

ANTELOPES AND GAZELLES : DISTRIBUTION AND POPULATION STATUS IN GUJARAT, INDIA

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Introduction

Gujarat in the Western part of India has diverse climatic and geo-morphological conditions. As per Rodgers and Panwar (1989) classification, the State has four bio-geographic zones, out of ten in the country. Fauna of the western part of the country, including Gujarat has similarity with animals belonging to Ethiopian and Palaearctic Realms, but animals of Oriental Realm also occur in Gujarat State. Major part of the Gujarat falls in semi-arid to arid region, which is considered as an important ecological zone for majority of Antelopes like Blackbuck, Chinkara and Bluebull. Saurashtra, Kutch and North Gujarat fall in this category where concentration of the Antelopes is very high. Forests in the hills of South Gujarat are not suitable habitat for Blackbuck, Chinkara and Bluebull, however these forested hills provide the ideal home for Fourhorned Antelope.

The Western part of India has always had a large variety of wildlife, because of its unique geographical location and divergent climatic conditions. The spectrum of diversity ranges from extensive scrubland and savannah like forests in Saurashtra with variety of Cats, Deer and Antelopes juxtaposed with the refreshing tropical greenery of South Gujarat and South-East part of the State. The vast

expanse of the unique and fascinating deserts of the Rann of Kutch, the extensive grassland and desert margin lend charm and wonder to this bountiful land.

Antelopes and Gazelles bear characters of the oxen, sheep and goats, but they can not be classified into either of them. They form other sub-divisions of the family Bovidae. In general structure, Antelopes and Gazelles resemble other members of Bovidae. Antelopes are elegant in build and they have a gland under the eye, a character in which they differ from the oxen and goats. Of Indian species of Antelopes and Gazelles, the Tibetan Antelope (Chiru) and the Tibetan Gazelle inhabit the Tibetan plateau. Remaining four species i.e. Blackbuck, Chinkara (Indian Gazelle), Bluebull and Fourhorned Antelope, belonging to sub-family Antilopinae, are found in Indian subcontinent, including Gujarat. Constant persecution by man has sadly reduced their number, and the vast herds, which once roamed the plains and lower hills of North and West India, where Antelopes thrive best, are now no more (Prater, 1971). But some of the species have started recovering as a result of conservation measures adopted during last two decades. This paper discusses status, extent of distribution, population trend and habitat status of four species of Antelopes that occur in Gujarat State.

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Methods

Data for this paper has been collected from different sources, including wildlife census reports of Forest Department. Gujarat Ecological Education and Research (GEER) Foundation has conducted studies in Blackbuck National Park, Velavadar, Wild Ass Sanctuary in Little Rann, Great Rann Wildlife Sanctuary, Narayan Sarovar Sanctuary, Hingolghadh Nature Education Sanctuary, Rampara Wildlife Sanctuary, Ratanmahal Wildlife Sanctuary and Vansda National Park. Population dynamics and status of mammals, including those of Antelopes were studied by the GEER Foundation. Forest Department has conducted wildlife counting in the years 1999 and 2000 in majority of the protected as well as other areas. Author made extensive field visits in the above-mentioned areas for collecting first hand information. Old records of Forest Department and previous studies conducted in different areas were reviewed to derive meaningful results.

