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ORIGINAL ARTICLE

Presence or stir of Wild mammals and reptiles species in human dominated landscape, Social Forestry Division, Bareilly, Uttar Pradesh

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ABSTRACT
The earth has limited resources, such as agricultural land, energy, and raw materials, which limit the amount of people that the world can maintain. The research was done in the 2013 to 2015 in Social Forestry Division, Bareilly. The method consisted of collection of data from primary and secondary resources. Wild animals sign, evidence and ad libitum sampling were performed to evaluate the data. The study showed the presence of 34 species of mammals and 11 reptiles in Social Forestry Division, Bareilly. The area showed the presence of good biodiversity of mammals and reptiles which reflects towards good health condition of ecosystem in the area. As per Wildlife Census Report, 2013 of Social Forestry Division, Bareilly maximum number of animals were reported for rhesus macaque (3454) followed by nilgai (2976), black buck (575), wild pig (556), peacock (374), jackal (296), fox (132), chital (52), wild cat (44), common langur (17), porcupine (14), bear (12), chousingha (9), monitor lizard (6), wolf (2) and sambhar (2). The census report lacks few important species such as hog deer, chinkara and hyaena.
Key Words: Diversity, human, mammals, reptiles

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INTRODUCTION

Wild animals contribute to human well-being. India is an agriculture based country with rich variety of wildlife biodiversity. Numerous wild species live in human inhabited areas and agricultural areas. Wildlife requirements fall into three basic categories food, water, and shelter safe from predators where they can sustain and raise their young ones. These requirements are very specialized for each species of animals and birds. Wherever these specialized requirements are accessible to a species, we call it a habitat. Wild species cannot survive outside their habitat.

Spatial distribution and habitat use of wildlife is a dynamic process involving species-specific responses at differing spatial and temporal scales [1]. However, it is complex to understanding habitat use by highly mobile species such as carnivores. These species exhibit marked diurnal fluctuations in a variety of activities such as movement, feeding, resting, hiding, vigilance, defending territory and mating [11]. Growing global human population is the making the pressure on the worlds wilderness.

The 21st century is human dominated and demand of land is increasing, every ecosystem has been affected by human activities. About 40-50% of the land surface is expected to have been converted by humans, often with manifest environmental effects: for instance, either agriculture or urban areas now cover 10-15% of the total land surface, while an additional 6-8% has undergone conservation to pasture [10].

In this study, we quantitatively evaluated the presence or stir of wild mammals and reptile's species in human dominated landscape, Social Forestry Division, Bareilly, Uttar Pradesh

MATERIAL AND METHODS

STUDY AREA

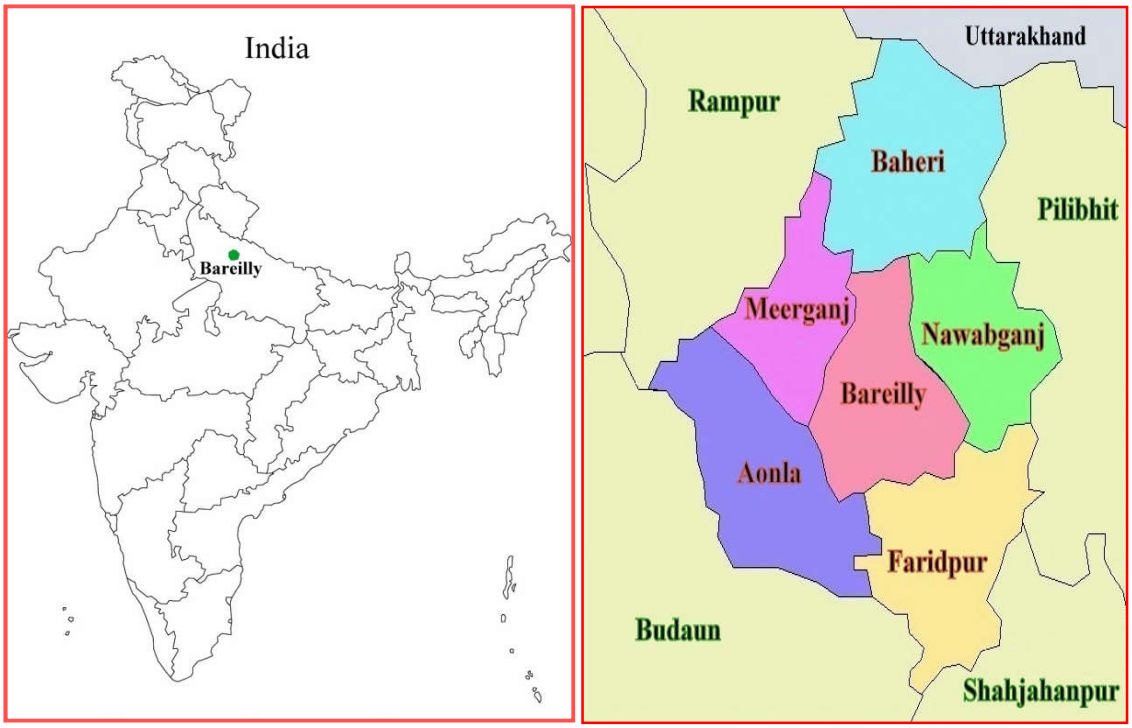
The present study was conducted in Social Forestry Division, Bareilly, Uttar Pradesh. The Bareilly district is located in the north western part of Uttar Pradesh and lies between latitude $28^0 10'$N, and longitude $78^0 23'$E. There are six Tehsils namely Bareilly City, Anola, Baheri, Faridpur, Meerganj, and Nawabganj and fifteen blocks in Bareilly (Plate 1).

