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Research Article

CENSUS STUDY ON BLACK BUCKS *ANTILOPE CERVICAPRA* (L). IN HULLATHI SECTION OF RANEBENNUR WILDLIFE SANCTUARY (RWLS), RANEBENNUR, HAVERI DISTRICT, KARNATAKA

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ABSTRACT

Ranebennur Black Buck Sanctuary is located in Ranebennur Taluk of Haveri District, Karnataka, established for protection of Black bucks and other fauna and flora. The sanctuary is declared vide Government of Karnataka Notification No. AFD-58-PWL-74 dated 17-6-1974 with an area of 119Sq.Km. The Black buck *Antilope cervicapra* (Linnaeus, 1758) is a member of group of Bovidae native to India. The forest area of this Sanctuary is classified as "Southern Thorn Forest' as per Champion and Seth's classification in the year (1968), habitats of the sanctuary include scrub, dry deciduous and grassland type with sparse tree vegetation. In India (1982) the estimated populations of blackbucks range from 22,500 to 24,500, as per India Portal Report at the time of independence. The black buck population was estimated to be 80,000 presently; this species is declining in number all over its range in the country. During the field study, populations of black bucks are evaluated and any variation is discussed in this paper. The sanctuary is divided into Four Sections Viz Hullathi, Huniskatti, Hanumapura, and Alalgere. In Hullathi section the study area is divided into Hullathi, Kudrihala, Medleri beats. The sampling was made once on every month for a period of 1 year starting from June 2017 to May 2017 to know the variation in blackbuck density. About 1519 animals were cited in present study area. This Paper highlights the variation in black buck populations and discussed on conservation strategies for them.

Keywords: Black bucks census, Habitat structure, Conservation strategies, Ranebennur Black Buck Sanctuary.

INTRODUCTION

The *Antilope cervicapra* (L) is an ungulate species commonly called as Black buck. A most handsome of all Asiatic antelopes and member of Bovidae family are locally known as Krishna mryga or Chegare. *A. cervicapra* is one of the Key species of the grassland ecosystem. The Black buck is the only living species of the genus Antilope (Nowak, 1999). Its generic name stems from the Latin word Antelopus, a horned animal. The specific name *cervicapra* is composed of the Latin words *capra*, she goat and *cervu*s, deer.

The genus *Antilope* is only representative found in India and one of the most graceful and the fastest runner of all surviving species (70 Km/hr) (Mahato & Raziuddin, 2010). *A. cervicapra* (Linnaeus, 1758) is a group living animal native to India (Shambhulingappa *et al*., 2014). The conservation status of Black buck is listed in Red Data Book of IUCN (International Union for Conservation of Nature and Natural resources) as Vulnerable, under CITES (Convention on International trade for Endangered species of Wild flora and fauna). It is categorized in Appendix III and Schedule I of Wildlife (Protection) Act 1972.

Blackbuck and Great Indian Bustard are the theme species to Ranebennur blackbuck sanctuary. Black bucks are now limited to a few areas, like parts of Rajasthan and Gujarat where it is protected by religious sentiments. Great Indian bustard were not cited for the past few years due to change in habitat condition from Grassy to Woodland, GIB were reported till 1982 and disappeared then onwards or migrated towards arid lands of Bellary area. The other fauna and flora found in the sanctuary are distributed due to immense pressure of large scale poaching and destruction

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of their habitat including cultivation, cattle grazing, human habitation etc.

The Black bucks are also situated in few isolated pockets of Karnataka. Those studies include Tumkur-based Wildlife Aware Nature Club (WANC) conducted studies and initiated actions to declare a habitat in Tumkur as Jayamangali Blackbuck Conservation Reserve (Kumar & Zutshi, 2013) Melkote wildlife sanctuary which is also house for blackbucks. Due to intensive management and Protection of the area at Ranebennur, resulted in increase in Black buck's population year after year (Singh *et al*., 2011).

