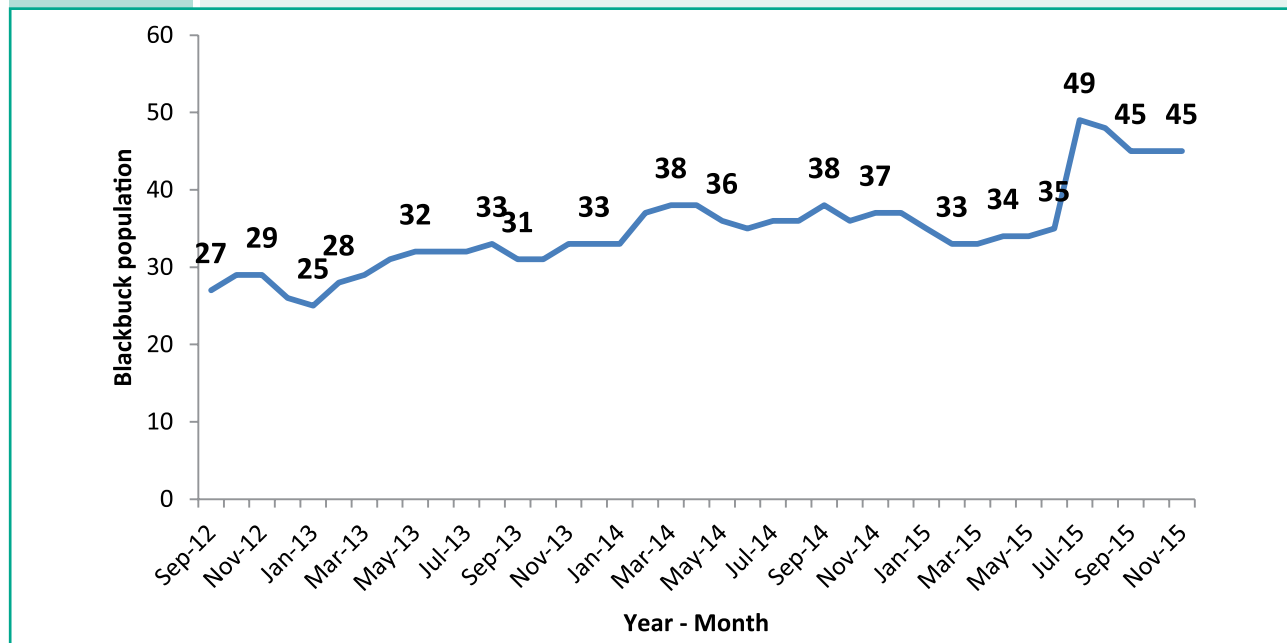
Between 2012 and 2015 44 animals were born, and 47 died in the enclosure. To expand the genetic base, an additional 14 blackbucks (10 female and 4 male) were translocated from BCA to the enclosure in Hirapur Phanta in July, 2015. With this restocking, the population of blackbuck in SWR reached 49 individuals. The intent is to let the population increase to a minimum of 100 individuals before they are released into the open space in reserve.

Hirapur Phanta is located in the northeastern

part of SWR and lies about 1.5 km north of the Arjuni range post. Approximately 150 ha of Hirapur Phanta was previously cultivated, and now the re-vegetated short grassland is dominated by *Cynodon dactylon* and *Imperata cylindrica*. Further information on the site is provided in table 2. The blackbuck enclosure lies in the central part of the phanta (Fig. 3) with 95 percent covered by grassland, 3 percent riverine forest, 1 percent mango orchard and 1 percent wetland. Major plant species in the area are *Shorea robusta*, *Dalbergia sissoo*, *Bombax ceiba*, *Syzygium cumini*, *Syzygium operculatum*, *Mallotus philippinensis* and *Lagerstroemia parviflora*. The salient features of the blackbuck occupied area (Table 4) are similar to those of the BCA.

**Figure 2**

Population trend of newly reintroduced blackbuck in Hirapur Phanta in SWR.