METHODS

The study was conducted in 60 villages of Bareilly district under social forestry division. The method consisted of data collection from primary and secondary resources.

Primary data were collected by direct observation, interviews, questionnaire survey and group discussion with forest staff and citizens through a semi structured questionnaire survey [7]. Primary data were also collected by field evaluation, site inspection, interviews, and group discussion with rural and urban communities. The wildlife sign and evidence such as pugmark, animal parts, human-livestock-crop damages etc. were recorded.

The information about the secondary resources for wild animals presence and stir collected in the form of published literature such as management plan, previous studies on the government document, official statistics, technical report, scholarly journals, review articles, books, computerized database, the world wide database magazines and newspaper were recorded [3, 7]. Information's were collected from the data available with the forest department and revenue department.



A. Location map of Bareilly in the state of Uttar Pradesh, India **B.** Map of Bareilly district showing six Tehsils

Plate 1: Location map of different tehsil under Bareilly district of Uttar Pradesh, India

Ad libidum sampling:

Frequent visits were made to different areas of Social Forestry Division, Bareilly and observations on wildlife biodiversity were recorded, as an indicator of ecosystem health using *Ad libitum* sampling method [1].

Statistical analysis

Both qualitative and quantitative data were recorded and considered for Statistical Analysis. The data calculation, tabulation, analysis, and their interpretation were performed. The standard statistical procedures were used in the study [6].

RESULTS

The present research work Presence or stir of wild mammals and reptiles species in human dominated landscape, Social Forestry Division, Bareilly, Uttar Pradesh was conducted during the year 2013 to 2015. The findings of the study can be summarized under following headings:

Wildlife biodiversity in Social Forestry Division, Bareilly

Table 1: List of wild animals found in Social Forestry Division Bareilly

S. No.	Name of animal	Zoological name	Conservation status	Abundance
Family Felidae				
1.	Tiger	*Panther tigris*	EN	R
2.	Leopard	*Panther pardus*	NT	R
3.	Fishing cat	*Prionaliurus viverrinus*	EN	R
4.	Caracal	*Caracal caracal*	LC	R
Family Mustelidae				
5.	Otter	*Lutra lutra*	NT	R
6.	Honey badger	*Mellivora capensis*	LC	R
Family Canidae				
7.	Wild dog	*Cuon alpinus*	EN	UC
8.	Indian Wolf	*Canis lupus pallipes*	LC	UC
9.	Indian jackal	*Canis aureus indicus*	LC	UC
Family Herpestidae				
10.	Common mongoose	*Herpestes edwardsii*	LC	FC
11.	Small Indian mongoose	*Herpestes aurpunctatus*	LC	FC
Family Hyaenidae				
12.	Striped hyena	*Hyaena hyaena*	NT	R
Family Bovidae				
13.	Indian gazelle	*Gazelle bennettii*	LC	R
14.	Four horned antelope	*Tetracerus quadricornis*	VU	R
15.	Nilgai	*Boselaphus tragocamelus*	LC	C
16.	Black buck	*Antilope cervicapra*	NT	C
Family Cervidae				
17.	Chital	*Axis axis*	LC	UC
18.	Sambhar deer	*Rusa unicolor*	VU	R
19.	Hog deer	*Hyelaphus porcinus*	EN	R
20.	Barasingha	*Rucervus duvaucelii*	VU	R
Family Suidae				
21.	Wild pig	*Sus scrofa*	LC	C
Family Suiuridae				
22.	Five stripped squirrel	*Funambulus palmarum*	LC	C
Family Muridae				
23.	Common house rat	*Rattus norvegicus*	LC	C
24.	Long tailed tree mouse	*Vandeleuria oleracea*	LC	FC
Family Hystricidae				
25.	Indian Porcupine	*Hystrix indica*	LC	UC
Family Leporidae				
26.	Indian Hare	*Lepus nigricollis*	LC	FC
Family Ursidae				
27.	Sloth bear	*Melursus ursinus*	VU	R
Family Soricidae				
28.	Ground shrew	*Sorex ugyunak*	LC	R
29.	Musk shrew	*Suncus murinus*	LC	R
Family Vespertillionidae				
30.	Common yellow bat	*Scotophilus heathii*	LC	FC
31.	Serotine bat	*Eptesicus serotinus*	LC	FC
Family Pteropodidae				
32.	Indian flying fox	*Pteropus gigantaus*	LC	FC
33.	Rhesus macaque	*Macaca mulatta*	LC	C
34.	Common langur	*Semnopithecus entellus*	LC	C

