

STUDIES ON BIOECOLOGY AND FAUNA OF HAZARGANJI CHILTAN NATIONAL PARK AND DEVELOPMENT OF ECOTOURISM IN PROTECTED AREAS

M Zaheer Khan and *Saima Siddiqui
Faculty of Science, Department of Zoology (Wildlife & Fisheries)
University of Karachi, Karachi-75270

ABSTRACT

Hazarganji Chiltan National Park (HCNP) was established in 1980 for the protection and conservation of Chiltan Markhor (*Capra aegagrus chiltanensis*). The present study was undertaken during 2006-2009 on bioecology and fauna of Hazarganji Chiltan National Park and development of ecotourism in protected areas. During the study 30 species of mammals, 120 species of avifauna, 25 species of reptiles and 4 species of amphibians have been recorded. The main habitats of Hazarganji Chiltan National Park were Hazarganji Foothill Plains, Hazarganji/Chiltan Reserve Forest, Scrub Grasslands, Steep Mountain Slopes, Vertical Cliffs, Deep Ravines and Gorges, Juniper Scrub Grassland, Rocky Cliffs, Riparian Habitat, Human Settlements and some nearby cultivated areas. The important wildlife habitat sites include Sham Thal, Razo Nullah, Tar Moro Top, Shamtal Top, Kangari, Tal, Kumbi, Dozchur, Hazarganji Nullah, Ziarat Nullah, Raghi, Paiti, Ziarat Sakht, Chkuli Top, Ziarat Nullah Tal, Shordrang, Hanari, Mulki, Yalli, Gulgulabi, Wadd, Doki, Namtal, Spait, Chapar, Eatly, Daghari, Tut Nullah, Dagari, Loori Khusht, Khulli, Nulli, Nulli Tooghi, Gidhahar, Hanjiri, Garak, Koolry, Kooshak, Mandooki Ghat, Bunap, Tooghi Karkhasa, Chiltan Forest and Hazarganji Reserve Forest. Several other protected sites were also studied for the development and promotion of ecotourism such as Khunjerab National Park, Ghamot National Park, Deva Vatala National Park, Haleji Lake, Keenjhar Lake and Hub Dam with proposed activities like Wildlife Safari, Bird Safari, Nature Safari, Nature Trails and Tracks, Sightseeing, Hiking, Rock Climbing, Para Gliding, Mountaineering, Snow Leopard Safari, Boating, Fishing etc.

Keywords: Hazarganji/Chiltan National Park, Chiltan Markhor (*Capra aegagrus chiltanensis*), ecotourism.

INTRODUCTION

Balochistan is the largest province of Pakistan (Fig.1) extending over an area of 347,190 sq.km with a population of 7,167,554. It is located at the south-eastern edge of the Iranian Plateau and bridges the Middle East and Southwest Asia to Central Asia and South, and forms the closest oceanic frontage for the land-locked countries of Central Asia (en.wikipedia.org/wiki/Balochistan, Pakistan, 2010).

The province lies between 24° 32'N and 60° 70'E. The coast line is about 770 km long. The east-central and northern part of the province has high mountains of which considerable parts reach an elevation of above 2,300 m (7000feet) and the valleys are situated around 1,500 m above sea level. The high mountains include: The Suleiman range, The Toba-Kakar-Kakar Khurasan range, and Central Brahui range. The ranges are generally below 2300 m (7000 feet) and their valleys may be as low as 76 m above sea level. The low mountains include the Khirthar Range, Pub Range, Chagai and Raskoh Hills, Siah Range, Central Makran Coastal Range, and

Makran Coast Range (Ghalib *et al.*, 2007).

Balochistan has juniper (*Juniperus excelsa*) forests which cover approximately 140,000 hectares area of the province. The province also has some of the world's finest wetland habitats and these attract a variety of water birds including swans, geese, ducks, cranes, grebes, herons, and several species of waders. There are four species of threatened mammals in Balochistan, two are Critically Endangered – the Balochistan Black Bear (*Ursus thibetanus*) and the Chiltan Markhor (*Capra aegagrus chiltanensis*). Two species are Endangered – the Straight Horned Markhor (*Capra falconeri jerdoni*) and the Urial (*Ovis vigeni*).

The published material with reference to the biodiversity of Balochistan includes Mirza (1975), Ahmed *et al.* (1992), Roberts (1998), IUCN (2000), Shafique *et al.* (2002), Shafique and Barkati (2002), Khan *et al.* (2004), Javed and Azam (2005), Khan and Siddiqui (2005), Roberts (2005a) and Roberts (2005b), Brohi and Fakhri (2006), Khan (2006), Ghalib *et al.* (2007), Lothiya *et al.* (2007), Ghalib *et al.* (2008), Khan *et al.* (2010a,b,c) and Waqas *et al.* (2011).

*Corresponding author email: saimasiddiqui7@hotmail.com

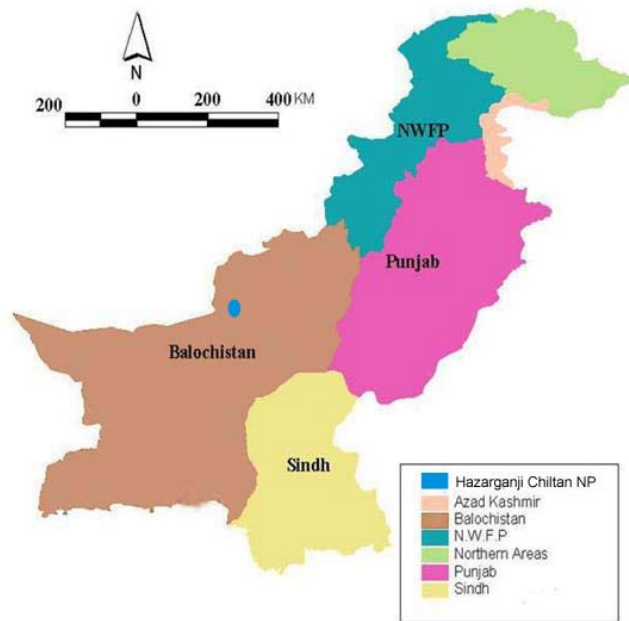


Fig. 1. Map of Pakistan showing location of Hazarganji Chiltan National Park in Balochistan Province.

