ISSN 1996-3351

Asian Journal of Biological Sciences

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Asian Journal of Biological Sciences 7 (2): 66-71, 2014
ISSN 1996-3351 / DOI: 10.3923/ajbs.2014.66.71

Mammalian Fauna of Prashar Lake and its Surrounding Area in Mandi District (Himachal Pradesh), India

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ABSTRACT

Thirteen species of mammals belonging to 13 genera, 12 families and 6 orders have been recorded from Prashar and surrounding area. Five species belonged to order Carnivora followed by Primates, Artiodactyla and Rodentia (2 species each), Insectivora and Chiroptera (one species each). Families Cercopithecidae and Mustellidae supported a maximum of two species each and other namely Soricidae, Vespertilionidae, Canidae, Ursidae, Felidae, Cervidae, Bovidae, Scuiridae and Muridae were represented by one species each. It has been reported that 11 of the 13 species have been placed under different schedules of the Wildlife (Protection) Act, 1972. Of these, one species namely *Panthera pardus* has been placed under Schedule-I of the WLP Act. *Semnopithecus ajax* has been categorised as endangered, *Ursus thibetanus* placed under vulnerable categoryand *Panthera pardus* and *Naemorhedus goral* declared as near threatened by IUCN.

Key words: Mammalian fauna, prashar lake, Mandi, Himachal Pradesh

INTRODUCTION

A total of 4,629 species of mammals under 1135 genera, 136 families and 26 orders are known from the globe (Wilson and Reeder, 1993). Order Rodentia accounts for more than 40% of the mammalian species in the world with 21 living families, 443 genera and more than 2,000 species. According to Takele *et al.* (2011) small mammals form the highest proportion of mammals all over the world. Indian mammals are represented by 390 species belonging to 180 genera, 42 families and 13 orders. Another 13 orders do not occur in India (Agrawal, 1998). Out of 180 genera, 61 are monotypic and 105 represented in India by a single species. Of the 390 species of mammals, 175 are threatened with extinction to various levelsand on that basis 75 have been listed in Schedule I, 73 in Schedule II, 8 in Schedule III and 19 in Schedule IV of the Wildlife (Protection) Act, 1972. Himachal Pradesh covering only 1.7% of total geographical area of India, harbours 27% of mammalian species of India. Chakraborty *et al.* (2005) reported 107 mammalian species belonging to 77 genera, 25 families and 9 orders from Himachal Pradesh. Out of 107 species of mammals found in the state, 21 have been included in Schedule I of the Indian Wildlife (Protection) Act, 1972.

Present study area of Prashar situated at 31°45'15"N latitude and 77°6'5"E longitude, lies 49 km north of Mandi town (Himachal Pradesh, India). A three storeyed pagoda-like temple dedicated to the sage Prashar is alongside the lake and with deep blue waters, the lake held sacred