Figure 1: Wild animal diversity in Social Forestry Division Bareilly

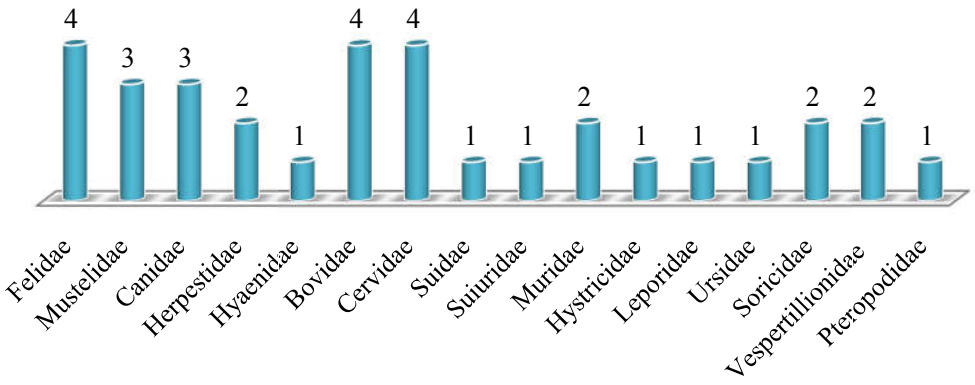


Table 2: List of reptiles found in Social Forestry Division Bareilly

S. No.	Name of animal	Zoological name	Conservation status	Abundance
Family Viperidae				
1.	Rat snake	*Zamenis longissimus*	LC	UC
Familly Colubrinae				
2.	Indian wolf snake	*Lycodon aulicus*	LC	C
Family Elapidae				
3.	Indian cobra	*Naja naja*	VU	UC
Family Colubridae				
4.	Water snake	*Enhydris enhydris*	LC	FC
Family Boidae				
5.	Indian sand boa	*Eryx johnii*	LC	UC
Family Scincidae				
6.	Snake eyed skink	*Ablepharus kitaibelii*	LC	C
7.	Bronze grass skink	*Eutropis macularia*	LC	C
Family Trionychidae				
8.	Indian flapshell turtle	*Lissemys punctata*	LC	C
Family Geoemydidae				
9.	Spotted pond turtle	*Geoclemys hamiltonii*	VU	UC
Family Crocodylidae				
10.	Marsh crocodile	*Crocodylus palustris*	VU	FC
Family Gavialidae				
11.	Gharial	*Gavialis gangeticus*	CR	FC
Family Varanidae				
12.	Monitor lizard	*Varanus bengalensis*	LC	C
Family Agamidar				
13.	Oriental garden lizard	*Calotes versicolor*	Not Evaluated	C

The present study showed the presence of 34 species of mammals and 13 reptiles in Social Forestry Division, Bareilly. Out of 34 species of mammals 22 were least concern, 4 vulnerable, 4 near threatened and 4 species belonging to endangered category of IUCN. Among 11 species of reptiles 8 were of least concern, 3 species vulnerable and one species critically endangered. The area had quite good availability of resources for survival viz. food, water and shelter for the wild animals and birds.

Wildlife Census Report of Social Forestry Division Bareilly (2013)

As per Wildlife Census Report, 2013 of Social Forestry Division Bareilly maximum number of animals were reported for rhesus macaque (3454) followed by nilgai (2976), black buck (575), wild pig (556), peacock (374), jackal (296), fox (132), chital (52), wild cat (44), common langur (17), porcupine (14), bear (12), chousingha (9), monitor lizard (6), wolf (2) and sambhar (2). The census report lacks few important species such as hog deer, chinkara and hyaena. (Table 3)

Table 3: Wildlife Census Report of Social Forestry Division Bareilly (2013)