Results and Discussion

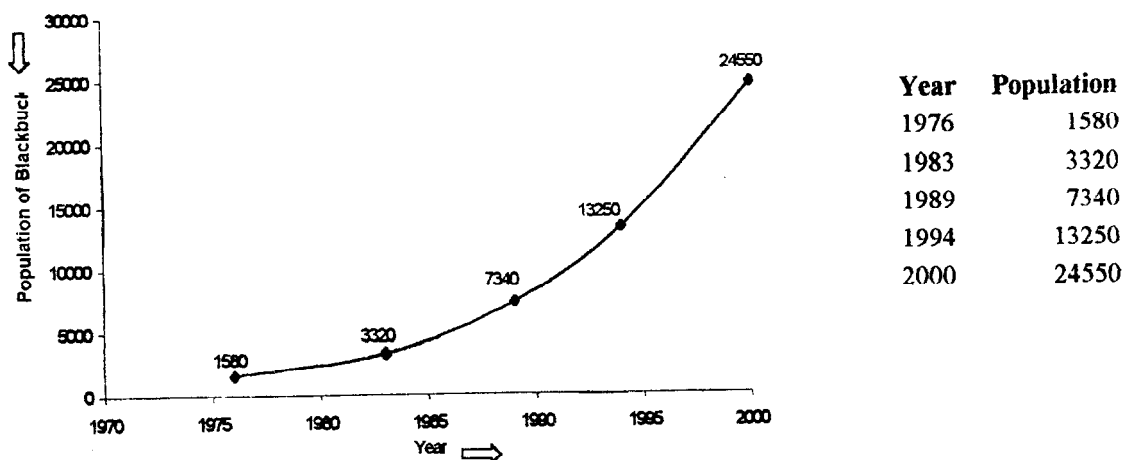
Socio-religious values prevailing in the society of Gujarat have played a crucial role in wildlife protection. Although majority of forests are located in South and South-East of Gujarat, most of wildlife disappeared or has been reduced to the verge of extinction due to hunting and food gathering practice by the tribals. Situation is different in Saurashtra and Kutch, where majority of the people are vegetarian and some communities protect wildlife zealously on religious grounds. Spread of Jainism has also contributed to the protection of animals. This is the main reason for thriving of three Antelopes - Blackbuck, Bluebull and Chinkara in this

region, whereas Fourhorned Antelope in forested region of Gujarat is on the verge of extinction.

Blackbuck [(*Antelope cervicapra*) (Pallas, 1766)] : Blackbuck is truly representative of India, having evolved in this subcontinent and is found only in India and on Indo-Nepal border. It was introduced in Texas (America) where population increased many folds. Ranjitsinhji (1989) mentioned that this Antelope was numerous in entire North, North-West and Deccan plateau at the beginning of the 20th century. Unrestricted hunting reduced population of this Antelope in restricted areas. As per an estimate in 1980s, about 43,500 animals were surviving in 8 States viz. Gujarat, Rajasthan, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Karnataka, Maharashtra, Tamil Nadu, Orissa and Andhra Pradesh (Singh and Rana, 1995). Ranjitsinhji in 1982 made an independent estimate of about 22,500 to 24,500 individuals of Blackbuck in India.

Blackbuck was found throughout Gujarat, except in hilly forested areas. They prefer short grass tracts and areas where agricultural crops are of a low height. They prefer to move out when average grass height exceeds 70 cm. Gazetteer of Broach (Anon., 1961) mentioned that they were found in plains of South Gujarat. There were about 80,000 Blackbuck at the time of independence in the Saurashtra peninsula (Ranjitsinhji, 1989). Saurashtra, North Gujarat and Central Gujarat had concentrated population in the past, but hunting and destruction of habitat reduced it to restricted pockets in Bhavnagar, Junagadh, Amreli, Surendranagar and Mehsana District by the 1970s.

Fig. 1



Population growth of Blackbuck in Gujarat State

Forest Department conducted first census of Blackbuck in 1976 and estimated a population of about 1,580 individuals. A protection measure was initiated in the same year by declaring grassland in Velavadar as Blackbuck National Park. Second official counting in 1983 reported a figure of about 3,320 Blackbucks in the State. Ban on hunting after listing the animal in Schedule I of Wildlife (Protection) Act, 1972 and protection provided by people contributed to the growth of population. Third census in 1989 revealed that the number of Blackbuck increased more than two folds in five to six years. In third census, Forest Department counted 7,340 Blackbucks in eight districts (Singh and Rana, 1995). The fourth counting of the animal was done in December 1994 and reported a further increased population of 13,250 individuals of Blackbuck in nine districts. Amreli (3,950), Bhavnagar (3,360), Mehsana (2,420), Junagadh (1,200), Surendranagar (1,150) and Ahmedabad (850) had maximum population in the

State. During this census, 31 white Blackbucks were counted in the wild (Singh and Rana, 1995). The Forest Department conducted the fifth census of Blackbuck in January 2000 throughout Gujarat and population of about 24,550 was estimated. Amreli (7,560), Mehsana (6,480), Bhavnagar (3,930), Junagadh (2,040), Porbandar (1,840), Ahmedabad (1,530) and Surendranagar (600) had highest population in the State (Anon., 2000).