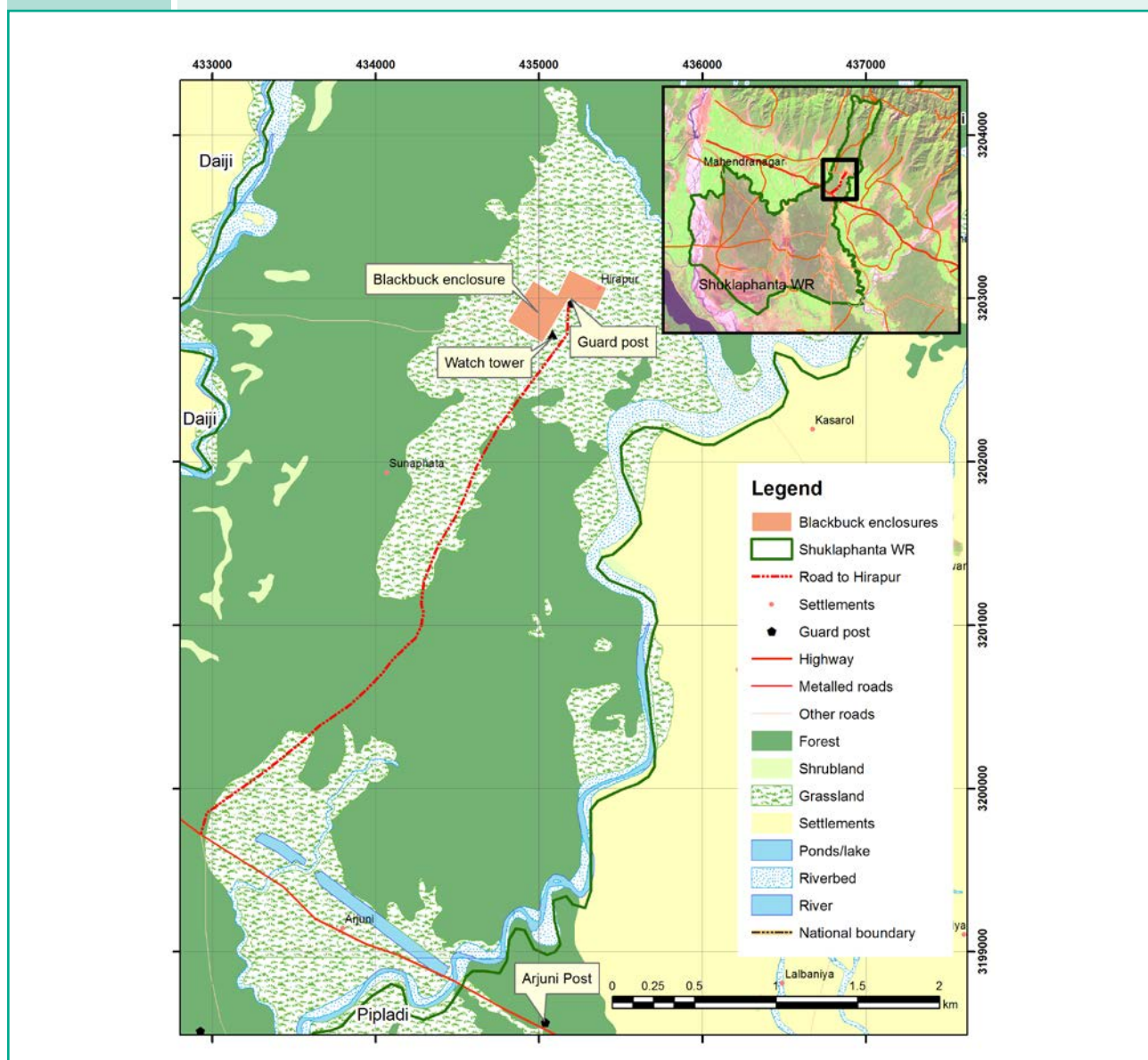


**Table 2:** Salient features of Hirapur Phanta in SWR

Attributes	Hirapur Phanta
Location	28° 56' 58.06" N 80° 20' 26.59" E ; North-East of SWR
Enclosure area	17 ha
Altitude	220 m asl
Historical information	Blackbuck in Shuklaphanta were reported until 1960s

<b>Attributes</b>	<b>Hirapur Phanta</b>
<b>Vegetation</b>	Open meadow dominated by short grass species, mainly <i>Cynodon dactylon</i> and <i>Imperata cylindrica</i> . The area is surrounded by <i>Shorea robusta</i> (Sal) forest with other associated tree species including <i>Terminalia</i> spp.
<b>Availability of water sources</b>	Regular ground water supply; a recently dug pond provides adequate water
<b>Threats</b>	Predation may become a threat at the initial stage of release; disease transmission from domestic cattle
<b>Accessibility</b>	1.5 km from road head; need to build an all-weather road
<b>Human pressure</b>	Intensive cattle grazing
<b>Possibility of habitat expansion</b>	Possible

**Figure 3** Reintroduced blackbuck site in Hirapur Phanta, SWR



## 1.4 Challenges and threats for blackbuck conservation in SWR

- 1. Small and isolated population:** The current population of blackbuck in SWR is small and the population could crash at any time due to stochastic events. Therefore, efforts to supplement with new individuals from the wild and captivity should be considered as a priority to increase the genetic viability of the existing population.
- 2. Disease as unvaccinated livestock come up to the enclosure:** At present, Hirapur Phanta is grazed by over 500 cattle each day. Grazing also occurs near to the enclosure increasing the risk of disease transfer. Continuous grazing pressure combined with other human activities like collection of firewood and other products from the nearby forest pose a serious threat to the success of the reintroduced blackbuck population, once they are released. Rinderpest and foot and mouth disease are among the most common diseases in the area that can affect both the livestock and blackbuck. Deaths of blackbuck in the enclosure from 2012 to 2015 have mainly been due to parasites likely from the livestock.
- 3. Availability of space to accommodate the growing population:** At present, blackbuck are kept in the 17 ha enclosure to protect them from predation while building up a wild population. The present space is not adequate for males to establish enough territories, and as the population grows overcrowding will lead to physiological and behavioral constraints, and reduced reproduction. The enclosure should be enlarged to provide adequate space to the blackbuck. Currently, animals are given supplementary food to supplement the nutritional requirements. This will be continued until adequate grazing space is created.
- 4. Climate induced hazards:** Climate change is advancing in Nepal, and is affecting species distribution, habitats, phenology, reproduction, etc. Increased climate variability could have direct implications for blackbuck survival: for example, more intense precipitation could increase flooding risk and animals in the enclosure might not be able to escape. Increased drought periods could increase fire risk in grasslands. Once released from the enclosure, animals might move out of the reserve during times of hardship. Longer term changes in water and temperature could result in changes to grassland quality, or woody vegetation encroachment, hence affecting suitability of habitat for blackbuck.
- 5. Low priority species:** Despite the fact that blackbuck is categorized as critically endangered in Nepal, the species has gained minimum attention for its conservation.
- 6. No conservation action plan for blackbuck:** As the species has captured little attention compared to flagship species like tiger, rhino and snow leopard, Nepal has never prepared a national conservation action plan for blackbuck. This plan is a site specific plan for SWR.





# BLACKBUCK CONSERVATION ACTION PLAN

## 2.1 Guiding principles of the action plan

This Site Specific Conservation Action Plan for recently translocated blackbuck in SWR follows an adaptive management framework of setting goals and priorities, developing strategies, taking action and measuring results, and applying results for future management.

This action plan benefits from the views of a number of active conservation partners with extensive field experience and also reflects the international conservation perspective. This perspective is particularly germane to the plan since the remaining populations of blackbuck

occur only in BCA and SWR and the recovery process will require a long-term conservation vision for developing the SWR wild population, enhancing genetic diversity, and establishment of new subpopulations for long-term survival. The recovery process will require a science-based approach and collaboration among stakeholders. This viewpoint is reflected in the following general in-situ conservation principles.

1. ***Maintain and restore healthy populations of blackbuck by adopting a science-based approach:*** Science-based management of blackbuck will help ensure a healthy increase of blackbuck populations, broadening their genetic base and thus securing the viability of small populations. This includes the

possibility of establishing another viable population elsewhere, e.g. in Parsa Wildlife Reserve.

**2. *Ensure that the approach is climate-smart, building resilience and/or facilitating adaptation to climate change:***

Taking into account observed climate changes and future projections, assess climate vulnerability of blackbuck and the reserve, and mainstream resilience building and climate adaptation measures into management. This includes flood and fire hazards both in the early enclosure stage, and later after release into the reserve. It should also cover longer term potential changes to grassland quality and extent as a result of climate change.

**3. *Foster commitment and facilitate local involvement in the implementation process by building capacity and strengthening community engagement:***

While implementing the action plan, it is a high priority to promote local involvement by providing opportunities for capacity enhancement, involvement in wildlife management, and promotion of alternative livelihoods, especially in cases where there is actual or potential conflict with blackbuck conservation. Every effort should be made to support the involvement of local communities and stakeholders, addressing their needs and concerns with support from national and international conservation partners. Blackbuck conservation can help promote ecotourism through transfer of conservation knowledge and other support to local communities, community based organizations (CBOs), tourism entrepreneurs/business community and other stakeholders.

**4. *Secure resources for blackbuck management:***

Adequate funding resources are crucial for long-term conservation of this species. In long run, SWR will incorporate blackbuck conservation in its regular program. DNPWC will work with its conservation partners to seek additional funding and provide technical support.

**5. *Increase local awareness on blackbuck conservation:***

Under the action plan, a conservation awareness program will be developed and implemented targeting to CBOs, civil society, schools and other relevant stakeholders through educational materials and issue-related campaigns.