S. No	Name of wild animal	Male	Female	Non adult	Total
1.	Chital	15	24	13	52
2.	Sambhar	-	-	-	2
3.	Black buck	220	273	85	575
4.	Chousingha	5	3	1	9
5.	Nilgai	1280	1249	447	2976
6.	Rhesus macaque	1434	1399	621	3454
7.	Common langur	7	6	4	17
8.	Wild pig	219	215	122	556
9.	Bear	8	4	-	12
10.	Wild cat	15	22	7	44
11.	Jackal	134	122	40	296
12.	Fox	53	61	18	132
13.	Wolf	-	-	-	2
14.	Porcupine	11	2	1	14
15.	Goh/ Monitor lizard	6	-	-	6
16.	Peacock	200	136	38	374

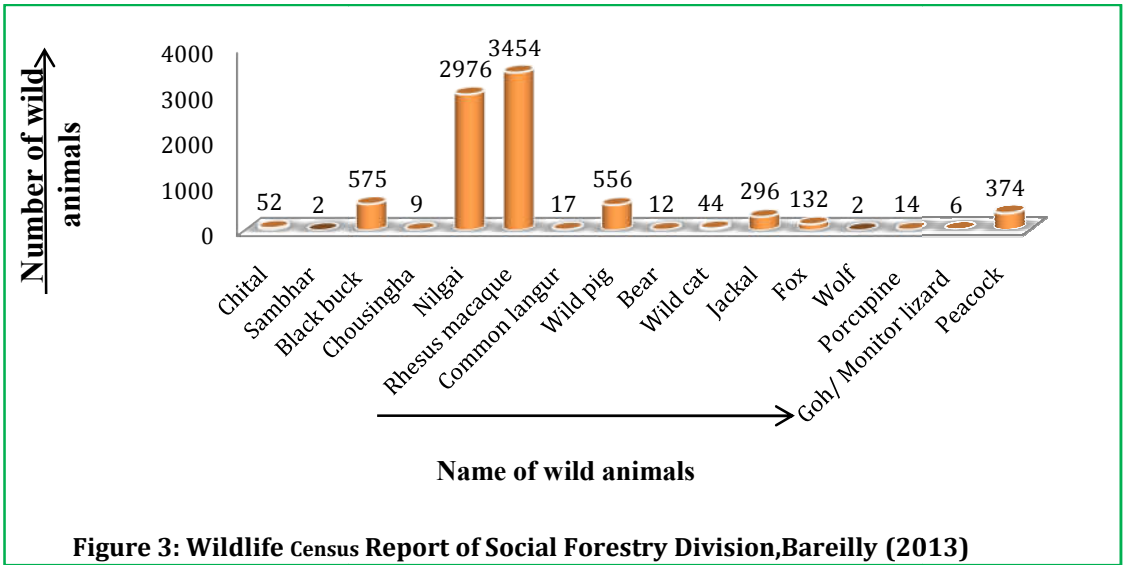


Figure 3: Wildlife Census Report of Social Forestry Division,Bareilly (2013)

The Bareilly lies entirely in the Ganges plains. The low-lying Ganges plains provide fertile alluvial soil suitable for agriculture. They are prone to recurrent floods. Bareilly lies on the bank of river Ram-Ganga, and there are seven rivers passing through this district. The lower Himalayan range is 40 km North of it. This environment forms suitable conditions for the survival and propagation of wildlife in the area. The area showed the presence of good biodiversity of mammals, reptiles and birds, which reflects towards good health condition of ecosystem in the area. Singh [9] in his studies at Allahabad showed the presence of 29 species of mammals, 16 species of reptiles, 19 species of fishes and 111 species of birds.

The census report lacks few important species prevalent in the area such as hog deer, chinkara and hyaena. The census report of 2013 bear's ambiguous species names such as Hiran, deer, chital, nilgai, vangai, vanroz etc. It appears that the same species were mentioned with different names by different census teams. Therefore, a column should be created for scientific name of the species in census format.

Wild mammals and reptiles watching is a popular activity for the local communities. McCleery [4] stated that even in urban landscapes, people seek mammal-related activities, such as feeding and watching wild squirrels. Observation of wildlife by urban residents improves their recognition and support of biodiversity conservation. Information on mammal assemblages around urban areas is important for the conservation of mammals both within and outside urban areas. Natuhara and Imai [5] reported that urbanization often decreases biodiversity and alters animal assemblages via habitat loss and fragmentation, food subsidies such as crops and garbage, and human avoidance behaviour.

Most of the wild animals entered in to the cities for food, shelter, and due to habitat loss and deforestation. Tiger and leopards most adapted animals and learned to live with humans in urban Bareilly. Sugarcane fields are the main source for their shelter and food presence. Most of the wild

animals move in cites during breeding period in the search of the territory, food and shelter. Bovidae, Cervidae and Suidae family occur in the agricultural fields and non human used areas and near the Gangatic plains. Non poisonous and venomous snake's species are also found around the human dominated landscapes. Human settlement and degradation of wildlife habitat is given the nativity of new ecological conditions to the wild animals.

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