Leopard, Cheetah (hunting Leopard) and Wolf were main predators of Blackbuck in the State in the past. Cheetah has become extinct and Leopard has been exterminated from most of the Blackbuck area. Wolf is the still surviving predator in Blackbuck National Park where it kills about 155 to 160 Blackbuck every year. This is the main reason why Blackbuck number is almost stabilized between 1,300 to 1,600 within the Park area for last fifteen years, whereas number increased in other areas due to absence of predator (Jhala,

1991). It is also mentioned that Blackbuck National Park supports the single largest population of this Antelope in India.

Statistics of last five censuses revealed that number of Blackbucks has increased at over all annual growth rate of about 15% in the State. Male/female ratio was 43:100 in 1976, 62:100 in 1989, 55:100 in 1994. Fawns constituted 15.0% of total population in the year 1994 and 15.5% in the year 2000. With increased population in some districts, especially in Mehsana, Amreli and Bhavnagar, Blackbucks started damaging agriculture crops. Some villages in these districts have serious problem due to concentrated number. During counting in 1983, there were less than 1,000 Blackbucks in and around Visatpur village in Kadi taluka in Mehsana District. People in this area have religious attachment with the Antelope and they protect it from hunting. People loved, managed and protected when number was within tolerance limit. Population continued to grow almost three folds in six years and population of 6,480 Blackbuck was estimated at the close of the millennium. With increased population, animal dispersed in more than two dozen villages and people started making strong protest against the damage of the crops by the Blackbuck.

The State Government responded to demonstration of the farmers and obtained permission from the Government of India to capture and translocate 500 Blackbuck. The Department with involvement of people designed a scheme of chainlink fencing. Two enclosures were designed at a site so that animals could be easily driven from large enclosure (100 m x 80 m) to small enclosure (50 m x 20 m) for capturing. Money was paid to farmers to grow fodder

within enclosure and water facility was created accordingly. Blackbucks started entering the enclosure in search of food and water. One day (18.02.1999), the enclosure was closed from the open side when seven animals were driven into the small enclosure where they were captured after tranquilizing. All the tranquilized animals were transported to Indroda Park, Gandhinagar, about 50 km away from the site. One Blackbuck was found dead at the time of arrival and five were surviving. They started dying one by one as days progressed and the last Blackbuck died after two weeks from the day of the capture. Finally, none of the captured Blackbucks survived. This unsuccessful attempt discouraged officials to retry fresh capturing to avoid criticism. Man-Blackbuck conflict is now a reality in some areas and it is now a great challenge of population management of this species for the Forest Department.

Bluebull [*Boselaphus tragocamelus* (Pallas 1776)] : Bluebull, the largest Antelope in Asia, is also a true representative of Indian subcontinent. It occurs from Jammu and Punjab in North to Karnataka in South and Pakistan and Saurashtra in West to Bihar in the East. This Antelope prefers open forests, undulating hills, dry deciduous scrub and thorn forest, grassland and agricultural fields, but avoids dense forests. In Gujarat, this animal is found in all districts, except Valsad, Navasari, Dangs, Narmada and Rajpipla in South Gujarat.

Plateau of Saurashtra and Kutch, uplands ('Bets') in the Rann of Kutch and North Gujarat are suitable habitat for Bluebull. Bluebull, locally, called 'Nilgai', resembles cow and Hindu communities do not harm this animal. The Dafer tribe and

some other communities hunted it which resulted in population decline throughout the State before the beginning of conservation era in the 1970s. A decade ago, this Antelope was rarely seen in Sabarkantha, Mehsana, Kheda, Ahmedabad, Vadodara and Panchmahals. Population of this animal is now increasing at a faster rate due to ban on hunting and absence of any major predator in Bluebull area. Lions control their numbers in Gir where it is almost at same level for last one decade, but scenario is completely different in other areas.