## 2.2 Strategic approaches

- Build on and consolidate successful past efforts and achievements.
- Ensure evidence and science-based decision making.
- Strengthen integrated management system combining habitat improvement, species enrichment and people participation.
- Develop community based human-blackbuck conflict management system.
- Develop and enforce stringent protection measures mobilizing local community.
- Build capacity of local stakeholders.
- Forge partnerships with private sector and local community for eco-tourism development.
- Develop effective and user-friendly database management and monitoring systems.



## VISION, GOAL, OBJECTIVES, OUTPUTS AND ACTIVITIES

### 3.1 Vision

Genetically viable wild breeding population of blackbuck in SWR that plays a functional role in the ecosystem contributes to the livelihood of local people and makes a major contribution to the broader conservation of the species in Nepal

### 3.2 Goal

Re-establish free roaming wild population of blackbuck in SWR

### 3.3 Objectives

**Objective 1:** Manage blackbuck population for long term viability in SWR

**Objective 2:** Manage habitat in SWR to support blackbuck population in the long term

**Objective 3:** Strengthen community engagement for blackbuck conservation

**Objective 4:** Establish sustainable financing mechanism

### 3.4 Issues, strategies and activities

Prominent issues, and strategies and activities to address the issues and achieve the objective are as follows:

**Objective 1: Manage blackbuck population for long term viability in SWR**

## Issues

- Small population size and narrow genetic base
- Knowledge gap on newly re-introduced blackbuck population
- Inadequate space for growing number of animals
- Inadequate veterinary facilities and services
- Security of reintroduced population from poaching and predation

## Strategy

1. Ensure adequate breeding and foraging space by expanding existing enclosure
2. Closely monitor habitat condition and manage scientifically
3. Improve veterinary services
4. Ensure animal safety
5. Ensure effective coordination among stakeholders including private sector

*Output 1.1 Adequate space for reintroduced blackbuck provided*

## Activities

- Extend current 17 ha of enclosure to at least 40 ha and continue expansion to provide adequate breeding and foraging space for targeted 100 individuals before they are released to the open ground
- Undertake regular research and monitoring and explore possible area elsewhere in the Terai Arc Landscape to establish third viable population
- Build genetic robustness: increase genetic diversity by seeking possibility of reintroducing wild individuals from elsewhere in the region

- Protect the blackbuck habitat from damaging human activities

*Output 1.2 Research and monitoring undertaken to support management*

## Activities

- Conduct regular monitoring of blackbuck population including demographic parameters and animal condition; and social behavior in the enclosure
- Establish and maintain database on population and habitat
- Carry out genetic study of wild and reintroduced population
- Conduct comparative study on ecology and behavior of blackbuck of BCA and SWR
- Seek opportunities to introduce additional animals from different source populations
- Build institutional capacity for blackbuck conservation

*Output 1.3 Health of blackbuck maintained*

## Activities

- Establish veterinary facilities and provide regular veterinary services
- Carry out periodic disease and parasite surveillance and monitor health conditions
- Support regular vaccination of livestock in adjoining buffer zone

*Output 1.4 Safety of reintroduced blackbuck population ensured*

## Activities

- Undertake review of blackbuck anti-poaching activities, identify gaps and issues, and harmonize with SWR management

plan; prepare to adapt anti-poaching for blackbuck release

- Undertake regular monitoring and maintenance of predator proof fence
- Establish watch tower for surveillance
- Form, strengthen and mobilize community based anti-poaching units (CBAPUs) in the buffer zone (BZ) villages
- Equip the anti-poaching units with field gear and basic equipment (e.g. global positioning systems (GPSs), cameras)
- Maintain locally-based management team for the blackbuck conservation
- Control stray dog population through sterilization of female dogs

*Output 1.5 Risk of climate induced hazards to blackbuck population reduced*

#### **Activities**

- Undertake climate vulnerability assessment for blackbuck and for SWR
- Identify feasible actions for resilience building and climate adaptation both during enclosure period and after release of blackbuck, and mainstream them into management
- Develop early warning systems and contingency disaster plans as needed, for example for flooding and uncontrolled fire
- Provide shade in the expanded enclosure
- Monitor changes in weather patterns and the effects of climate change, and adapt management practices as needed
- Develop local capacity to address climate change issues

### **Objective 2: Manage habitat in SWR to support blackbuck population in the long term**

#### **Issues**

- Inadequate forage during the dry season
- Risk of further habitat deterioration and water scarcity during prolonged drought

#### **Strategy**

1. Improve habitat quality through habitat management interventions and develop mechanism for information sharing
2. Use cutting-edge technology in habitat research and monitoring
3. Apply best available management tools for habitat management

*Output 2.1 Availability of quality food ensured throughout the year*

#### **Activities**

- Maintain short grassland through regular cutting, controlled burning and grazing
- Create plantation of blackbuck preferred tree and shrub species to provide forage and shade in the enclosure during hot and dry season
- Provide drinking water throughout the year
- Provide irrigation during the hot dry season to promote grass growth
- Provide supplementary feed during stress period (dry and winter seasons)

*Output 2.2 Habitat conditions regularly studied and monitored*

### Activities

- Engage university graduates to undertake studies on habitat condition inside the enclosure
- Provide feedback to SWR management to improve habitat quality based on research results
- Document all invasive alien species and their impact on food availability
- Document all likely impacts of climate change on habitat and food availability, especially floral composition
- Provide recommendations for sound habitat management

### Objective 3: Strengthen community engagement for blackbuck conservation

#### Issues

- Over grazing and regular interactions of cattle with blackbuck
- Inadequate conservation awareness among local communities
- High community dependency on reserve resources
- Widespread poverty and limited livelihood options

#### Strategy

1. Engage local communities in conservation through alternative livelihood options
2. Develop alternative forest resources in private and community lands

### *Output 3.1 Local stewardship on blackbuck conservation developed*

#### Activities

- Conduct blackbuck conservation awareness activities (radio program, workshops, blackbuck festival, etc.)
- Promote community based tourism in the nearby village to accrue benefit from blackbuck conservation
- Support community to mitigate potential human blackbuck conflict
- Support alternative livelihood options
- Promote stall feeding and discourage livestock grazing within the SWR, to reduce grazing pressure and disease risk
- Promote artificial insemination to enhance value of livestock and reduce number of unproductive breed animals, and hence increase household income from livestock
- Promote alternative energy (e.g. biogas, improved cooking stoves) to reduce firewood pressure and women's work/time burden; biogas also brings other benefits

### *Output 3.2 Community livelihoods improved through alternative livelihood options*

#### Activities

- Promote diversified off-farm opportunities through skill-based training, and on-farm support (vegetable farming, poultry, riverbank vegetable farming, etc.)
- Promote community based tourism (home stay) in neighboring *Simalphanta* village
- Train community members in nature guiding, cooking, hospitality and house management