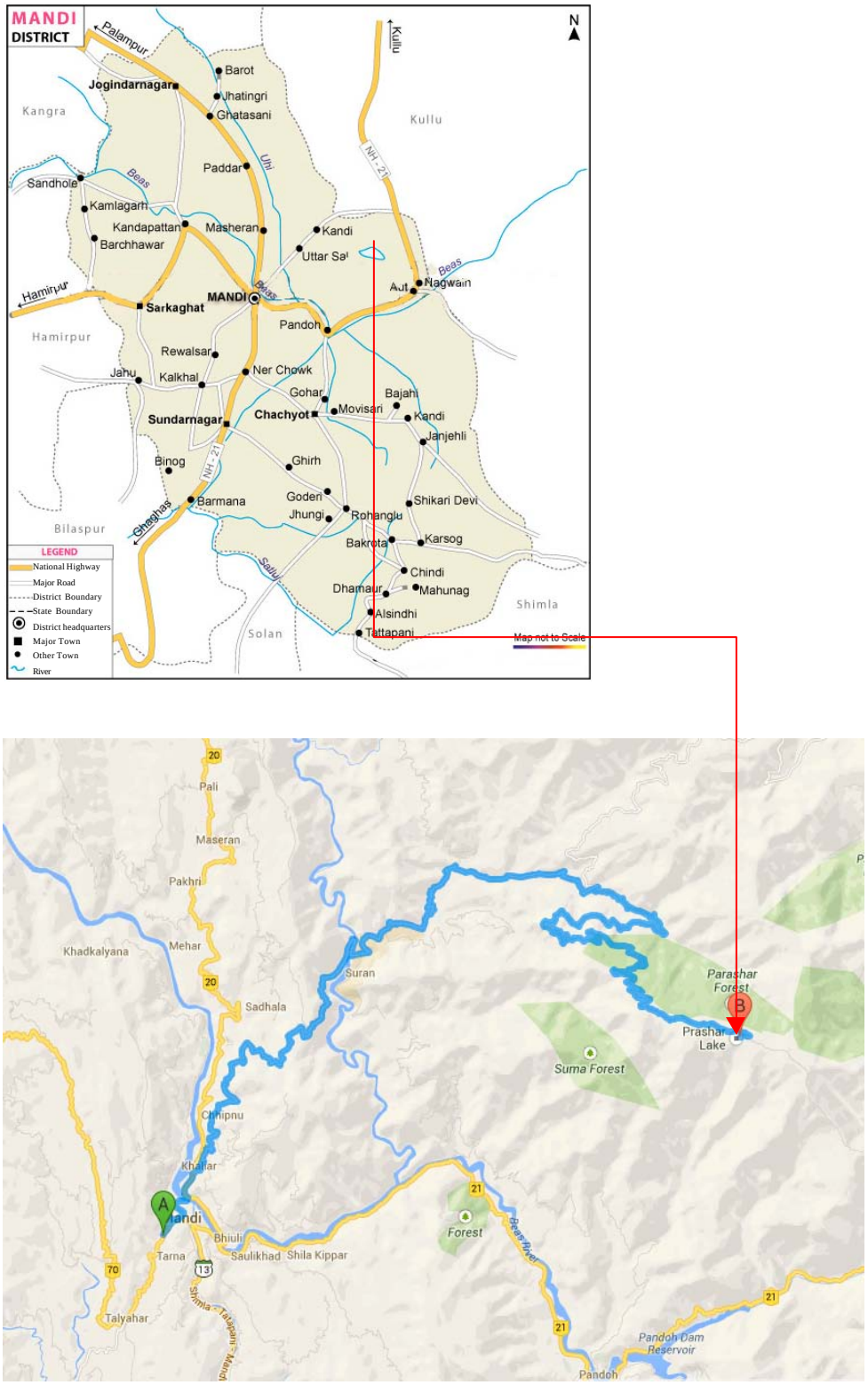

Fig. 1: Prashar area in Mandi district, Himachal Pradesh

to the sage Prashar. The lake is located at a height of 2,730 m above sea level, approximately in the centre of a large high altitude alpine meadow (Fig. 1). The lake has a floating island in it. The lake is holomictic with uniform temperature and density from top to bottom at some time of the year, allowing the lake water to completely mix. Surrounded by snow-capped peaks and looking down on the fast flowing river Beas, the lake can be approached after crossing thick forests of oaks, rhododendrons, pines and deodar. Weather in Prashar area is unpredictable experiencing untimely rains and snow mostly due to the dense belt of forest all around the area. Temperature ranges from -9-23°C in a year. The area is one the most favoured alpine meadow for animal graziers and receives flood of animals during summer and monsoon months.

Although, many investigators have studied the diversity of mammals in different parts of Himachal Pradesh (Sharma and Saikia, 2009; Singh and Banyal, 2012) but the present study area of Prashar lake has not attracted the attention of field biologists though it constitutes a part of the fragile Himalayan ecosystem under severe pressure due to heavy tourist influx and animal grazing, needs urgent attention.