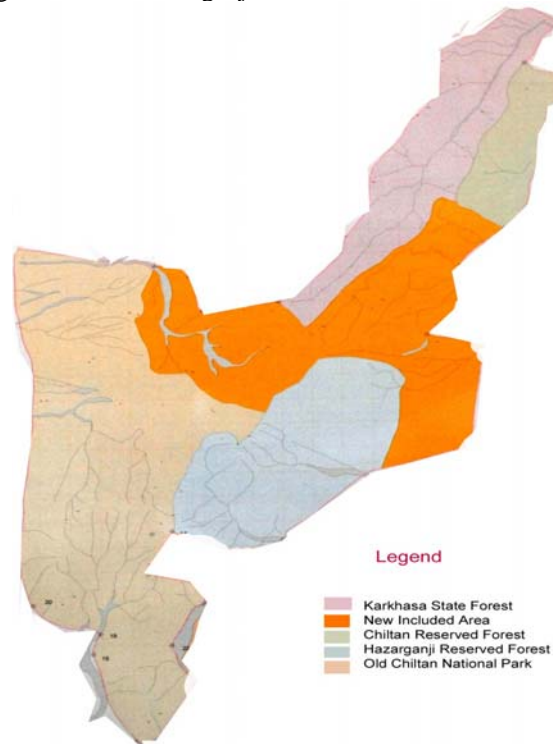


Fig. 2. Map of Hazarganji Chiltan National Park.



Fig.1.3. Map showing three entrance points of Hazarganji Chiltan National Park

Hazarganji Chiltan National Park (HCNP) $29^{\circ} 59' - 30^{\circ} 07' N$, $66^{\circ} 24' - 66^{\circ} 54' E$ (Fig. 2, 3) is one of the twenty three declared national parks of Pakistan established in 1980 to protect the habitat of the Chiltan Wild Goat and to provide recreational and educational facilities to the people of Balochistan. It is in the districts of Quetta and Mastung, some 20 km south west of the provincial capital Quetta.

The area is characterized by mountainous and rugged precipitous slope which is divided by gullies, valleys and by deep ravines. The main axis of the mountain range is north-north east/south-south-west with a marked divide between the Chiltan area to the south and west and Hazarganji range to the north and east. To the east and west of the park are gently sloping outwash plains of the Quetta and Kanak Valleys respectively.

The long-term average annual total precipitation is about 245 mm, which mostly falls in winter. The main source of this precipitation is from the eastward passage travelling low pressure disturbances in mid December to March (peaking in January and February) which originates in the Mediterranean. On the higher peaks, rain which falls as snow remains from December until the end of March.

The park is an important last remaining refuge of the Chiltan Markhor (*Capra falconeri chiltanensis*). Likewise it is an important habitat for many endemic species of the Balochistan flora.

Today ecotourism unfortunately is used as an all-inclusive term that affects protected areas and biodiversity in different ways. Despite the Asian economic crisis, international tourist arrivals grew by a solid 2.4 per cent worldwide in 1998. The objective of the present study was to investigate the Bioecology and Fauna of HCNP and Development of Ecotourism in Protected Areas of Pakistan.

MATERIALS AND METHODS

Study Areas

Based on preliminary surveys in the HCNP some important areas were selected for study (Table 1). Many vertebrates are nocturnal, inconspicuous, or avoid detection in other ways for which different techniques were used. For mammals several direct and indirect methods have been used which are as follows:

Table 1. Study areas at Hazarganji Chiltan National Park.

S. No.	Area	Study Areas	Co-ordinates
1	Hazarganji	Sham Thal, Razo Nullah, Tar moro Top, Shamtal Top	30 ⁰ 05' 24.2 N 66 ⁰ 56' 12.8 E
		Kangari, Tal, Kumbi, Dozchur	30 ⁰ 03' 08.9 N 66 ⁰ 55' 02.9 E
		Hazarganji Nullah	30 ⁰ 02' 10.9 N 66 ⁰ 52' 02.9 E
		Ziarat Nullah, Raghi, Paiti, Ziarat Sakht, Chkuli Top	30 ⁰ 04' 31.6 N 66 ⁰ 54' 16.3 E
		Ziarat nullah Tal, Shordrang, Hanari, Mulki, Yalli	30 ⁰ 00' 04.3 N 66 ⁰ 52' 28.3 E
2	Chiltan	Gulgulabi, Wadd, Doki, Namtal,	30 ⁰ 01' 01.6 N 66 ⁰ 49' 32.4 E
		Spait, Chapar, Eatly, Daghari, Tut nullah,	30 ⁰ 05' 02.43 N 66 ⁰ 52' 10.04 E
		Dagari, Loori khusht, Khulli, Nulli	30 ⁰ 06' 05.72 N 66 ⁰ 49' 56.29 E
		Nulli Tooghi, Gidhahar, Hanjiri	30 ⁰ 06' 05.72 N 66 ⁰ 48' 19.6 E
		Garak, Koolry, Kooshak, Mandooki Ghat, Bunap, Toghi	30 ⁰ 07' 37.36 N 66 ⁰ 43' 33.52 E
3	Karkhasa	Karkhasa	30 ⁰ 05' 25.06 N 66 ⁰ 51' 07.43 E
4	Hazarganji Reserve Forest	Hazarganji Forest	30 ⁰ 00' 20.09 N 66 ⁰ 51' 12.8 E
5	Chiltan Reserve Forest	Chiltan Forest	30 ⁰ 07' 37.09 N 66 ⁰ 57' 11.16 E

Mammals

Track Counts

This method has been used for nocturnal animals for their observation and locating their presence. This technique is useful for the confirmation of animals' presence which is secretive in their habitat. After rain previous tracks are eliminated where as recent tracks of animals give their abundance measures.

Line Transects

Line transects method involves counting of animals for the population estimation and status as seen by an observer along a transect line.

Point Surveys

Observation points are made along the roads, marshes, edges of ponds, at the higher points or at any points that are suitable for the habitat sighting (Brower *et al.*, 1990). Point surveys were conducted twice daily, once during early morning i.e. one hour earlier before sun rise and secondly, in the evening, i.e. half an hour before the sun set.

Pellet Counts

This counting technique in a specific area has been used for locating large mammals and assessing their

population. Pellet count method is effective in dry weather habitat where pellet groups remained preserved between sampling periods. Ten to fifteen hundred sq. m plots area has been used for this purpose. Number of pellet group per unit area is then measured as, an index of identity (ID) and determined as:

$$ID = n/A$$

(Where n is the sum of pellet group counted over all plots and A is the total area sampled (i.e.; the sum of the areas of all the plots).

Road side Counts

Normally or usually it is difficult to locate large mammals by walking in its habitat because they smell human presence from a long distance. Therefore the method of roadside counts applies to locate and get the population estimation of different mammalian species.