Crop raids by Bluebull became a serious problem in the 1990s. Therefore, Bluebull census was conducted in April 1995 and the Forest Department estimated a population of 41,700 animals in the State. Maximum number was recorded in Kutch (10,000), Rajkot (7,950), Amreli (1,200), Bhavnagar (4,810), Banaskantha (3,690), Junagadh (1,200) and Surendranagar (3,790). To assuage the anger of farmers, permission was granted to kill some animals in restricted areas. With great difficulties, experts could kill only two animals. After first firing, herds always maintained a safe distance from the culling party. Thus, they could not achieve success. On other hand, groups of animal lovers and religious people opposed the action and hence permission for culling was withdrawn.

Bluebull were counted in 20 districts out of 25 districts of the State in January 2000. Collection of data in some districts is in progress, but counting records revealed that Bluebull population exceeded 65,000 at the close of millennium. Rajkot (5,460), Kutch (about 9,000), Banaskantha (over 6,000), Junagadh (3,160), Bhavnagar (3,020), Amreli (3,380), Sabarkantha (about

4,000), Patan (about 5,000), Vadodara (3,440) and Ahmedabad (2,860) supported maximum population. Male/female ratio in the census of 1995 was recorded at 41:100 and young ones (fawns) constituted 20% in the year 1995 and 21% in the year 2000 of the total population. These statistics reflect the trend of fast growing population. If this trend continues population may exceed hundred thousands by the year 2005.

Chinkara or Indian Gazelle [Gazella gazella bennettii (Sykes 1831)] : Rolling hills, scrub and thorn forests, desert thorn forest, savannah type vegetation and desert margins are preferred habitats for the Indian Gazelle. It is found in the South-East Africa, the eastern shore of the Gulf of Persia, through Baluchistan, Rajasthan and Gujarat to North and Central India and Karnataka. Chinkara is still common in Saurashtra, Kutch and Rajasthan. Loss of habitat, hunting and predation by carnivores like Wolf, Leopard and Lion were the main causes of decline of population in the past. Population in different parts of India was not estimated, but scanty records prove that this animal was abundant in Rajasthan, Saurashtra and Kutch before independence.

It would not be an exaggeration to state that plateau of Saurashtra and Kutch, and margin of coastal wetlands were land of Chinkara. Low hills, undulating terrain and grasslands in the region provided the most suitable home for this animal. With progress of cultivation, invasion of *Prosopis juliflora* in grasslands and degradation of habitat, Chinkara now occurs in fragmented habitats in small number, however Kutch District has good population in extensive habitat, extending in the Ranns and coastal zone. Chinkara is less gregarious than Blackbuck and lives in

small herds, but groups of over two dozen (25 to 30) can be easily seen in grasslands near Naliya in Kutch District. About 80% of total Chinkara population in the State is now found in Kutch District. This Gazelle was exterminated from Central and North Gujarat.

At present, Chinkara is found in eight Protected Areas - Gir, Paniya, Hingolghadh, Rampara, Little Rann, Great Rann, Narayan Sarovar and Lala Great Indian Bustard Sanctuaries. The State Wildlife census in 1974 reported only 195 Chinkara in and around the Gir, which increased to 970 in 1990. This indicates that number was very low in 1970s in the State. Wildlife counting in May 2000 indicated further increase to about 1,160 in Gir and its peripheral areas. A population of over 300 Chinkara was estimated in Mitiyala, grassland and revenue area in Khabha and Dhari taluka and Chhatariya forest near Khodiyar dam [DCF, Gir (E), *pers. comm.*].

GEER Foundation counted 110 Chinkara in Hingolghadh Sanctuary in the year 2000 and about 25 in Rampara Sanctuary. Chinkara population recently (1999 and 2000) estimated 1,550 to 1,600 in and around Narayan Sarovar Sanctuary, 400 to 425 in and around Lala Bustard Sanctuary near Naliya, 150 in the Little Rann of Kutch, 250-300 on Khadir 'Bet', almost same number in Pachchham 'Bet', 20-25 in Palitata hills near Bhavnagar and about 25-30 in a 'vidi' (Grassland) near Hingolghadh (Anon., 1999). They also occur in small groups in some 'vidis' in Saurashtra. Kutch (East) Division counted Chinkara in the sanctuaries, forests, 'vidis' and revenue area in the year 2000 and estimated population of about 2000-2100 in the division (Chaturvedi, *pers. comm.*).