MATERIALS AND METHODS

Study area

Ranebennur blackbuck sanctuary is situated towards north-east of Pune-Bangalore National Highway No 4 at North east of Ranebennur. It is situated between 14°-34-00'' to 14°- 0-46 -00'' latitude North and between 75°-30-08'' to75°-47-21''longitude East. The topography of the Study area ranging from 531M to 762M above MSL and Temperature varies from 25°C in winter to, 40°C in the summer. March-April is the hottest months. Average rainfall is around 600-620 mm. The soil structure is "Gneisses" Shisty and Granite of Archean area and Deccan trap rocks of tertiary era, since area coming under Tungabhadra River Valley Project (RVP). The area of the Sanctuary is 119 Sq.kms. It is spread over in four sections those include, Hullathi, Huniskatti, Hanumapura, and Alalgere. Among these areas Hullathi and Huniskatti form a contiguous block and Hanumapura and Alalgeri are isolated. An area of 14.87 Sq.kms in Hullathi Block has been notified as "CORE AREA'' on 21-10-1982 from the (Table 1).

LINE TRANSECTS METHOD

Transect is a path along which one will enumerate and record the species. Line transects techniques for estimating animal density through direct counts is popular. Transects were placed in Hullathi Section, and it consists three beats namely Hullathi, Medleri, Kudrihala. For each beat 2 Km Transect line has been placed.

To estimate the population size or density of an animal in area is a fundamental requirement to understand its status and demography and to plan for its management and conservation. In spite of the development of sophisticated stastical methods of sampling of animal species (Burnham *et al*., 1980), both direct and indirect methods of estimating mammals densities in forest have been used (Barnes & Jensen, 1987; Karanth & Sunquist, 1992; Koster & Hart, 1988; Sale *et al*., 1990; Varman *et al*., 1995). Estimates based on indirect methods usually involve counting animal droppings, while direct methods use visual sightings .Line transect sampling is practical, efficient and relatively inexpensive for many biological population (Anderson, Laake, Crain, & Burnham, 1979; Burnham *et al*., 1980).

The surveyed for blackbucks and other animal was undertaken in Ranebennur Wildlife Sanctuary. Transect is made for blackbucks and other animals. Transect is made for each beat for a length of 2 Kms. The assistance of trained forest department watchers is sought in the census activity, the main aim was to count the Black bucks and to know the present Population density.

RESULTS AND DISCUSSIONS

The study in Hullathi, Kudrihala and Medleri beat revealed the total sightings of 1112 total animals in all the three beats of Ranebennur Black buck sanctuary. From the above three beats total transect length of 6 Kms, 203 Male adult, 657 Female adult, 126 Young males, 126 Young females and animals were sighted in 14.87 Sq.kms area in the Hullathi section of Ranebennur Black buck sanctuary (Table 2).

During the study period the animal numbers varied month wise .The present study revealed more number of Black bucks from (June to January) may be because, it was rainy and winter season, there was abundance of food and the habitat condition also congenial. Gradual decline in the number of density of Black bucks in the months (February to May) may be due to scarcity of food and water, during hot months and hence there was a less citation of animals. The period June to May revealed 1519 black bucks citations which includes a maximum numbers of animals, male adult n=190 (12.50%), female adult n=894 (58.85%).young male n=181 (11.91%), young female n=254 (16.72%) recorded respectively (Figure 1, 2, 3 and 4). Based on the study highest population was observed 335 Black bucks found in Hullathi Section from the (Table 3 and 4).

In the sanctuary area availability of food was abundant with artificial feeding grounds and waterholes in the sanctuary which was made by the Forest Department. Protection is improved and Poaching or hunting of Wild animals has come down as per the records available at range level. Sighting of animals and its population is increased as noticed in field visits. Hullathi section is chosen as a part of Core area and included in Tourism zone to sight the animal.

Table 1. Details about Hullathi section of Ranebennur Wildlife Sanctuary (RWLS).