This method was used in Hazarganji and Chiltan Forest area and in some areas of Karkhasa where 4 x 4 Vehicle is used at a slow speed. The road side counts were carried out during early morning, at dusk and during night by using lights on the top of the vehicle.

Trapping

Sharman Traps were used to collect the live specimens. Traps were set on a line approx 500 m long and approx 10

m apart. Each trap was marked by colorful ribbons to locate the traps easily, these traps were set in the afternoon and checked early morning. The trapped animals were carefully transferred one after the other into weighed transparent polyethene bag. Relevant data such as trap setting date, date of data collection, elevation, habitat, location, environmental conditions and their effects were recorded on the data sheet at the spot, the animals were released after getting data, but the specimens with any doubts were preserved in 10% formalin and brought to Wildlife Laboratory, Department of Zoology, University of Karachi. Then the identified specimens were preserved as voucher specimens in the university museum.

Wheat and rice were used as bait to attract while peanut butter coriander, oat and honey were used for fragrance. Freshly prepared bait was used on every trapping day; only a small amount was put on the platform fitted on the nearside of the traps.

Because of limited time for surveys, trapping was done only for the night at each of the sites whereas for best results it continued at least for three nights. Other data collection procedures such as active searching (day and night), spot light searching, interviews of locals, visible signs and literature reviews were also adopted.

Counting of Fresh holes and Tracks

Fresh holes and tracks were counted in the study area of one square kilometer to estimate the population (Brower *et al.*, 1990).

Baited Spotlight Method

Some large predatory mammals are usually difficult to detect by using normal spotlight method so mostly fresh meat bait is used to attract mammals e.g. the skin of a recently slaughtered goat was dragged behind the vehicle. When the vehicle retraced the route back, some animals were found which followed the scent trail along the tract.

Normal Spotlight Method

This method is used at night for locating small and large mammals such as Hare, Porcupine, Hedgehog, Fox, Wild Cat, Jackal etc. because these nocturnal animals move at night in search of food.

Birds

The avifauna consists of resident as well as migratory species. Detailed surveys were made in summer, autumn, winter and spring seasons from 2006 to 2009. Strip census method was generally used to record the bird presence in the study area. Each sample area was covered lengthwise. Observations were made on each side of the strip for 300m thus covering 600m with the help of binoculars/spotting scopes (Khan *et al.*, 2010c). All types of habitats in the study area such as cultivated area, fallow lands, hills and mountains were sampled.

Amphibians and Reptiles

Amphibians seem to be very active just after dusk during their breeding season while Skinks and some lizards are diurnal in activity and seem most active during mid morning. Certain geckos and snakes would be active only at night. The following techniques have been employed for observation of reptiles and amphibians.

Direct Counting

One-hour Plot Searching

At each side a one-hour search was carried out to detect as many reptiles and amphibian species as possible within a circular central zone. This consisted of searching approximately 20 ha. (Within a 250 meter radius of sampling points) for exactly one hour and recording the number of individuals.

Night Observations

Spot light transects method was conducted to detect some lizards and snakes with portable spotlights. Each transect was 3 km long, the same route was travelled on the return trip. In this way 6 km round trip was covered in one night.

Turning of Stones, Rocks and Rotten Trees Process

Reptiles and amphibians take shelter or rest by hiding themselves under the stones or rocks. Therefore, in the day time survey, stones, rocks or rotten fallen trees were turned to locate and record the presence of species (Auffenberg and Rahman, 1991). The stone turning technique helps a lot for the location and estimation of population of different species, especially in the mountainous area where scattered stones are in abundance. This technique also helps to detect the food availability for herpes such as beetle, termites, spiders, scorpions etc.

Indirect Counting

Information had been collected from game watchers, game inspectors, field staff and other local villagers. Evidences from the impression of finger or foot prints, or trail presence of faecal pellets, tracks and existence of tunnels (egg laying excavations) helped in finding the existence range and rough population of reptiles.

RESULTS AND DISCUSSION

During the present study, 30 species of mammals, 120 species of birds, 25 species of reptiles and 4 species of amphibians were recorded from HCNP.

Mammals

Nine species of large mammals were recorded including Indian Wolf (*Canis lupus*), Asiatic Jackal (*Canis aureus*), Common Red Fox (*Vulpus vulpus*), Caracal/ Red Lynx (*Felis caracal*), Jungle Cat (*Felis chaus*), Stone/Beech Martin (*Martes foina*), Marbled Pole Cat (*Vormela*

peregrusna), Striped Hyaena (*Hyaena hyaena*), and Chiltan Markhor (*Capra aegagrus chiltanensis*), while 21 species of small mammals belonging to order chiroptera, insectivora, lagomorpha and rodentia were recorded (Table 2).

Avifauna

The recent work done on avifauna of Balochistan includes Roberts (1991,1992), Ahmed *et al.* (1992), Kylanpaa *et al.* (1997), Mian (1997), Moazzam and Ziaullah (2001), Shafique *et al.* (2002), Ahmed (2003), Azam (2004), Ghalib *et al.* (2004, 2008), Pandrani *et al.* (2005), Khan and Ghalib (2006), Rasool and Hasnain (2008) and Khan *et al.* (2010b). Avifauna comprises of 36 Resident and 84 Migratory species. Migratory species included Passage migrants, winter visitors and summer breeders (Table 3).

Reptiles and Amphibians

Khan (2006) is the latest published work on Reptiles of Pakistan. Recently, Khan and Ghalib (2006), Khan *et al.* (2010c) and Waqas (2011) have published some work on marine turtles of Balochistan. Among reptiles, 15 lizards and 9 species of snakes were recorded including 4 species of poisonous snakes viz. Indian Cobra (*Naja naja*), Levantine Viper (*Macrovipera lebetina*), Saw Scaled Viper (*Echis carinatus*), Persian Horned Viper (*Pseudocerastes persicus*) and only one testudine was recorded namely Afghan Tortoise (*Agrionemys horsfieldii*) (Table 4).

Among amphibian's two species of toads *Bufo stomaticus* and *Bufo viridus* and two species of frogs viz *Paa sternosignata* and *Euphlyctis cyanophlyctis* were recorded (Table 5).

Key and important species

The conservation and protection of Chiltan Markhor was the key purpose for the establishment of Hazarganji Chiltan National Park. It is a threatened species as all Wild goats are included as Vulnerable in the IUCN Red List of Threatened Species.

Lydekker (1913), for the first time described Markhor as a distinct sub-species *Capra falconeri chiltanensis*. Schallar and Khan (1975) and Schaller (1977) studied the Chiltan Markhor populations and it was concluded that they were not Markhor but Wild Goat, based on horn core morphology and coat color of mature males (Roberts b,2005).