METHODOLOGY

Various habitats like lake, forest, pasture, human habitations and agriculture fields in Prashar area were selected for the present study. The stratification was based on certain logistics like time frame, resources and size of the area etc., so as to get the maximum data regarding mammalian fauna of the study area.

The mammalian populations have been sampled by using a combination of direct and indirect methods. The direct methods included sightings of animals whereas indirect methods relied on quantification of indirect evidences such as pellet groups, scats, pug marks and hoof marks in different habitat types.

The direct evidences of large and medium sized mammals were collected by visual sighting method in different vegetation/ habitat types. The indirect evidences such as scats and pellet were also used for assessing presence and status of mammals in the study area. The information on small mammals was collected by general trapping method. Sherman traps were deployed in different habitat types for capturing the rodent species. After taking morphological measurements, captured specimens were released.

RESULTS

Mammalian fauna of Prashar and surrounding area revealed the presence of 13 species belonging to 13 genera, 12 families and 6 orders. Of the species observed five belong to order Carnivora followed by Primates, Artiodactyla and Rodentia (2 species each), Insectivora and Chiroptera (one species each). Further analysis of data revealed that family Cercopithecidae and Mustellidae supported a maximum of two species each and other namely Soricidae, Vespertilionidae, Canidae, Ursidae, Felidae, Cervidae, Bovidae, Scuiridae and Muridae represented by one species each (Table 1).

Eleven species have been placed under different schedules of the Wildlife (Protection) Act, 1972. *Panthera pardus* has been placed under Schedule-I, 7 species namely *Macaca mulatta*, *Semnopithecus ajax*, *Vulpes vulpes*, *Martes flavigula*, *Mustela sibirica*, *Ursus thibetanus* and *Petaurista peraurista* in Schedule-II while *Muntiacus muntjak* and *Naemorhedus goral* in Schedule-III and *Mus musculus* in Schedule-V. It has been further observed that four species of mammals found in Prashar area have been declared threatened, therefore, placed under different

Table 1: Systematic list of mammalian fauna of Prashar lake area, Mandi (H.P)

	Status	
Group/Taxon	WPA-1972	IUCN
Order: Insectivora		
Family: Soricidae		
1. House Shrew *Suncus murinus*	---	Least concern
Order: Chiroptera		
Family: Vespertilionidae		
2. Nepalese Whiskered Bat *Myotis muricola*	---	Least concern
Order: Primates		
Family: Cercopithecidae		
3. Rhesus Monkey *Macaca mulatta*	II	Least concern
4. Hanuman Langur *Semnopithecus ajax*	II	Endangered
Order: Carnivora		
Family: Canidae		
5. Himalayan Fox *Vulpes vulpes*	II	Least concern
Family: Mustelidae		
6. Yellow throated Marten *Martes flavigula*	II	Least concern
7. Himalayan Weasel *Mustela sibirica*	II	Least concern
Family: Ursidae		
8. Black Bear *Ursus thibetanus*	II	Vulnerable
Family: Felidae		
9. Leopard *Panthera pardus*	I	Near threatened
Order: Artiodactyla		
Family: Cervidae		
10. Barking Deer *Muntiacus muntjak*	III	Least concern
Family: Bovidae		
11. Himalayan Goral *Naemorhedus goral*	III	Near threatened
Order: Rodentia		
Family: Sciuridae		
12. Flying Squirrel *Petaurista petaurista*	II	Least concern
Family: Muridae		
13. House Mouse *Mus musculus*	V	Least concern

categories by International Union for Conservation of Nature (IUCN, 2013). Of these, *Semnopithecus ajax* has been categorised as endangered, *Ursus thibetanus* placed under vulnerable while *Panthera pardus* and *Naemorhedus goral* declared as near threatened by IUCN. Other species of mammals recorded in Prashar area have been declared as species of least concern by IUCN (Table 1).