#### **Objective 4: Establish sustainable financing mechanism**

##### **Issues**

Inadequate financial resources

##### **Strategy**

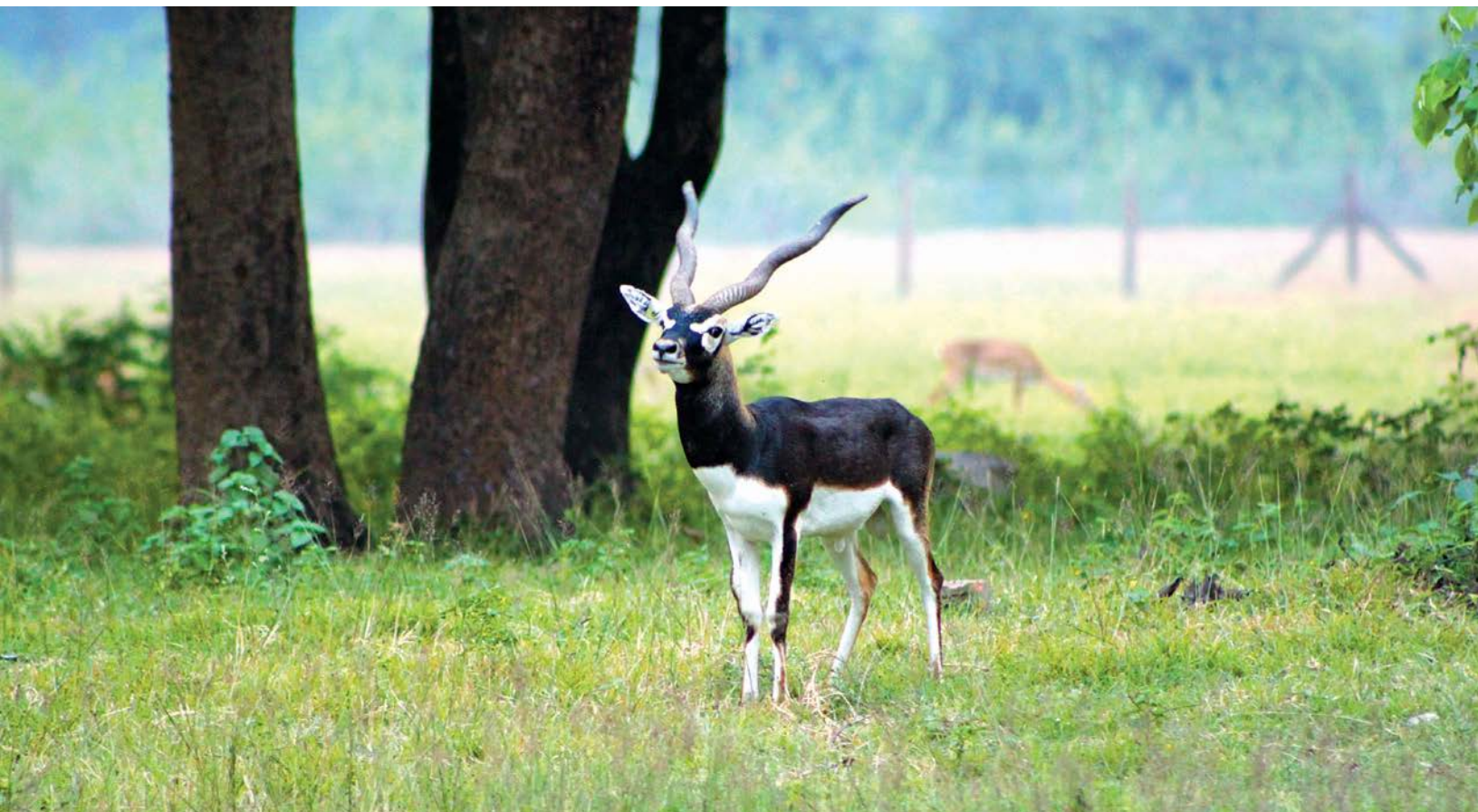
1. Develop and implement mechanism to grow and sustain the fund
2. Foster coordination and collaboration with potential conservation partners for resource leverage

*Output 4.1 Financial resources for blackbuck conservation in SWR ensured*

##### **Activities**

- Explore funding opportunities through local government line agencies

- Seek funding opportunities with the private sector, based on saving an eye-catching and easily visible species from extinction in Nepal; 'adopt a blackbuck population'
- Seek funding opportunities with potential national and international donors
- Secure government funding by mainstreaming the action plan into the regular plan and program of SWR
- Identify relevant institutions and develop mechanisms for effective collaboration
- Disseminate learning and the story of the reintroduction more widely
- Develop proposals jointly with conservation partners to raise sufficient funds for the implementation of the action plan
- Create emergency fund for crisis management



# 4



## **MONITORING PLAN LOGICAL FRAMEWORK**



**Table 3: Logical framework**

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Goal: Re-establish free roaming wild population of blackbuck in SWR</b>	Number of self sustaining individuals thriving in the area	Regular monitoring report	No large-scale calamities and epidemics occur that the population cannot be recovered
	Broader genetic base and adaptable population	Restocking report, health status report, population size	Secured funding
<b>Objective 1: Manage blackbuck population for long term viability in SWR</b>	Area allocated for blackbuck	Total area of enclosed habitat	Secured funding
	Number of wild population restocked	Periodic reports	
	Number of new generation (growth rate)	Regular monitoring reports	
	Regular veterinary services	Restocking report, health status report	
	Decrease in number of open grazing livestock	CBAPU activity log	
	Number of killing incidences	Regular monitoring reports	
	Number of CBAPU mobilized		
<b>Outputs</b>			
<b>Output 1.1:</b> Adequate spaces for reintroduced blackbuck provided	Habitat allocated for the species	Area under enclosure	Secured funding
<b>Activities</b>			
<i>Activity 1: Extend current 17 ha of enclosure to at least 40 ha</i>			
<i>Activity 2: Undertake regular research and monitoring</i>			
<i>Activity 3: Increase genetic diversity by seeking possibility of reintroducing wild individuals from elsewhere in the region</i>			
<i>Activity 4: Protect the blackbuck habitat from damaging human activities</i>			

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Output 1.2:</b> Research and monitoring undertaken to support management	Knowledge produced Management interventions carried out based on the findings of the research Strengthened capacity of institutions on blackbuck conservation	Monitoring reports Database and generated reports Reports	Secured funding
<b>Activities</b>			
<i>Activity 1: Conduct regular monitoring of blackbuck population</i>			
<i>Activity 2: Establish and maintain database on population and habitat</i>			
<i>Activity 3: Carry out genetic study of wild and reintroduced population</i>			
<i>Activity 4: Conduct comparative study on ecology and behavior of blackbuck of BCA and SWR</i>			
<i>Activity 5: Seek opportunities to introduce additional animals from different source populations</i>			
<i>Activity 6: Build institutional capacity for blackbuck conservation</i>			
<b>Output 1.3:</b> Health of blackbuck maintained	Healthy new generations of the species Veterinary services provided Reduced in number of death due to diseases	Number of new births and survival rate Veterinary service report Veterinary service report	No-large-scale calamities and epidemics occur Secured funding
<b>Activities</b>			
<i>Activity 1: Establish veterinary facilities and provide regular veterinary services</i>			
<i>Activity 2: Carry out periodic disease surveillance and monitor health conditions</i>			
<i>Activity 3: Support regular vaccination of livestock in adjoining buffer zone</i>			