Schaller and Mirza (1971) reported the population of 107 Markhors (*Capra aegagrus chiltanensis*) in the Chiltan areas. Mirza continued this in 1975 and counted 168 Markhor which were confined to the southern area of the range where as adult males were found above 2,800 m in the most difficult terrain. From 1980 to 1990, Markhor surveys were undertaken by Park staff. The trend between

1979 and 1990 indicated that the Markhor population was increasing.

During the present study from 2006-2009, 700 Markhors were recorded in the areas of Hazarganji, Chiltan and Karkhasa areas.

Other important mammals of the area are Caracal (*Felis caracal*), Beech or Stone Marten (*Martis foina*), Marbled Polecat (*Vormela peregusna*), Striped Hyaena (*Hyaena hyaena*), Afghan Pika (*Ochotona rufescence*) and Afghan Mole Vole (*Ellobius fuscocapillus*).

106 bird's species were recorded from the park during 1997 (Anon., 1998), Shafique and Barkati (2002) reported 74 species. 120 species of avifauna were recorded during the present study out of which 19 species of Birds of Prey, 9 species of Game birds, 84 Passerines and 8 other bird species were recorded.

The area is important for the birds of prey. Shafique and Barkati (2002) reported Black kite (*Milvus migrans*), Sparrow hawk (*Accipiter nisus*), Golden Eagle (*Aquila chrysaetos*), Short-Toed Eagle (*Circaetus gallicus*), Bearded or Lammergeier Vulture (*Gypaetus barbatus*), Cinereous Vulture (*Aegyptius monachus*), Long Legged Buzzard (*Buteo rufinus*), Hen Harrier (*Circus cyaneus*), Eurasian Kestrel (*Falco tinnunculus*), Peregrine Falcon (*Falco peregrines*) and Spotted Owllet (*Athene brama*) from the area. Ahmed and Khan (2005) recorded two species of vultures viz Cinereous vulture (*Aegyptius monachus*) and Eurasian Griffon (*Gyps fulvus*). Important Game birds of the park included See-See Partridge (*Ammoperdix griseogularis*), Chukor (*Alectoris chukar*), Houbara Bustard (*Chlamydotis undulata*) and Spotted Sand Grouse (*Pterocles senegallus*).

30 species of reptiles were recorded during the present study. The important species being Fat Tailed Gecko (*Eublepharis macularius*), Caspian Varanus (*Varanus griseus*), Saharo-Sindhian Ribbon Snake (*Psammodon schokari*), Dark Head Dwarf Racer (*Pseudocyclophis persicus*) and Persian Horned Viper (*Pseudocerastes persicus*).

ECOTOURISM IN PROTECTED AREAS

As far as ecotourism is concerned different sites were explored during the study not only in Hazarganji Chiltan National Park but also in Khunjerab National Park, Hingol National Park, Ghamot National Park, Deva Vatala National Park, Haleji Wildlife Sanctuary, Keenjhar Lake and Hub Dam and suggested some interesting activities like, Nature Safari, Bird Safari, Snow Leopard Safari as in the case of Khunjerab National Park, Mountaineering, Rock Climbing, Hiking, Paragliding etc. were suggested.

Table 2. Checklist of Mammals of Hazarganji Chiltan National Park.

S. No.	Order	Family	Common Name	Scientific Name	Distribution
01	Insectivora	Erinaceidae	Afghan Hedgehog	<i>Hemiechinus auritus</i>	Hazarganji, Chiltan, Karkhasa.
02	Insectivora	Erinaceidae	Brandt's Hedgehog	<i>Paraechinus hypomelas</i>	Hazarganji, Karkhasa
03	Insectivora	Soricidae	Balochistan Short Tailed Shrew	<i>Crocidura gmelini</i>	Hazarganji, Chiltan, Karkhasa
04	Insectivora	Soricidae	Zarudny's Shrew	<i>Crocidura zarudnyi</i>	Hazarganji, Chiltan
05	Chiroptera	Rhinolophidae	Greater Horse Shoe Bat	<i>Rhinolophus ferrummequinum</i>	Hazarganji
06	Carnivora	Canidae	Indian Wolf	<i>Canis lupus</i>	Chiltan, Hazarganji
07	Carnivora	Canidae	Asiatic Jackal	<i>Canis aureus</i>	Hazarganji, Chiltan, Karkhasa
08	Carnivora	Canidae	Common Red Fox	<i>Vulpes vulpes</i>	Hazarganji, Bibi Nala, Ziarat Nala Duzchur, Hinjeeri Nala, Chiltan Hills.
09	Carnivora	Felidae	Caracal/ Red Lynx	<i>Felis caracal</i>	Hazarganji, Chiltan, Karkhasa
10	Carnivora	Felidae	Jungle Cat	<i>Felis chaus</i>	Hazarganji, Hazarganji Reserve Forest Chiltan, Chiltan Reserve Forest, Karkhasa.
11	Carnivora	Mustellidae	Stone/Beech Martin	<i>Martes foina</i>	Hazarganji, Chiltan, Karkhasa, Hazarganji Reserve Forest, Chiltan Reserve Forest
12	Carnivora	Mustellidae	Marbled Pole Cat	<i>Vormela peregusna</i>	Hazarganji, Karkhasa
13	Carnivora	Hyaenidae	Striped Hyaena	<i>Hyaena hyaena</i>	Hazarganji, Chiltan, Karkhasa
14	Artiodactyla	Bovidae	Chiltan Markhor	<i>Capra aegagrus chiltanensis</i>	All over the Park
15	Lagomorpha	Leporidae	Cape Hare	<i>Lepus capensis</i>	Hazarganji, Bibi nala, Ziarat nala
16	Lagomorpha	Ochotonidae	Afghan Pika	<i>Ochotona rufescence</i>	Hazarganji Reserve Forest
17	Rodentia	Cricetidae	Migratory Hamster	<i>Cricetulus migratorius</i>	Hazarganji, Chiltan
18	Rodentia	Cricetidae	Mouse like Hamster	<i>Calomyscus bailwardi</i>	Hazarganji, Chiltan, Karkhasa
19	Rodentia	Dipodidae	Small Five Toad Jerboa	<i>Allactaga elater</i>	Hazarganji, Chiltan hills
20	Rodentia	Gliridae	Forest Dormouse	<i>Dryomys nitedula</i>	Hazarganji, Karkhasa, Chiltan Reserve Forest
21	Rodentia	Hystricidae	Indian Crested Porcupine	<i>Hystrix indica</i>	1800-2500 m
22	Rodentia	Muridae	Sundevall's Jird	<i>Meriones crassus</i>	Hazarganji, Chiltan
23	Rodentia	Muridae	Persian Jird	<i>Meriones persicus</i>	Hazarganji, Chiltan
24	Rodentia	Muridae	Libian Jird	<i>Meriones libycus</i>	Hazarganji, Chiltan
25	Rodentia	Muridae	Afghan Mole Vole	<i>Ellobius fuscocapillus</i>	Hazarganji and Chiltan area 1900- 2400 m
26	Rodentia	Muridae	Grey Spiny Mouse	<i>Mus saxicola</i>	Hazarganji, Karkhasa
27	Rodentia	Muridae	Roof or House Rat	<i>Rattus rattus</i>	Near Museum n rest house

Continued.....