Hullathi section	Hullathi	Kudrihala	Medleri
Forest Division	WL Sub-Division,	WL Sub-Division,	WL Sub-Division,
Forest Range	Ranebennur.	Ranebennur.	Ranebennur.
Route No	Ranebennur WL Range.	Ranebennur WL Range.	Ranebennur WL Range
Date	01	02	03
Starting Time	25/05/2017	26/05/2017	27/05/2017
Finishing Time	6.00 am	6.00 am	6.00 am
Elevation	8.00 am	8.15 am	8.20 am
Longitude	488.62 m-488.27 m	546 m-546 m	532 m-532 m
	E- 075º 39' 58.24''	N - 14º 41' 22.22''	N - 14º 39' 09.20''
Latitude	N- 14º 38' 58.05''	E- 75º 40' 04.29''	E- 75º 41' 43.07''
	E - 075º 39' 58.24''	N- 14º 41' 13.45''	N- 14º 40' 19.38''
	N - 14º 38' 58.05''	E- 75º 40' 51.17''	E - 75º 41' 47.59''
Vegetation Types (In	Scrub Forest	Scrub Forest	Scrub Forest
Percentage)	30%	Nil	5%
Grassland	65%	85%	85%
Scrub	Nil	15%	10%
Plantation	5%	Nil	Nil
Others (Specify)	(Eucalyptus Trees)		
Transect length in Meters	2000 m	2000 m	2000 m

Table 2. Estimation of Total Number of Black bucks found in Hullathi Section of Ranebennur Wildlife Sanctuary (RWLS) by Line Transect Method.

Hullathi Section	No. of Transect	Total length of Transect	Mean distance of sighted (In Km)	Animal Sighted					Density per Sq. Km
				Male Adult	Female Adult	Young		Total	
						Male	Total		
Hullatti, Kudrihala, Medleri	3	06 Km	0.098	16	52	10	10	88	74.829

Male	203
Female	657
Young once	252
Total	1112

Density = $\frac{n}{l \times 2 \times (x)}$

Where: n- Animals

I – Transect length

(x)- Perpendicular

Mean distance of sighting.

Table 3. Monthly citations of black bucks in Hullathi section Ranebennur black buck sanctuary.

Months	Male	Percentage of male	Female	Percentage of female	Young Male	Percentage of young male	Young Female	Percentage of young male	Total
June	24	9.30%	190	73.64%	20	7.75%	24	9.30%	258
July	40	12.50%	175	54.68%	40	12.50%	65	20.31%	320
August	38	15.70%	140	57.85%	29	11.98%	35	14.46%	242
September	16	12.69%	80	63.49%	20	7.93%	20	15.87%	126
October	12	10.16%	65	55.08%	19	16.10%	22	18.64%	118
November	10	12.19%	45	54.87%	11	13.41%	16	19.51%	82
December	16	20.25%	30	37.97%	15	18.98%	18	22.78%	79
January	10	13.69%	40	54.79%	9	12.32%	14	19.17%	73
February	6	10.71%	41	73.21%	5	8.92%	4	7.14%	56
March	9	16.98%	36	67.92%	-	-	8	15.09%	53
April	5	9.80%	22	43.13%	14	27.45%	10	19.60%	51
May	4	6.55%	30	49.18%	9	14.75%	18	29.50%	61
Total	190	12.50%	894	58.85%	181	11.91%	254	16.72%	1519