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Output 1.4:</b> Safety of reintroduced blackbuck population ensured	Reduced number of killing incidences Regular monitoring carried out by strengthened CBAPU	CBAPU activity log, SWR patrolling log Number of cases filed in SWR	Secured funding
<b>Activities</b>			
<i>Activity 1: Undertake review of blackbuck antipoaching activities, identify gaps and issues, and harmonize with SWR management plan; prepare to adapt anti-poaching for blackbuck release</i>			
<i>Activity 2: Undertake regular monitoring and maintenance of predator proof fence</i>			
<i>Activity 3: Establish watch tower for surveillance</i>			
<i>Activity 4: Form, strengthen and mobilize community based anti-poaching units (CBAPUs) in the BZ villages</i>			
<i>Activity 5: Equip the anti-poaching units with the field gears and basic equipment (e.g. GPS, camera, etc.)</i>			
<i>Activity 6: Maintain locally-based management team for the blackbuck conservation</i>			
<i>Activity 7: Control stray dog population through sterilization of female dogs</i>			
<b>Output 1.5:</b> Risk of climate induced hazards to blackbuck population reduced	Vulnerability factors identified and incorporated in the management interventions Adaptation capacity of local communities strengthened	Vulnerability mapping report Prepared adaptation plan	No-large-scale calamities; Secured funding
<b>Activities</b>			
<i>Activity 1: Undertake climate vulnerability assessment for blackbuck and for SWR</i>			
<i>Activity 2: Identify feasible actions for resilience building and climate adaptation</i>			
<i>Activity 3: Develop early warning systems and contingency disaster plans as needed</i>			
<i>Activity 4: Provide shade in the expanded enclosure</i>			
<i>Activity 5: Monitor changes in weather patterns and the effects of climate change, and adapt management practices as needed</i>			
<i>Activity 6: Develop local capacity to address climate change issues</i>			

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Objective 2: Manage habitat in SWR to support blackbuck population in the long term</b>	Monitoring protocol and monitoring mechanism Database on population and habitat	Report generated from database, study reports (genetic study and nutritional ecology study)	No-large-scale calamities; Secured funding
<b>Outputs</b>			
<b>Output 2.1:</b> Availability of quality food ensured throughout the year	Habitat with good availability of food/ forage Availability of water throughout the year Health of individual blackbuck	Study reports	Secured funding
<b>Activities</b>			
<i>Activity 1: Maintain short grassland through regular cutting, controlled burning and grazing</i>			
<i>Activity 2: Create plantation of blackbuck preferred tree and shrub species</i>			
<i>Activity 3: Provide drinking water throughout the year</i>			
<i>Activity 4: Provide irrigation during the hot dry season to promote grass growth</i>			
<i>Activity 5: Provide supplementary feed during stress period</i>			
<b>Output 2.2:</b> Habitat conditions regularly studied and monitored	Increased percentage in food availability, reduction in area coverage by invasive plant species Reduced impact of climate change in habitat and food availability	Number of invasive species identified Number of rescued animals	Secured funding
<b>Activities</b>			
<i>Activity 1: Engage university graduates to undertake studies on habitat condition inside the enclosure</i>			
<i>Activity 2: Provide feedback to SWR management to improve habitat quality based on research results</i>			
<i>Activity 3: Document all invasive alien species and their impact on food availability</i>			
<i>Activity 4: Document all likely impacts of climate change on habitat and food availability, especially floral composition</i>			
<i>Activity 5: Provide recommendations for sound habitat management</i>			

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Objective 3: Strengthen community engagement for blackbuck conservation</b>	Community perception towards blackbuck conservation	Number of CBAPU formed and mobilized	Secured funding
	Increased percentage of community participation on blackbuck conservation	Number of local institutions involved in blackbuck conservation (buffer zone users committees, buffer zone user groups, buffer zone community forest users groups)	
<b>Outputs</b>			
Output 3.1: Local stewardship on blackbuck conservation developed	Community engagement in conservation works; number of individuals participated on conservation awareness activities; number of CBAPU formed and mobilized	Attendance sheet	Increased willingness of local people's participation
<b>Activities</b>			
		Percentage decrease in open grazing	Secured funding
<i>Activity 1: Conduct blackbuck conservation awareness activities (radio program, workshop, blackbuck festival, etc.)</i>			
<i>Activity 2: Promote community based tourism in the nearby village</i>			
<i>Activity 3: Support community to mitigate potential human blackbuck conflict</i>			
<i>Activity 4: Support alternative livelihood options</i>			
<i>Activity 5: Promote stall feeding and discourage livestock grazing within the SWR, to reduce grazing pressure and disease risk</i>			
<i>Activity 6: Promote artificial insemination to enhance value of livestock and reduce number of unproductive breed animals</i>			
<i>Activity 7: Promote alternative energy (e.g. biogas, improved cooking stoves)</i>			
Output 3.2: Community livelihood improved through alternative livelihood options	Community engaged in various livelihood options The site established as one of the potential eco-tourism site	Number of HHs engaged in alternative livelihood options Number of visitors; number of HHs involved in home stay	Secured funding Increased willingness of local people's involvement

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
<b>Activities</b>			
<i>Activity 1: Promote diversified off-farm opportunities through skill-based training, and on-farm support</i>			
<i>Activity 2: Promote community based tourism (home stay) in neighboring Simalphanta village</i>			
<i>Activity 3: Train community members in nature guiding, cooking, hospitality and house management</i>			
Objective 4: Establish sustainable financing mechanism	Secured financial sources	Financial reports	Secured funding
	Donors commitment for the conservation of blackbuck in SWR	Reports	
<b>Outputs</b>			
<b>Output 4.1:</b> Financial resources for blackbuck conservation in SWR ensured	Conservation fund received by the conservation partners and national and international donors	Donor agreement, financial and technical reports	Secured funding
	Number of activities of action plan implemented and achievement made	Annual plan/budget of SWR	Secured funding, government commitment for the conservation of blackbuck
	Activities of the action plan incorporated in annual plan/budget of SWR		
<b>Activities</b>			
<i>Activity 1: Explore funding opportunities through local government line agencies</i>			
<i>Activity 2: Seek funding opportunities with the private sector, based on saving an eye-catching and easily visible species from extinction in Nepal; 'adopt a blackbuck population'</i>			
<i>Activity 3: Seek funding opportunities with potential national and international donors</i>			
<i>Activity 4: Secure government funding by mainstreaming the action plan into the regular plan and program of SWR</i>			
<i>Activity 5: Identify relevant institutions and develop mechanisms for effective collaboration</i>			
<i>Activity 6: Disseminate learning and the story of the reintroduction more widely</i>			
<i>Activity 7: Develop proposals jointly with conservation partners to raise sufficient funds for the implementation of the action plan</i>			
<i>Activity 8: Create emergency fund for crisis management</i>			



## IMPLEMENTATION

DNPWC will take a lead role in coordinating the overall implementation of the action plan. The key roles are to support, facilitate and identify priority research, conservation, recovery and monitoring projects and seek financial and technical support for the implementation.