Continued.....

S. No.	Order	Family	Common Name	Scientific Name	Distribution
28	Rodentia	Muridae	Sand Colored Rat	<i>Millardia gleadowi</i>	Hazarganji
29	Rodentia	Muridae	House Mouse	<i>Mus musculus</i>	Hazarganji, Chiltan
30	Rodentia	Muridae	Short Tailed Mole Rat	<i>Nesokia indica</i>	Hazarganji, Hinjiri nala, Bibi nala, Ziarat nala

Table 3. Checklist of Birds of Hazarganji Chiltan National Park.

S. No.	Family	Common Name	Scientific Name	Distribution	Status
01	Accipitridae	Shikra	<i>Accipiter badius</i>	Near rest house	WV/SBV
02	Accipitridae	Eurasian Sparrow Hawk	<i>Accipiter nisus</i>	Hazarganji, Chiltan	SBV
03	Accipitridae	Black Kite	<i>Milvus migrans</i>	Hazarganji, Chiltan	SBV
04	Accipitridae	Golden Eagle	<i>Aquila chrysaetos</i>	shamthar area	R/WV
05	Accipitridae	Tawny Eagle	<i>Aquila rapax</i>	Hazarganji, Chiltan	R
06	Accipitridae	Bonelli's Eagle	<i>Hieraetus fasciatus</i>	Hazarganji, Karkhasa	R
07	Accipitridae	Short Toed Eagle	<i>Circaetus gallicus</i>	Hazarganji, Chiltan, Karkhasa	R
08	Accipitridae	Bearded Vulture/ Lammergeier	<i>Gypaetus barbatus</i>	Hazarganji, Chiltan	WV/R
09	Accipitridae	Eurasian Griffon Vulture	<i>Gyps fulvus</i>	Chiltan	R
10	Accipitridae	Egyptian Vulture	<i>Neophron percnopterus</i>	Chiltan	SBV
11	Accipitridae	Cinereous Vulture	<i>Aegyptius monachus</i>	Chiltan	SBV/WV
12	Accipitridae	Long Legged Buzzard	<i>Buteo rufinus</i>	Hazarganji, Chiltan, Karkhasa	WV
13	Accipitridae	Hen Harrier	<i>Circus cyaneus</i>	Chiltan Forest	WV
14	Falconidae	Eurasian Kestrel	<i>Falco tinnunculus</i>	Hazarganji, Chiltan	R/WV
15	Falconidae	Northern/ Eurasian Hobby	<i>Falco subbuteo</i>	Chiltan areas, Karkhasa	WV
16	Falconidae	Saker Falcon	<i>Falco cherrug</i>	Bibi nala, Karkhasa	WV
17	Falconidae	Peregrine Falcon	<i>Falco peregrinus</i>	Hazarganji, Chiltan	SBV/WV
18	Falconidae	Merlin	<i>Falco columbarius</i>	Hazarganji, Chiltan	SBV/WV
19	Phasianidae	See-See Partridge	<i>Ammoperdix griseogularis</i>	Bibi nala	R
20	Phasianidae	Chakor	<i>Alectoris chukar</i>	Kangri nala	R
21	Otididae	Houbara Bustard	<i>Chlamydotis undulata</i>	Ziarat nala, Hazarganji	WV/PM
22	Charadriidae	White Tailed Lapwing	<i>Chettusia leucura</i>	Hazarganji, Chiltan	PM/SBV
23	Pteroclididae	Spotted Sand Grouse	<i>Pterocles senegallus</i>	Hazarganji	PM/WV
24	Columbidae	Blue Rock Pigeon	<i>Columba livia</i>	Bibi nala, Hinjiri nala, Nulli nala	R
25	Columbidae	Common Wood Pigeon	<i>Columba palumbus</i>	Bibi nala, Hinjiri nala, Nulli nala	R
26	Columbidae	Western Turtle Dove	<i>Streptopelia turtur</i>	Hazarganji nala	WV
27	Columbidae	Eurasian Ring Dove	<i>Streptopelia decaocto</i>	Hazarganji nala	R/SBV
28	Columbidae	Little Brown Dove	<i>Streptopelia senegalensis</i>	Rest house	R/SBV
29	Psittacidae	Rose Ringed Parakeet	<i>Psittacula krameri</i>	Hazarganji, Chiltan	SBV
30	Cuculidae	Asiatic/Eurasian Cuckoo	<i>Cuculus canorus</i>	Hazarganji, Karkhasa	SB

Continued.....

Continued.....

