POPULATION DYNAMICS OF NILGAI (BOSELAPHUS TRAGOCAMELUS) IN SHEKHAWATI REGION OF INDIAN THAR DESERT

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Abstract: A population is a group of individuals, who live together in the same habitat and are likely to interbreed. Nilgai is the biggest Asian antelope. Nilgai is a protected animal under the schedule III of wildlife (Protection) act, 1972, but since last15-20 years or so as seen in this part of Rajasthan and elsewhere farmers want to get rid of this unconventional pest as it accounts for loss about 15-25% of total yield.
The Study Area, Shekhawati region is a part of Indian Thar Desert. A survey was initially conducted at selected focal sites of Shekhawati Region to determine the status of Nilgai population during 2012 and 2013. High population density of Nilgai in Shekhawati Region of Thar Desert is due to large number of agricultural fields around the scrub land, wasteland, and hilly patches which make habitat of Nilgai. The population of Nilgai is dynamic due to natality, mortality, migration, dispersion, mixing of herd.
The result of this study about 121 Nilgai presumed to be a population at focal sites. The population under study was predator free system, some selected poaching, restricted hunting, poisonings, natural death, road mishaps are the reason for slightly fluctuations.

Keywords: Fluctuations, Nilgai, Population Dynamics, Thar Desert

Introduction: The Nilgai or Blue-bull, *Boselaphus tragocamelus* is a biggest Asian antelope found in open scrubs/forest where little vegetation exists and in and around wildlife sanctuaries in Rajasthan. Blue-bull is a horse like animal and show clear sexual dimorphism.
Expressions of population density and biomass have been used to investigate the complex relationship between a species and its environment [2]. It is worth mentioning that the peculiar circumstances in which Nilgai live particularly in Shekhawati Region, do not allow the animal's sufficient freedom of association in the formation of groups. Animals are regularly chased and driven away from the cultivated areas and hence the entire population remains in a state of turmoil during the cropping seasons in particular. Another set of problem is faced by the animals during April-July when there is no cultivation. Majority of Nilgai in that period move to reserve/ community forested patches for shelter during the day time and hence they escape observations.
Study area and method: The Study Area, Shekhawati region is a part of Indian Thar Desert, located on the south-eastern fringes of the great Palaearctic desert. The Shekhawati Region comprises of three districts namely Jhunjhunu, Sikar and Churu. The region is not a vast stretch of sand dunes but also with mountainary range of Aravalli, interspersed with low hills and gravel plains.
The study site located in the north-east part of Rajasthan lies in between 27°24′ to 29° 02′ N latitude and 73°4′ to 76° 5′ E longitude at a height of about 320 meters from sea level. The region covers an area of 27,529.44 sq km and connects with the boundaries of Hanumangarh district in north, Hissar in north-east, Bhiwani, Rohtak and Mahendragarh districts of Haryana in south-east, Jaipur and Nagaur in south and with Bikaner district in west.
A survey was initially conducted at selected focal sites of Shekhawati Region to determine the status of Nilgai population during 2012 and 2013. The head to head counting conducted covering whole area by foot from 600 to 900 hrs and 1700 to 1900 hrs. Basic information was obtained from the Forest department and farmers of the villages before embarking on questionnaire survey.
Results and Discussion: Population can be defined variously from different points of view for the last four decades a number of workers have applied different methods for estimating the population and biomass of ungulates [9], [1],[13], [6], [8] & [10]. The detailed information on population of Nilgai is very much laking except some account by Singh, (1995) and Goyal & Rajpurohit, (1999) and most case studies are limited to smaller areas.
High population density of Nilgai in Shekhawati Region of Thar Desert is due to large number of agricultural fields around the scrub land, wasteland, and hilly patches which make habitat of Nilgai. Net large area sown and also double cropping (kharif and Rabi crops) which provide a palatable food for blue-bull and the drinking water is available every where in this area.
Total counts were done in January, April, July and October 2012 and 2013. It creates some difficulty to define the group of animals found in the study area, as a population or a sub-population.
The mixing of herd create confused to identifying focal animals while that have been marked. Whether there is regular interaction (immigration and

emigrations) between them otherwise separated groups cannot be stated with confidence. Occasionally one or few animals may or wander from one area to another [10]. It is also possible that when driven.

Table: Seasonal variation in population of Nilgai at selected focal sites of Jhunjhunu District of Shekhawati Region during study period 2012 and 2013.