SWR will be responsible for the overall implementation of this action plan. Chief Conservation Officer will serve as a focal person and Assistant Conservation Officer stationed at Arjuni sector will serve as project manager.

Communities will play important role to minimize the potential risk of poaching. Community will

also play important to address human blackbuck conflict to be occurred after the animals are released from the enclosure.

Conservation partners (e.g. NTNC, World Wildlife Fund (WWF), Zoological Society (ZSL) of London, USAID funded Hariyo Ban Program during its lifetime) will continue to support the implementation of the action plan financially and technically.

Research and academic institutions will collaborate with SWR to conduct and disseminate research and monitoring related to blackbuck translocation, status, and other areas mentioned in this plan.

## 5.1 Human resources

Department of National Parks and Wildlife Conservation (DNPWC), Shuklaphanta Wildlife Reserve (SWR), National Trust for Nature Conservation (NTNC) and other conservation partners will make every effort to mobilize existing human resources for the implementation of this action plan.

## 5.2 Monitoring and evaluation

DNPWC will monitor and evaluate the implementation of the action plan. Mid-term review will be conducted during the third year of implementation. Final review and updating of the plan will be done during the 5<sup>th</sup> year of implementation so that the new revised/ updated conservation action plan will be approved and ready to start by the end of this plan period.

Staffing	DNPWC/SWR	NTNC
<i>Existing</i>	<ul style="list-style-type: none"> <li>• Project Manager/Chief Conservation Officer</li> <li>• One Game Scout</li> </ul>	<ul style="list-style-type: none"> <li>• Project Coordinator/Office In-charge, Shuklaphanta Conservation Program (SCP)</li> <li>• Two Junior Wildlife Technicians</li> </ul>
<i>Proposed</i>	<ul style="list-style-type: none"> <li>• Chief Conservation Officer – focal person</li> <li>• Assistant Conservation Officer – project manager</li> <li>• One Veterinary Assistant</li> <li>• Two Game Scouts</li> </ul>	<ul style="list-style-type: none"> <li>• Project Coordinator/Office In-charge, SCP</li> <li>• One Natural Resource Conservation Assistant</li> <li>• One Community Mobilizer</li> <li>• Two Junior Wildlife Technicians</li> </ul>





# BUDGET PLAN

# 6

## 6.1 Summary of the budget

**Table 4: Summary of the estimated budget in NPR, 000**

Objectives and Activities	Estimated Cost (NPR in ,000)					Total
	Year I	Year II	Year III	Year IV	Year V	
<b>Goal: Re-establish free roaming wild population of blackbuck in SWR</b>						
<b>Objective 1: Manage blackbuck population for long term viability in SWR</b>						
Output 1.1: Adequate spaces for reintroduced blackbuck provided	3,800	4,000	1,250	100	300	9,450
Output 1.2: Research and monitoring undertaken to support management	480	980	500	400	300	2,660
Output 1.3: Health of blackbuck maintained	300	670	350	225	400	1,945
Output 1.4: Safety of reintroduced blackbuck population ensured	560	975	805	870	1,270	4,480
Output 1.5: Risk of climate induced hazards to blackbuck population reduced	200	900	200	500	-	1,800
<b>Subtotal of Objective 1</b>	<b>5,340</b>	<b>7,525</b>	<b>3,105</b>	<b>2,095</b>	<b>2,270</b>	<b>20,335</b>
<b>Objective 2: Manage habitat in SWR to support blackbuck population in the long term</b>						
Output 2.1: Availability of quality food ensured throughout the year	1,210	1,685	1,320	1,170	1,170	6,555
Output 2.2: Habitat conditions regularly studied and monitored	115	25	265	25	315	745
<b>Subtotal of Objective 2</b>	<b>1,325</b>	<b>1,710</b>	<b>1,585</b>	<b>1,195</b>	<b>1,485</b>	<b>7,300</b>
<b>Objective 3: Strengthen community engagement for blackbuck conservation</b>						
Output 3.1: Local stewardship on blackbuck conservation developed	725	1,925	1,200	1,350	1,050	6,250
Output 3.2: Community livelihood improved through alternative livelihood options	300	1,650	900	300	200	3,350
<b>Subtotal of Objective 3</b>	<b>1,025</b>	<b>3,575</b>	<b>2,100</b>	<b>1,650</b>	<b>1,250</b>	<b>9,600</b>
<b>Objective 4: Establish sustainable financing mechanism</b>						
Output 4.1: Financial resources for blackbuck conservation in SWR ensured	75	525	325	975	975	2,875
<b>Subtotal of Objective 4</b>	<b>75</b>	<b>525</b>	<b>325</b>	<b>975</b>	<b>975</b>	<b>2,875</b>
Total Program Cost (A)	7,765	13,335	7,115	5,915	5,980	40,110
Administrative Cost (B)	2,290	2,527	2,798	3,082	3,440	14,137
<b>GRAND TOTAL (A+B)</b>	<b>10,055</b>	<b>15,862</b>	<b>9,913</b>	<b>8,997</b>	<b>9,420</b>	<b>54,247</b>

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# ANNEXES

## Annex 1: Detailed budget

Objectives and Activities	Estimated Cost (NPR in ,000)					Total
	Year I	Year II	Year III	Year IV	Year V	
<b>Goal: Re-establish free roaming wild population of blackbuck in SWR</b>						
<b>Objective 1: Manage blackbuck population for long term viability in SWR</b>						
<b>Outputs</b>						
<b>Output 1.1:</b> Adequate spaces for reintroduced blackbuck provided	3,800	4,000	1,250	100	300	9,450
<b>Activities</b>						
Activity 1: Extend current 17 ha of enclosure to at least 40 ha	3,600	3,600	-	-	-	7,200
Activity 2: Undertake regular research and monitoring	200	-	250	-	300	750
Activity 3: Increase genetic diversity by seeking possibility of reintroducing wild individuals from elsewhere in the region	-	350	1,000	-	-	1,350
Activity 4: Protect the blackbuck habitat from damaging human activities	50	50	100	100	150	150
<b>Output 1.2:</b> Research and monitoring undertaken to support management	480	980	500	400	300	2,660
Activity 1: Conduct regular monitoring of blackbuck population	100	100	150	150	200	700
Activity 2: Establish and maintain database on population and habitat	50	50	50	50	100	300
Activity 3: Carry out genetic study of wild and reintroduced population	-	750	-	-	-	750
Activity 4: Conduct comparative study on ecology and behavior of blackbuck of BCA and SWR	80	80	-	-	-	160
Activity 5: Seek opportunities to introduce additional animals from different source populations	-	-	-	200	-	200
Activity 6: Build institutional capacity for blackbuck conservation	250	-	300	-	-	550
<b>Output 1.3:</b> Health of blackbuck maintained	300	670	350	225	400	1,945
<b>Activities</b>						
Activity 1: Establish veterinary facilities and provide regular veterinary services	-	500	-	-	-	500
Activity 2: Carry out periodic disease surveillance and monitor health conditions	150	-	150	-	150	450
Activity 3: Support regular vaccination of livestock in adjoining buffer zone	150	170	200	225	250	995
<b>Output 1.4:</b> Safety of reintroduced blackbuck population ensured	560	975	805	870	1,270	4,480
<b>Activities</b>						
Activity 1: Undertake review of blackbuck antipoaching activities, identify gaps and issues, and harmonize with SWR management plan; prepare to adapt anti-poaching for blackbuck release	50	-	50	-	50	150