S. No.	Family	Common Name	Scientific Name	Distribution	Status
31	Strigidae	Spotted Owllet	<i>Athene brama</i>	Chiltan ,Bibi nala	R
32	Strigidae	Eagle Owl	<i>Bubo bubo</i>	Karkhasa	R
33	Strigidae	Eurasian Scops Owl	<i>Otus scops</i>	Hazarganji, ziarat nalla	SBV
34	Strigidae	Pallid Scops Owl	<i>Otus brucei</i>	Hazarganji, Chiltan, Karkhasa	SBV
35	Caprimulgidae	European Nightjar	<i>Caprimulgus europaeus</i>	Karkhasa	SBV/WV
36	Apodidae	Common Swift	<i>Apus apus</i>	Chiltan Hazarganji	SBV
37	Apodidae	Little Swift	<i>Apus affinis</i>	Hazarganji	SBV
38	Apodidae	Alpine Swift	<i>Apus melba</i>	Karkhasa, Chiltan Forest	SBV
39	Meropidae	European Bee-Eater	<i>Merops apiaster</i>	Near rest house	SBV
40	Meropidae	Green Bee Eater	<i>Merops orientalis</i>	Hazarganji	SBV
41	Upupidae	Hoopoe	<i>Upupa epops</i>	Stream bed of Chiltan	SBV
42	Picidae	Scally Bellied Wood Pecker	<i>Picus squamatus</i>	Hazarganji, Chiltan	R
43	Alaudidae	Hume's Short Toed Lark	<i>Calandrella acutirostris</i>	Chiltan near rest house	SBV
44	Alaudidae	Greatet Short Toad Lark	<i>Calandrella brachydactyla</i>	Chiltan Forest area	WV
45	Alaudidae	Small Skylark	<i>Alauda gulgula</i>	Hazarganji	R
46	Alaudidae	Eurasian SkyLark	<i>Alauda arvensis</i>	Hazargani, Chiltan Reserve Forest	WV
47	Alaudidae	Eastern Calandra Lark	<i>Melanocorypha bimaculata</i>	Hazarganji Chiltan	WV
48	Alaudidae	Crested Lark	<i>Galerida cristata</i>	Chiltan & Hinjiri nala	R
49	Hirundinidae	Barn or Common Swallow	<i>Hirundo rustica</i>	Chiltan near dam & in nullahs	SBV/WV
50	Hirundinidae	Red Rumped Swallow	<i>Hirundo daurica</i>	Hazarganji Chiltan	SBV
51	Hirundinidae	Crag Martin	<i>Ptyonoprogne rupestris</i>	Chiltan Forest	SBV
52	Hirundinidae	Collared Sand Martin	<i>Riparia riparia</i>	Hazarganji Chiltan	PM
53	Laniidae	Great Grey Shrike	<i>Lanius excubitor</i>	Hazarganji	R/SBV
54	Laniidae	Brown Shrike	<i>Lanius cristatus</i>	Chiltan, Hazarganji	SBV/R
55	Laniidae	Bay-Backed Shrike	<i>Lanius vittatus</i>	Hazarganji	R
56	Laniidae	Red Backed Shrike	<i>Lanius collurio</i>	Hazarganji near rest house	PM
57	Laniidae	Rufous- Backed Shrike	<i>Lanius schach</i>	Hazarganji near rest house	R
58	Laniidae	Isabelline Shrike	<i>Lanius isabellinus</i>	Hazarganji,Chiltan	WV/SBV
59	Laniidae	Lesser Gray Shrike	<i>Lanius minor</i>	Hazarganji	PM
60	Oriolidae	Golden Oriole	<i>Oriolus oriolus</i>	Hazarganji Reserve Forest,Chiltan	PM/SBV
61	Motacillidae	Red Throated Pipit	<i>Anthus cervinus</i>	Ziarat nala	WV
62	Motacillidae	Long Billed Pipit/ Brown Rock Pipit	<i>Anthus similis</i>	Chiltan,Hazarganji	R
63	Motacillidae	Water Pipit	<i>Anthus spinoletta</i>	Chiltan, Chiltan Forest, Karkhasa	WV
64	Motacillidae	Yellow Wagtail	<i>Motacilla flava</i>	Hazarganji, Chiltan Reserve Forest	WV
65	Motacillidae	Yellow Headed /Citrine Wagtail	<i>Motacilla citreola</i>	Ziarat nala, Bibi nala	SBV

Continued.....

Continued.....

S. No.	Family	Common Name	Scientific Name	Distribution	Status
66	Motacillidae	Grey Wagtail	<i>Motacilla cinerea</i>	Chiltan, Shamtal Top	SBV
67	Pycnonotidae	White Cheeked Bulbul	<i>Pycnonotus leucogenys</i>	Hazarganji & Chiltan velleys	R
68	Pycnonotidae	Red Vented Bulbul	<i>Pycnonotus cafer</i>	Hazarganji Reserve Forest	PM
69	Turdidae	Blue Rock Thrush	<i>Monticola solitarius</i>	Hazarganji Nala	
70	Turdidae	Mistle Thrush	<i>Turdus viscivorus</i>	Hazarganji, Chiltan	R/WV
71	Turdidae	Pied Bush Chat	<i>Saxicola caprata</i>	Chiltan near rest house	SBV
72	Turdidae	Stone Chat/Indian Bush Chat	<i>Saxicola torquata</i>	Chiltan	SBV/PM
73	Turdidae	Hume's Wheatear	<i>Oenanthe alboniger</i>	Hazarganji Chiltan	WV
74	Turdidae	Pied Wheatear	<i>Oenanthe picata</i>	Hazarganji & Chiltan	SBV
75	Turdidae	Desert Wheatear	<i>Oenanthe deserti</i>	Chiltan valley	WV
76	Sylviidae	Cetti's Warbler	<i>Cettia cetti</i>	Chiltan near rest house	WV
77	Sylviidae	Plain leaf Warbler	<i>Phylloscopus neglectus</i>	Hazarganji, Chiltan, Karkhasa	SBV
78	Sylviidae	Great Reed Warbler	<i>Acrocephalus scirpaceus</i>	Chiltan, Hinjri nala	PM
79	Sylviidae	Booted Warbler	<i>Hippolais caligata</i>	Hazarganji	WV/SBV
80	Sylviidae	Green Warbler	<i>Phylloscopus nitidus</i>	Hazarganji	PM
81	Sylviidae	Sulphur –Bellied Warbler	<i>Phylloscopus griseolus</i>	Hazarganji, Chiltan	SBV
82	Sylviidae	Upcher's Warbler	<i>Hippolais languid</i>	Hazarganji	SBV
83	Sylviidae	Orphean Warbler	<i>Sylvia hortensis</i>	Chiltan hills	PM/SBV
84	Sylviidae	Lesser White Throat	<i>Sylvia curruca</i>	Chiltan near rest houses	WV/SBV
85	Turdidae	Rufous- Backed Redstart	<i>Phoenicurus erythronotus</i>	Hazarganji, Chiltan, Karkhasa	R
86	Turdidae	Black Redstart	<i>Phoenicurus ochruros</i>	Rocky Nullahs of Hazarganji	PM
87	Muscicapidae	Red Throated Flycatcher	<i>Ficedula parva</i>	Chiltan, Karkhasa	WV
88	Muscicapidae	Spotted Flycatcher	<i>Muscicapa striata</i>	Hazarganji, Chiltan Reserve Forest	WV
89	Timaliidae	Common Babbler	<i>Turdoides caudatus</i>	Hazarganji, Chiltan, Karkhasa	R
90	Timaliidae	Himalayan Laughing Thrush	<i>Garrulax lineatus</i>	Hazarganji, Chiltan, Karkhasa	R
91	Aegithalidae	White Cheeked Long Tailed Tit	<i>Aegithalos leucogenys</i>	Hazarganji, Chiltan	R
92	Paridae	Black Crested Tit	<i>Parus rufonuchalis</i>	Hazarganji, Chiltan Reserve Forest	R
93	Paridae	Great Tit	<i>Parus major</i>	Karkhasa, Hazarganji, Chiltan	R
94	Sittidae	Eastern Great Nuthatch	<i>Sitta tephronota</i>	Hazarganji & Chiltan	R
95	Sittidae	Common European Nuthatch	<i>Sitta europaea</i>	Chiltan, Bibi ziarat	R
96	Trichodromidae	Wall creeper	<i>Tichodroma muraria</i>	Shamtahar & Ziarat nala	PM

Continued.....