Analyses of the data showed that mammals are found in and around the Prashar lake depending upon the habitat requirements. Species like Yellow Throat Marten, Black Bear, Leopard, Barking Deer and Himalayan Goral were mainly confined to forest area. Himalayan Fox has been reported from the meadow area near the lake. Moreover, Himalayan Weasel has been recorded from forest, meadow and summer settlements of humans. Black Bear has been declared by locals to be a pest of agricultural crops of nearby villages. Rhesus Monkey and Hanuman Langur have been recorded from forest as well as agriculture fields around Prashar area.

DISCUSSION

The present study is in correlation with some earlier studies on mammals reported from different parts of Himachal Pradesh. Sharma and Saikia (2009) reported the presence of 21 mammalian species belonging to 19 genera and 9 orders from Simbalbara wildlife sanctuary. Recently, Sharma and Saikia (2013) have reported the presence of 19 species of mammals comprising of 17 genera, 11 families and 4 orders from Pangi valley of Chamba.

During present study it has been observed that 11 of the 13 species have been placed under different schedules of the Wildlife (Protection) Act, 1972. *Semnopithecus ajax* was formerly considered a subspecies of *Semnopithecus entellus* (Molur *et al*., 2003). Till 2004, this species was considered as critically threatened by IUCN. Recently, it has been placed under endangered category as its range of occurrence has been considered less than 5,000 km^2 and the area of occupancy is less than 500 km^2. The estimated population is less than 250 mature individuals. This species is reported as occurring in northwestern India in Himachal Pradesh and Jammu and Kashmir (Groves, 2001), also claimed to occur in Melemchi, Nepal (Brandon-Jones, 2004). Molur *et al*. (2003) reported that this species is found in pine, moist temperate and alpine cedar forests from 2,200-4,000 m and being folivorous, diurnaland mainly terrestrial. In a similar study, Singh and Banyal (2012) revealed the presence of 16 species of mammals belonging to 14 genera, 12 families and 6 orders from Khajjiar area which is very similar to present study area of Prashar. They reported that 13 species of mammals were placed under Indian Wildlife (Protection) Act, 1972.

The small mammalian fauna of Himachal Pradesh have received relatively little attention during recent years compared to other vertebrate groups. The first report pertaining to the Chiroptera of Himachal Pradesh was that of Dobson (1873) who described *Vespertilio murinoides* (*syn. Myotis blythii*) from the Chamba area of Himachal Pradesh. During the course of present study some of the small mammals like House Shrew, Nepalese Whiskered Bat and House Mouse were reported from Prashar area.

The present study revealed that Yellow Throat Marten, Black Bear, Leopard, Barking Deer and Himalayan Goral were mainly confined to forest area. Himalayan Fox has been reported from the meadow area near the lake. Prater (1980) has also described the similar type of habitat for this animal and takes shelter in burrows dug in the ground, under or among rocks and vegetation among reeds and bushes. Similarly Black Bear lives in rock caves and hollows of trees and comes out at dusk for feeding. Further, Black Bear is omnivores and its diet comprises more than 90% of plant materials (Hwang and Garshelis, 2007). Present study indicated that crops of locals were invaded by Black Bear. They feed on plantations and damage trees by stripping the bark and eating cambium in cultivated areas (Mizukami *et al*., 2005; Gong and Harris, 2006; Vinitpornsawan *et al*., 2006). In some places the diet contains a sizeable portion of meat (Hwang *et al*., 2002). Other animals like Rhesus Monkey, Hanuman Langur, Barking Deer and Goral are primarily herbivorous, generally feed on leaves, fruits, buds and flowers but sometimes also feed on insects, tree bark and gum (Jerdan, 1984). Present study revealed that Rhesus Monkey and Hanuman Langur have been recorded from forest as well as agriculture fields around Prashar area. Molur *et al*. (2003) also reported that Hanuman Langur is a foliage eater. Earlier, Southwick and Siddiqi (1994) reported in north India normally 86% of rhesus monkey population depends entirely upon human settlements for their food, however, only 14.4% of the Rhesus Macaques live in isolation from humans and do not rely on them at all for food. Rhesus Monkey has been designated as highly adaptable to man-made habitat.

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