Objectives and Activities	Estimated Cost (NPR in ,000)					Total
	Year I	Year II	Year III	Year IV	Year V	
Activity 2: Undertake regular monitoring and maintenance of predator proof fence	25	50	75	100	300	550
Activity 3: Establish watch tower for surveillance	-	350	-	-	-	350
Activity 4: Form, strengthen and mobilize community based anti-poaching units (CBAPUs) in the BZ villages	60	90	120	150	170	590
Activity 5: Equip the anti-poaching units with the field gears and basic equipment (e.g. GPS, camera, etc.)	50	60	70	80	100	360
Activity 6: Maintain locally-based management team for the blackbuck conservation	350	400	450	500	600	2,300
Activity 7: Control stray dog population through sterilization of female dogs	25	25	40	40	50	180
<b>Output 1.5:</b> Risk of climate induced hazards to blackbuck population reduced	200	900	200	500	-	1,800
<b>Activities</b>						
Activity 1: Undertake climate vulnerability assessment for blackbuck and for SWR	125	-	-	-	-	125
Activity 2: Identify feasible actions for resilience building and climate adaptation	75	-	-	-	-	75
Activity 3: Develop early warning systems and contingency disaster plans as needed	-	100	200	-	-	300
Activity 4: Provide shade in the expanded enclosure	-	250	-	-	-	250
Activity 5: Monitor changes in weather patterns and the effects of climate change, and adapt management practices as needed	-	50	-	-	-	50
Activity 6: Develop local capacity to address climate change issues	-	500	-	500	-	1,000
<b>Subtotal of Objective 1</b>	<b>5,340</b>	<b>7,525</b>	<b>3,105</b>	<b>2,095</b>	<b>2,270</b>	<b>20,335</b>
<b>Objective 2: Manage habitat in SWR to support blackbuck population in the long term</b>						
<b>Outputs</b>						
<b>Output 2.1:</b> Availability of quality food ensured throughout the year	1,210	1,685	1,320	1,170	1,170	6,555
<b>Activities</b>						
Activity 1: Maintain short grassland through regular cutting, controlled burning and grazing	850	850	950	950	950	4,550
Activity 2: Create plantation of blackbuck preferred tree and shrub species	150	-	150	-	-	300
Activity 3: Provide drinking water throughout the year	50	50	50	50	50	250
Activity 4: Provide irrigation during the hot dry season to promote grass growth	75	700	75	75	75	1,000
Activity 5: Provide supplementary feed during stress period	85	85	95	95	95	455

Objectives and Activities	Estimated Cost (NPR in ,000)					Total
	Year I	Year II	Year III	Year IV	Year V	
<b>Output 2.2:</b> Habitat conditions regularly studied and monitored	115	25	265	25	315	745
<b>Activities</b>						
Activity 1: Engage university graduates to undertake studies on habitat condition inside the enclosure	40	-	40	-	40	120
Activity 2: Provide feedback to SWR management to improve habitat quality based on research results	25	25	25	25	25	125
Activity 3: Document all invasive alien species and their impact on food availability	50	-	50	-	50	150
Activity 4: Document all likely impacts of climate change on habitat and food availability, especially floral composition	-	-	150	-	-	150
Activity 5: Provide recommendations for sound habitat management	-	-	-	-	200	200
<b>Subtotal of Objective 2</b>	<b>1,325</b>	<b>1,710</b>	<b>1,585</b>	<b>1,195</b>	<b>1,485</b>	<b>7,225</b>
<b>Objective 3: Strengthen community engagement for blackbuck conservation</b>						
<b>Outputs</b>						
<b>Output 3.1:</b> Local stewardship on blackbuck conservation developed	725	1,925	1,200	1,350	1,050	6,250
<b>Activities</b>						
Activity 1: Conduct blackbuck conservation awareness activities (radio program, workshop, blackbuck festival, etc.)	150	200	250	300	350	1,250
Activity 2: Promote community based tourism in the nearby village	-	800	-	150	-	950
Activity 3: Support community to mitigate potential human blackbuck conflict	25	25	50	50	50	200
Activity 4: Support alternative livelihood options	-	250	250	300	300	1,100
Activity 5: Promote stall feeding and discourage livestock grazing within the SWR, to reduce grazing pressure and disease risk	250	250	250	250	250	1,250
Activity 6: Promote artificial insemination to enhance value of livestock and reduce number of unproductive breed animals	100	100	100	100	-	400
Activity 7: Promote alternative energy (e.g. biogas, improved cooking stoves)	200	300	300	200	100	1,100
<b>Output 3.2:</b> Community livelihood improved through alternative livelihood options	300	1,650	900	300	200	3,350
<b>Activities</b>						
Activity 1: Promote diversified off-farm opportunities through skill-based training, and on-farm support	200	700	800	200	200	2,100
Activity 2: Promote community based tourism (home stay) in neighboring Simalphanta village	-	750	-	-	-	750
Activity 3: Train community members in nature guiding, cooking, hospitality and house management	100	200	100	100	-	500
<b>Subtotal of Objective 3</b>	<b>1,025</b>	<b>3,575</b>	<b>2,100</b>	<b>1,650</b>	<b>1,250</b>	<b>9,600</b>