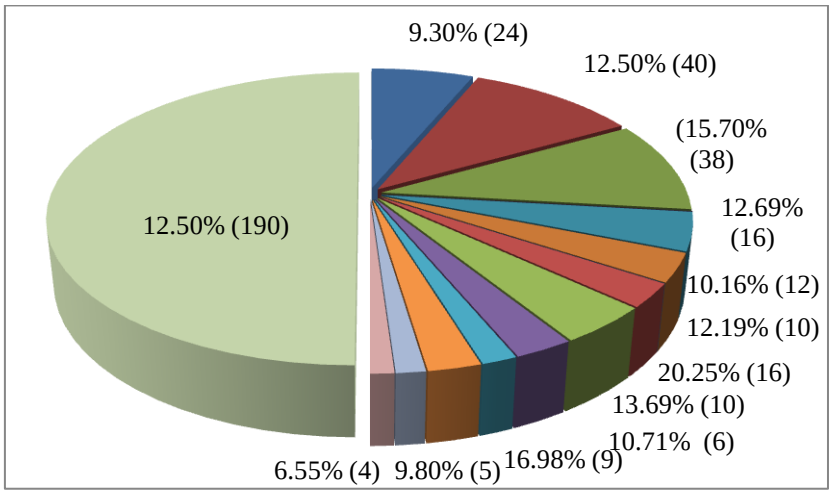

Figure 1. Total No of Males and its Percentage.

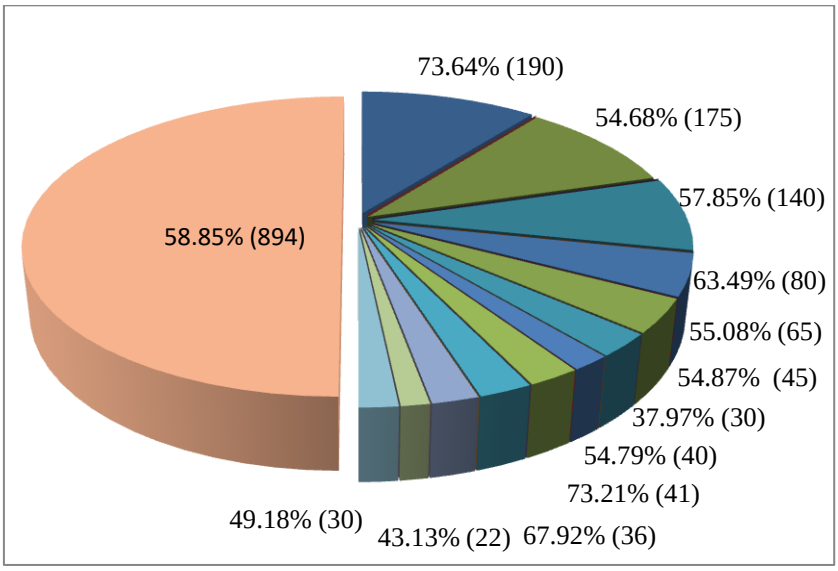

Figure 2. Total No of Females and its Percentage.

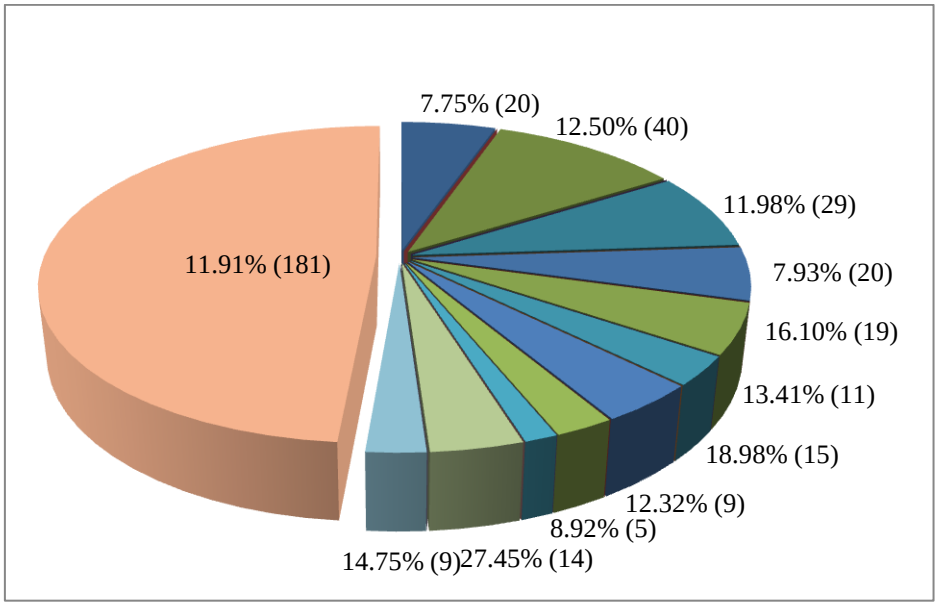

Figure 3. Total No of Young males and its Percentage.