Continued.....

S. No.	Family	Common Name	Scientific Name	Distribution	Status
97	Corvidae	Jackdaw	<i>Corvus monedula</i>	Hazarganji, Chiltan	WV
98	Corvidae	Raven	<i>Corvus corax</i>	Chiltan , Hazarganji	R
99	Corvidae	Mag Pie	<i>Pica pica</i>	Hazarganji, Chiltan	R
100	Corvidae	Alpine Chough	<i>Pyrrhocorax graculus</i>	Bibi nala, Hinjiri & Koolri	R
101	Corvidae	Chough	<i>Pyrrhocorax pyrrhocorax</i>	Hazarganji, Chiltan	PM
102	Sturnidae	Rosy Pastor	<i>Sturnus roseus</i>	Hazarganji & Chiltan	PM
103	Passeridae	House Sparrow	<i>Passer domesticus</i>	Hazarganji	R/SBV
104	Passeridae	Tree Sparrow	<i>Passer montanus</i>	Hazarganji & Chiltan	R
105	Passeridae	Spanish Sparrow	<i>Passer hispaniolensis</i>	Hazarganji & Chiltan	PM
106	Estrildidae	Red Munia	<i>Estrilda amandava</i>	Chiltan Reserve Forest, Karkhasa	SBV
107	Fringillidae	Brambling	<i>Fringilla montifringilla</i>	Chiltan, Hazarganji	WV
108	Fringillidae	Red Fronted Serin	<i>Serinus pusillus</i>	Chiltan	R
109	Fringillidae	Eurasian Goldfinch	<i>Carduelis carduelis</i>	Hazarganji, Chiltan	R
110	Fringillidae	Eastern Linnet	<i>Carduelis cannabina</i>	Hazarganji	WV
111	Fringillidae	Common Rosefinch	<i>Carpodacus erythrinus</i>	Hazarganji	SBV
112	Fringillidae	Red Mantled Rosefinch	<i>Carpodacus grandis</i>	Bonap, Chiltan	SBV
113	Fringillidae	Billed Desert Finch	<i>Rhodopechys obsoleta</i>	Hazarganji, Chiltan, Chiltan Reserve Forest	R
114	Fringillidae	White Winged Gross Beak	<i>Mycerobas carripes</i>	Hazarganji, Chiltan Reserve Forest	R
115	Fringillidae	Hawfinch	<i>Coccothraustes coccothraustes</i>	Chiltan	PM
116	Emberizidae	Pine Bunting	<i>Emberiza leucocephalos</i>	Chiltan nala	WV
117	Emberizidae	Black Headed Bunting	<i>Emberiza melanocephala</i>	Hazarganji	PM
118	Emberizidae	White Capped Bunting	<i>Emberiza stewarti</i>	Chiltan Bunap	SBV
119	Emberizidae	Rock Bunting	<i>Emberiza cia</i>	Chiltan, Karkhasa, Chiltan Reserve Forest	SBV
120	Emberizidae	Red Headed Bunting	<i>Emberiza bruniceps</i>	Hazarganji, Chiltan	PM

R= Resident; WV = Winter visitor; SV = Summer Visitor; SBV = Summer breeding Visitor; PM = Passage Migrant

Table 4. Checklist of Reptiles of Hazarganji Chiltan National Park.

S. No.	Order	Family	Common Name	Scientific Name	Distribution
01	Squamata	Agamidae	Caucasian Rock Agama	<i>Laudakia caucasia</i>	Hazarganji linjo area, Chiltan Bibi Nala
02		Agamidae	Common Field Agama	<i>Trapelus agilis</i>	Chiltan Bibi Nala
03		Agamidae	Ocellate Ground Agama	<i>Trapelus megalonyx</i>	Chiltan Bibi Nala
04		Agamidae	Garden Lizard/ Common Tree Lizard	<i>Calotes versicolor</i>	Chiltan forest area
05		Gekkonidae	Persian Spider Gecko	<i>Agamura persica</i>	Hazarganji Chiltan Karkhasa
06		Gekkonidae	Kachh Spotted Ground Gecko	<i>Cryptopodian kachhense</i>	Hazarganji rest house
07		Gekkonidae	Persian Sand Lacerta	<i>Eremias persica</i>	Hazarganji
08		Gekkonidae	Persian House Gecko	<i>Hemidactylus persicus</i>	Near museum at Hazarganji
09		Gekkonidae	Long Tailed Desert Lacerta	<i>Mesalina watsonana</i>	Hazarganji

Continued.....

Continued.....

S. No.	Order	Family	Common Name	Scientific Name	Distribution	
10	Squamata	Geckonidae	Snake Eyed Lacerta	<i>Ophisops jerdoni</i>	Hazrganji Nala, Chiltan	
11		Geckonidae	Mountain Dwarf Gecko	<i>Tropicolotes depressus</i>	Hinjiri Nala	
12		Geckonidae	Fat Tailed Gecko/ Leopard Gecko	<i>Eublepharis macularius</i>	Chiltan Nala, Hazarganji	
13		Lacertidae	Blue Tail Sand Lizard	<i>Acanthodactylus cantori</i>	Chiltan, Hazarganji	
14		Scincidae	Eastern Dwarf Skink	<i>Ablepharus pannonicus</i>	Hazarganji	
15		Varanidae	Caspian Varanus	<i>Varanus griseus</i>	Hazarganji, Karkhasa	
16		Colubridae	Golden Wolf Snake	<i>Lycodon striatus</i>	Hazarganji Nala	
17		Colubridae	Cliff Racer	<i>Platyceps rhodorachis</i>	Shamtahar Nala	
18		Colubridae	Saharo-Sindhian Ribbon Snake	<i>Psammophis schokari</i>	Ziarat Nala	
19		Colubridae	Dark Headed Dwarf Racer	<i>Pseudocyclophis persicus</i>	Hazarganji Rest House area	
20		Colubridae	Dhaman / Rope Snake	<i>Ptyas mucosus</i>	Chiltan Toot Nala near spring	
21		Elapidae	Indian Cobra	<i>Naja naja</i>	Hazarganji, near Hazarganji Nala	
22		Viperidae	Saw Scaled Viper	<i>Echis carinatus</i>	Duzchur, Bunap. Ispet	
23		Viperidae	Levantine Viper	<i>Macrovipera lebetina</i>	Hazarganji near Museum	
24		Viperidae	Persian Horned Viper	<i>Pseudocerastes persicus</i>	Shamtaltop, gulgulabi	
25		Testudines	Testudinidae	Central Asian/ Afghan Tortoise	<i>Agrionemys horsfieldii</i>	All over the park

Table 5. Amphibians of Hazarganji Chiltan National Park.