Objectives and Activities	Estimated Cost (NPR in ,000)					Total
	Year I	Year II	Year III	Year IV	Year V	
<b>Objective 4: Establish sustainable financing mechanism</b>						
<b>Outputs</b>						
<b>Output 4.1:</b> Financial resources for blackbuck conservation in SWR ensured	75	525	325	975	975	2,875
<b>Activities</b>						
Activity 1: Explore funding opportunities through local government line agencies	50	50	50	50	50	250
Activity 2: Seek funding opportunities with the private sector, based on saving an eye-catching and easily visible species from extinction in Nepal; 'adopt a blackbuck population'	-	100	-	100	-	200
Activity 3: Seek funding opportunities with potential national and international donors	-	350	-	-	-	350
Activity 4: Secure government funding by mainstreaming the action plan into the regular plan and program of SWR	25	25	25	25	25	125
Activity 5: Identify relevant institutions and develop mechanisms for effective collaboration	-	-	-	-	-	-
Activity 6: Disseminate learning and the story of the reintroduction more widely	-	-	-	-	550	550
Activity 7: Develop proposals jointly with conservation partners to raise sufficient funds for the implementation of the action plan	-	-	250	-	350	600
Activity 8: Create emergency fund for crisis management	-	-	-	800	-	800
<b>Subtotal of Objective 4</b>	<b>75</b>	<b>525</b>	<b>325</b>	<b>975</b>	<b>975</b>	<b>2,875</b>
<b>Total Program Cost (A)</b>	<b>7,765</b>	<b>13,335</b>	<b>7,115</b>	<b>5,915</b>	<b>5,980</b>	<b>40,110</b>
<b>Administrative Cost (B)</b>						
Remuneration	2,015	2,217	2,438	2,682	2,950	12,302
Regular maintenance of the fence	125	135	145	175	225	805
Other direct cost	150	175	215	225	265	1,030
<b>Subtotal of Administrative Cost</b>	<b>2,290</b>	<b>2,527</b>	<b>2,798</b>	<b>3,082</b>	<b>3,440</b>	<b>14,137</b>
<b>GRAND TOTAL (A+B)</b>	<b>10,055</b>	<b>15,862</b>	<b>9,913</b>	<b>8,997</b>	<b>9,420</b>	<b>54,247</b>

## Annex 2: Detailed species description

The Indian blackbuck, *Antilope cervicapra* (Linn. 1758) is the only species in its genus, and belongs to the subfamily Antilopinae ('true antelopes') within the family Bovidae. This antelope is endemic to the Indian subcontinent. There are four sub-species – *Antilope cervicapra cervicapra*, *Antilope cervicapra rajputanae*, *Antilope cervicapra centralis* and *Antilope cervicapra rupicapra*. Blackbuck is regarded as the most graceful and majestic of all Asiatic antelopes (Saluja et al. 2012). The species is designated as near threatened (NT) as per the IUCN Red List of Threatened Species and also listed in CITES Appendix III (Nepal) (DNPWC 2012; Mallon 2008).

### Distribution

Blackbuck formerly occurred across almost all the Indian subcontinent. Its range decreased sharply during the 20<sup>th</sup> century; it is now extinct in Bangladesh and Pakistan, and in Nepal there is only a single small population of less than 300 individuals in the wild, where it is under constant threat of extinction. Attempted reintroductions have taken place in Nepal and Pakistan.

### Appearance

Blackbuck is one of the few antelope species that exhibit pronounced sexual dimorphism. The male is particularly attractive and gracefully built with a pair of divergent, spiraling horns, which are usually less than 50 cm long but can reach 79 cm. In the yearling buck the horns are straight; in the second year of life, a large open spiral develops. The full number of spiral twists is thought to be attained around the end of the third year, along with the dark coat. Females and juveniles are yellowish-fawn on the back and head, and are generally without horns. Both sexes have white under-parts, including the insides of the legs and lower chest, as well as a white ring surrounding the eye and a white chin. The name 'blackbuck' is a reference to the dark color of the males. The male gradually darkens with age, from tan to deep brown or black, beginning at two years of age. It has a slender build and short tail.

### Morphological features of blackbuck

Body length	100–150 cm
Shoulder height	60–85 cm
Tail length	10–17 cm
Horn length (male)	35–79 cm
Body weight	19.5–56.7 kg (male), 19–33 kg (female)
Coat color (male)	Dark head and back with white underside
Dark head and back with white underside	Yellow to fawn head and back with white underside

### Behavior and life history

Blackbuck is mainly diurnal, but sometimes nocturnal. It lives either in groups (single or mixed sex, numbering anywhere from 15 to several thousand animals) or as single animals at densities of 0.5–3 per hectare. In its native range, mating can occur throughout the year, but tends to be concentrated in two periods—March to May and August to October (Schaller 1967). During these times, the male becomes territorial and maintains a territory of between 1 and 100 ha. It marks its territory by depositing feces in selected areas. The male becomes extremely aggressive during the rut, driving all other males from the territory. Females are sexually mature at approximately 15 months. Gestation is 5–6 months and females produce an average of 1.9 offspring per year (normally a single offspring is born at a time (Crandall 1964), rarely two). Blackbuck fawns are born throughout the year, with a high birth rate (13 percent of the total) in the months of January–April. The young are able to run soon after birth and are weaned at around 2 months. Blackbuck can live up to 18 years in the wild.



## Habitat

Blackbuck prefer open grassland with intermittent tall grass or bushes (for delivery, fawn nursing and protection against predators as well as rain and wind). However, it can utilize a range of habitats including tropical and subtropical woodland, dry deciduous forest, open plains (grassland), riverbanks and semi-desert habitats; it also forages in crop land and pasture land.

## Food

Blackbuck is a diurnal feeder (Schaller 1967), and is mainly a grazer; browsing is rare (Ranjitsinh 1989). Its diet includes fresh tender leaves of browse species, soft grasses, crops, forbs, cereals, vegetables and leaves of shrubs and trees (Jhala 1997). It is reported to nibble mainly the young shoots of various cereal and pulse crops but damage is not great (Chauhan and Singh 1990). It prefers Dubo (*Cynodon dactylon*) and other grasses, forbs and tree species and supplements this diet with cereal crops when available. Females graze slightly longer than males throughout the year; males spend less time feeding, particularly in the rutting season (Saluja et al. 2012; Chattopadhyay and Bhattacharya 1986). The blackbuck is mainly sedentary, but in summer it may move long distances in search of water and forage. With extremely low intake of forage in summer due to lack of young grass at the end of dry season, the blackbuck faces a severe energy and protein deficit and mainly relies on body reserves; thus the body condition declines in early summer and improves in the monsoon and winter months (Jhala 1997). Blackbuck does not require water regularly, though water consumption becomes essential occasionally when moisture content of the forage is very low (Schaller 1967; Ranjitsinh 1989).

## Plant species preferred by blackbuck

Grasses, herbs, forbs	Trees
<i>Cynodon dactylon</i> , Dubo	Berries of <i>Zizyphus jujube</i>
<i>Vetiveria zizanioides</i> , Jove	Legumes of <i>Prosopis cineraria</i>
<i>Convolvulus numularis</i> , Thulo dudhiya	Leaves of <i>Acacia nilotica</i>
<i>Saccharum spontaneum</i> , Kans grass	Leaves of <i>Dalbergia sissoo</i>
<i>Sporobolus diander</i> , Jarakus	
<i>Imperata cylindrica</i> , Siru	
<i>Bothriochloa ischaemum</i> , Dubei bansoo	
<i>Cephalotus</i> spp., Motheri	
Agricultural crops as diet supplement	
Wheat ( <i>Triticum</i> spp.)	
Mustard ( <i>Brassica</i> spp.)	
Gram ( <i>Cicer</i> spp.)	
Lentil ( <i>Caganusja</i> , <i>Phaseolus</i> spp.)	
Corn ( <i>Zea mays</i> )	
Peanut ( <i>Arachis</i> spp.)	







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