Good numbers of Chinkara occur outside the Sanctuaries in Kutch West Division. These countings and studies made it possible to estimate population of Chinkara in Gujarat. The Chinkara population ranges from 4,500 to 5,000 in Kutch, including the Rann of Kutch. In Saurashtra, minimum population of this Antelope would be 1,600. Thus, total population of the animal as estimated in range of 6,000-7,000 at the close of millennium in the State.

Wolf is the only predator in some area of Kutch whereas Lion and Leopard prey upon the animal in Gir. Jackals also manage to kill young ones. Invasion of *Prosopis juliflora* in the prime areas of Chinkara is a major threat to the habitat. The ban imposed on hunting after inclusion of the animal in the Schedule I under Wildlife (Protection) Act, 1972 has halted population decline. Comparison of the present population in some areas with the previous estimates indicates that number of the animals has marginally improved. Population may increase slowly, if present protection measures continue with improvement of standard of management of the sanctuaries, which support good number of the Indian Gazelle.

Fourhorned Antelope [*Tetracerus quadricornis* (Blainville, 1816)] : The Fourhorned Antelope, locally called 'Chausingha' or 'Ghutada' is the only member of this group with two pairs of horns. Structure of the horns is not ringed as in true Antelopes. The front pair of horns is always shorter. This Antelope is the smallest in Asia and also an exclusive gain to the Indian subcontinent. Chausingha range extends from foothills of the Himalaya, including Nepal to Mudumalai Wildlife Sanctuary in Tamil

Nadu and from Gir forests in Saurashtra to Bihar. Unlike other three Antelopes of Gujarat, Chausingha prefers hilly moist or dry deciduous dense forests and also shelters in tall grass and open jungle. Thus, majority of area in Kutch, Saurashtra and North Gujarat is not suitable for this Antelope. In Saurashtra, this animal occurs only in Gir forests and Girnar. At present, it is found in dense forests of Sabarkantha (Vijaynagar), Panchmahals, Vadodara, Narmada, Rajpipla, Surat, Dangs and Valsad. During wildlife census in recently conducted in late 1990s in the Protected Areas, the animal was recorded in Ratanmahal Sanctuary, Jambughoda Sanctuary, Shoolpaneshwar Sanctuary, Purna Sanctuary and Vansda National Park. Chausingha was also reported from their neighbouring dense forests.

The District Gazetteers (Anon., 1961) mention about abundant population of this mammal in forested region of Gujarat. Wildlife census in Gir forests in 1974 reported population of 980 Chausingha (Singh and Kamboj, 1995). This figure was 1,040 in 1979, 1,060 in 1985, 440 in 1995 and 470 in May 2000. Although protection is high in the Gir, predation by major carnivores like Lion and Leopard may be a cause of declining population in Gir. About 180 Chausingha were counted in Shoolpaneshwar in 1996 whereas number in Purna Sanctuary was estimated over 100. Count in Vansda, Ratanmahal, Jambughoda was low, as sighting of this animal is difficult in dense forests. Sightings of the Antelope have increased in Vanaj forests in Vijaynagar taluka during recent years. Population is relatively good in the large block of forests in Rajpipla District and Vyara Forest Division adjoining Ukai dam. Fourhorned Antelope has fragmented habitats and its number

within these isolated patches of forest is very low. Leopard hunts Chausingha in these areas. Hunting and food gathering habits of the tribals are other main threats to the restricted population.

It is very difficult to estimate Chausingha population in Gujarat, yet census report, some studies and individuals observation may help provide an indicative number of the animals. Population of the Antelope would be about 500 in Gir and 700 to 1,200 in isolated forests from Vijaynagar (Sabarkantha) in the North to Valsad/Dangs in South. In Gujarat, it is the most threatened Antelope as a result of loss of habitat, hunting by tribals and predation by Leopard. Numbers of this Antelope may be projected in the range of 1,200 to 1,500 in Gujarat at the close of the millennium.