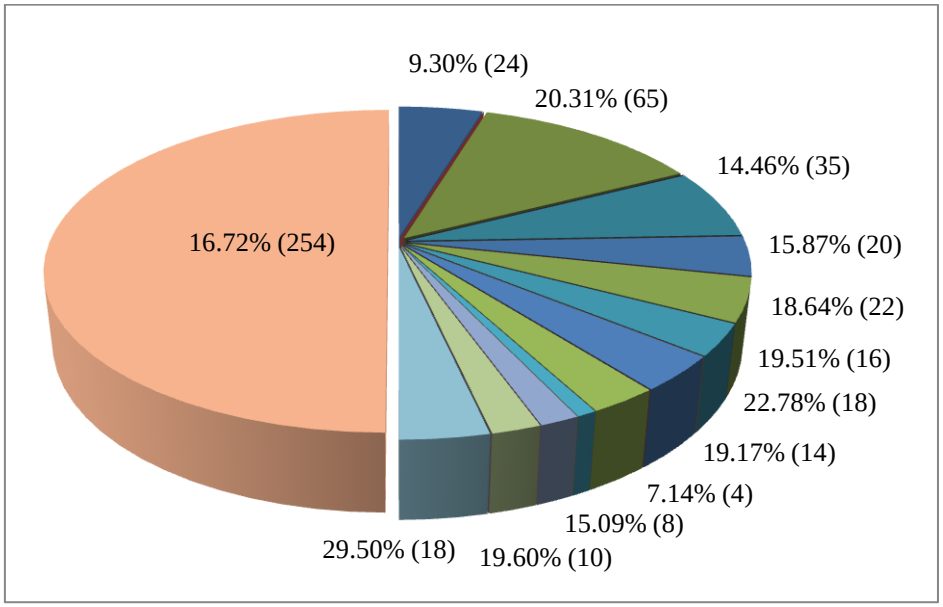

Figure 4. Total No of Young Females and its Percentage**.**

Table 4. Total Black buck Population in Hullathi Section of Ranebennur Black buck Sanctuary.

Animals	Numbers
Male	190
Female	40
Young male	65
Young female	40
Total	335

CONCLUSION

Based on the hitherto study on Ranebennur Black buck Sanctuary it revealed that there is a need of more protection in terms of habitat and the key species conservation. Black bucks are one of the key species in the sanctuary slightly increasing year after year; the original forest of this area was classified as Southern thorn forest. The forest cover is very less and of stunted growth, only thorny bushes and artificially planted Eucalyptus (*Eucalyptus citriadra*), Neem (*Azadirachta indica*), Jali (*Acacia nilotica*) and other fruit plants etc., were present in the forest, and grasses like Cenchrus Species and Stylozanthus species occupied as the ground cover. But due to scarcity of food, disturbance of human settlement around the sanctuary made them to move to the adjacent areas in search of food and shelter. Great Indian Bustard is another important key species of the areas which is not sighted since 1998 onwards may be due to habitat loss. Restoration of blackbuck habitat and creating artificial feeding grounds and waterholes in the sanctuary fodder crops like Hurule (*Macrotyloma uniflorum*), Navani (*Setaria italica*), Bajra (*Pennisetum glaucum*), and Hemata (*Stylosanthes hamata*) etc may improve conditions of the sanctuary. The major portion of the sanctuary is covered with Eucalyptus plantation, which is of no use for fodder purpose for black buck and GIB as well. Hence it is to be replaced by other fruit and fodder species .Sanctuary is the only forest area available to meet the diverse needs for local population. So people should need to gain the confidence about awareness and importance of wild life conservation. Now a day's crop raiding is becoming major problem for local public, it leads to human-animal conflict in the area. So strictly electric fencing needs to be placed around the sanctuary.

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