S. No.	Focal Site and type of herd	Quarterly counting of Nilgai population (2012 and 2013)							
		Jan. 2012	Apr. 2012	Jul. 2012	Oct. 2012	Jan. 2013	Apr. 2013	Jul. 2013	Oct. 2013
1	Bhompura (Bisexual)	23	17	14	26	24	15	18	22
2	Dhattarwala (Bisexual)	11	14	8	16	12	6	9	14
3	Bola Ki Dhani (All male herd)	6	9	3	3	3	4	2	5
4	Khudania (Bisexual)	13	7	11	19	21	13	8	14
5	Brahmno Ki Dhani (All male herd)	7	10	6	8	11	3	7	2
6	Narhar (Bisexual)	24	28	19	13	10	16	13	19
7	Gidania (Bisexual)	9	7	4	12	11	7	9	6
8	Sultana (All male herd)	4	11	14	8	6	13	7	10
9	Gadakhera (Bisexual)	9	5	6	9	7	3	4	12
10	Makdo (Bisexual)	7	6	2	13	6	11	14	19
11	Ganeshpura (Bisexual)	8	12	7	9	6	11	3	8
	Total no. of animals	**121**	**126**	**94**	**136**	**117**	**102**	**94**	**131**

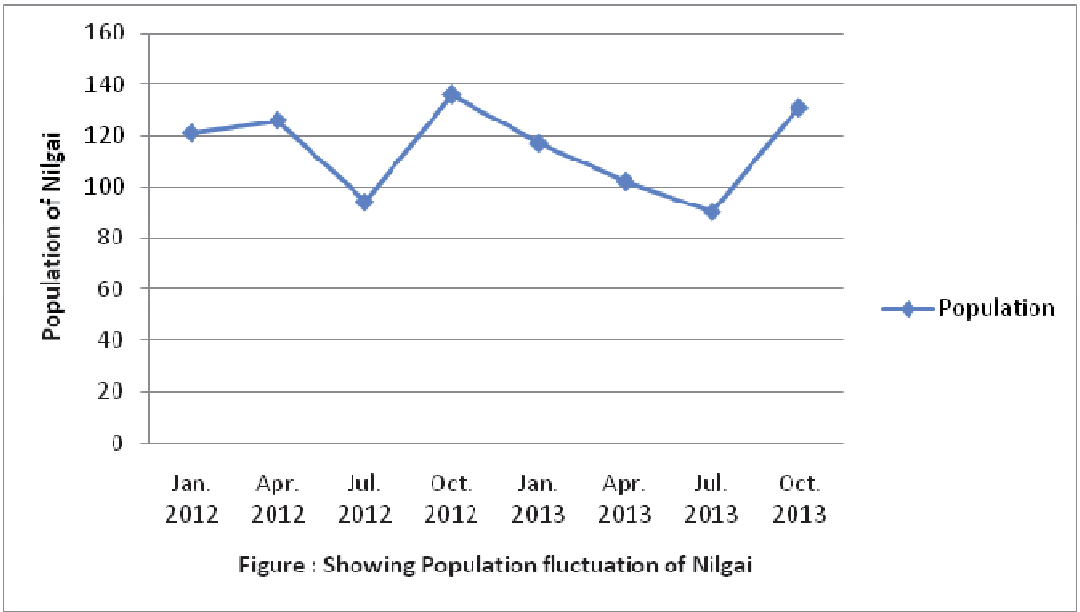

Figure : Showing Population fluctuation of Nilgai

Away by farmers or scattered by the poacher, one or more animals may stay into a nearby area and join the group living there.

The result of this study about 121 Nilgai presumed to be a population at focal sites. The population under study was predator free system, some selected poaching, restricted hunting, poisonings, natural death, road mishap are the reason for slightly fluctuations. The observation showing that population decreasing from month of April to July because, during the summer less vegetation exists in the habitat as well as scarcity of water. For the searching of water and fodder, Blue-Bull traverses the entire home range. The herds of blue bull have been observed shifting from one area to another, depending upon the availability of crops [4].

Population of Nilgai increasing from August to October, because peak birth occurs during these months. Neonate calves were becoming more number till October. Herds were not stable social units that remained constant in size membership over long period. The male population exhibited annual cyclic fluctuation in group size, influenced by rutting [11]. The birth occurs at the beginning of

cooler winter season, there is greatest stress, and is detrimental to survival of young born. Several factors contributed to the success of Nilgai in India. There are no large predators except feral dogs, kept by farmers to avoid the Nilgai from crop field. These dogs kill the helpless calves of Nilgai. Calves with mother not injured by dogs because Nilgai chased the dog with head.

Habitat loss due to human interference through shifting agriculture patterns, over-grazing pressure due to excessive domestic livestock, non-woody vegetation collection, poaching, drought and restricted range and pollution in the habitat are main factors of population dynamics. The density of a species in a given area is a good indicator of the quality of the habitat and change in number and distribution can be used to evaluate the management inputs over the years [7].

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