Conclusion

The distribution of all four Antelopes in Gujarat State was restricted in fragmented habitats in small number in the 1970s. Ban on hunting and conservation measures paid dividends and population of Blackbuck and Bluebull recovered everywhere in the State. Increased population in some areas has created new problems for management. With increased numbers, they dispersed in some of the old habitats. Attempts were made to capture some animals to soften the anger and agitation of farmers, but these have not yielded any fruitful result. Chinkara population is restricted to Kutch and some area of Saurashtra. Protection measures and notification of some areas as sanctuaries halted further decline of the population. Reversal trends have been observed in some areas, however degradation of habitat and invasion of

Prosopis juliflora continue to be major threats.

Unlike the other three Antelopes, Fourhorned Antelope is under high degree of threat in its habitat in Gujarat. Major area of this Antelope is in tribal belt where hunting and food gathering habits continue to put pressure on the animal. In Gir, predation by Lion and Leopard did not

provide chance for recovery. Hunting, predation by Leopard, loss of habitats and their fragmentation are main reasons for consistent decline in number of this small Antelope. In absence of other wild ungulates in forested regions of main Gujarat, Leopard may be able to kill some Chausingha regularly. Thus, to protect this animal in the area, it is necessary to check the degradation of its habitat and to control poaching by tribals in the area.

SUMMARY

Fauna of the western part of the country, including Gujarat has similarity with animals belonging to Ethiopian and Palaearctic realms, but animals from Oriental Realm also occur in the State. Blackbuck, Chinkara (Indian Gazelle), Bluebull and Fourhorned Antelope, belonging to subfamily Antilopinae, are found in the Indian plateau, and all these four species also occur in Gujarat. Saurashtra and Kutch were known as land of Antelopes and Gazelle in India as all four species were found in good number in the region. Scenario changed after independence. Loss of habitat and hunting were main causes for decline of population of the Antelopes, three decades ago. Trend reversed after implementation of conservation measures and population of Blackbuck and Bluebull increased manifold in some areas, causing problems to farmers. Decline of Chinkara population also halted in some areas as they got suitable habitats in the Protected Areas. Scenario is different for Fourhorned Antelope as this species has low population in fragmented habitat. Thus, to protect this animal, it is necessary to check degradation of its habitats and to control poaching by tribals in the forests.

हिरण और कुरंग : गुजरात, भारत में उनकी वितरण और संख्या स्थिति

एच.एस. सिंह

सारांश

देश के पश्चिमी भाग के, जिसमें गुजरात भी आता है, पशु-पक्षियों का इथियोपियाई और हिमाचलोत्तराय देश के पशुओं से साम्य है किन्तु पावैलिय देशों के पशु भी इस राज्य में पाए जाते हैं। एण्टिलोपिनी उपवंश के कृष्णासार, चिकारा (भारतीय कुरंग), नीलगाय और चौसिंगा भी भारतीय पठार में मिलते हैं तथा ये चारों जातियां गुजरात में भी मिलती हैं। सौराष्ट्र और कच्छ भारत में हिरणों और कुरंगों की भूमि के रूप में प्रसिद्ध थी क्योंकि ये चारों जातियां काफी अधिक संख्या में इस प्रदेश में मिल जाती थी। स्वतन्त्रता मिलने के बाद परिदृश्य बदल गया। प्राकृतावास विनाश और आखेट ही हिरणों की संख्या में कमी होने के, तीन दशक पूर्व, कारण थे। संरक्षण उपायों के क्रियान्वयन के बाद प्रवृत्ति पलट गई है और कृष्णासार और नीलगायों की संख्या कुछ क्षेत्रों में कईगुनी हो गई है जिससे किसानों को समस्या हो रही है। चिकारा की संख्या में ह्रास होना भी कई क्षेत्र में रुक गया है क्योंकि सुरक्षित किए क्षेत्रों में उन्हें उपयुक्त प्राकृतावास मिल गया है। चौसिंगों के लिए परिदृश्य भिन्न हैं क्योंकि इस जाति की संख्या विश्रुंखलित प्राकृतावास में कम है। अतः इस पशु को संरक्षित करने के लिए इसके प्राकृतावास का व्यापक रोकना तथा जंगलों में आदिवासियों द्वारा इसके चोर-शिकार पर नियन्त्रण करना जरूरी है।

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