S. No.	Order	Family	Common Name	Scientific Name	Distribution
01	Anura	Bufoidae	Zugmayer's Toad/ baloch Green Toad	<i>Bufo viridus</i>	Hazarganji near museum
02		Bufoidae	Indus Valley Toad	<i>Bufo stomatsicus</i>	Hazarganji nala
03		Ranidae	Baluch Mountain Frog	<i>Paa sternosignata</i>	Bonap Hills
04		Ranidae	Common Skittering Frog	<i>Euphlyctis cyanophlyctis</i>	Hazarganji nala, Ziarat nala, Karkhasa

CONCLUSION

It is concluded that the Park has an important and unique biodiversity. As many as 30 species of mammals, 120 species of birds, 25 species of reptiles and 4 species of amphibians were recorded from the study area. Among Mammals, the Chiltan Wild Goat, Caracal, Marbled Pole Cat and Stone Marten are the key species. The key species of birds include See-See Partridge, Chukor and Houbara Bustard. The area is also important for the birds of prey. Among reptiles, Afghan Tortoise, Persian Horned Viper and Laventine Viper are the key species.

The threatened species include the Hyaena (NT), Marbled Pole Cat (E), Houbara Bustard (V), Egyptian Vulture (E) and Afghan Tortoise. There are no serious threats to the biodiversity except the impact of Murri and Bugti Tribes, occupying some of the Core area of the Park. Eight Protected Areas have been suggested for the development of ecotourism in Pakistan.

REFERENCES

Ahmed, MF., Ghalib, SA. and Hasnain, SA. 1992. The Waterfowl of the Mekran Coast. Proc. Nat. Conf.

- Problems and Resources of Mekran Coast and Plan of Action for its development. pp.113-123.
- Ahmed, SI. 2003. Raptors of Pakistan. J. Nat. Hist. Wildl. 2(1):45-49.
- Anonymous, 1998. Hazarganji Chiltan National Park Management Plan. World Wide Fund for Nature-Pakistan and Forest and Wildlife Department, Government of Balochistan.
- Auffenberg, W. and Rahman, H. 1991. Studies on Pakistan Reptiles. Pt. I. The genus *Echis* (Viperidae). Bull. Florida Mus. Nat. Hist. 35 (5):263-314.
- Azam, MM. 2004. Avifaunal diversity of Hingol National Park. Rec. Zool. Surv. Pak. 15:7-15.
- Brohi, MA. and Fakri, S. 2006. Survey of Small mammals of Hingol National Park, Balochistan. Rec. Zool. Surv. Pakistan. 17:7-9.
- Brower, J., Zar, J. and Ende, C. 1990. Field and laboratory methods for general ecology. Wm . C . Brown Publishers. 2460 Kerper Boulevard, Dubuque. A 52001.
- Ghalib, SA., Khan, MZ., Zehra, A. and Khan, AR. 2004. Current Population Status of the Birds of Balochistan, Pakistan. J. Nat. Hist. Wildl. 3(2):5-62.
- Ghalib, SA., Jabbar, A., Khan, AR. and Zehra, A. 2007. Current status of the mammals of Balochistan. Pakistan J. Zool. 39(2):117-122.
- Ghalib., SA., Jabbar, A., Wind, J., Zehra, A. and Abbas, D. 2008. Avifauna of Hingol National Park, Balochistan. Pakistan J. Zool. 40(5):317-330.
- IUCN. 2000. Balochistan Conservation Strategy. IUCN Pakistan and GoB, Karachi, Pakistan. xxxii +354 pp.
- Javed, HI. and Azam, MM. 2005. Some observations on the population of Suleiman Markhor (*Capra falconeri jerdoni* Hume,1875) in Takatu, Balochistan Province, Pakistan. Rec. Zool. Surv. Pakistan.16:40-45.
- Khan, MS. 2006. Amphibians and Reptiles of Pakistan. Krieger Publishing Company, Malabar, Florida. pp312.
- Khan, MZ., Zehra, A. and Siddiqui, S. 2004. The Wildlife of Hingol National Park, Balochistan. J. nat. hist. wildl. 3(1):29-31.
- Khan, MZ. and Siddiqui, S. 2005. The Vertebrate Biodiversity of Hazarganji Chiltan National Park, Balochistan. J. nat. hist. wildl. 4(1):93-99.
- Khan, MZ. and Ghalib, SA. 2006. Status, distribution and conservation of Marine turtles in Pakistan. J. nat. hist. wildl. 5 (2):195-201.
- Khan, MZ., Ghalib, SA. and Hussain, B. 2010^a. Status and New Nesting sites of Sea Turtles in Pakistan. Chelonia Conservation and Biology. 9(1):113-123.
- Khan, MZ., Ghalib, SA., Zehra, A. and Hussain, B. 2010^b. Biogeology and conservation of the birds of Hingol National Park, Balochistan. Journal of Basic and Applied Sciences. 6(2):175-186.
- Khan, MZ., Zehra, A., Ghalib, SA., Siddiqui, S. and Hussain, B. 2010^c. Vertebrate Biodiversity and Key Mammalian species status of HNP. Canadian Journal of Pure and Applied Sciences. 4(2):1151-1162.
- Kylanpaa, J., Pyhala, M. and Rajput, RA. 1997. Report of Ornithological Expedition in the Hingol National Park. 9-12 May (unpublished report).
- Lothiya, SB., Achakzai, GD., Pervaz, A., Ahmed, SM. and Khan, MZ. 2007. Diet of Chiltan Wild Goat *Capra aegagrus chiltanensis* in Hazarganji Chiltan National Park. Canadian Journal of Pure and Applied Sciences. 1(1):53-56.
- Lydekker, R. 1913. Catalogue of the ungulate mammals in the British Museum (Natural History). Trustees of the British Museum (Natural History), London 1:1-249.
- Mian, A. 1997. A Checklist of the Avifauna of Western Chagai, Balochistan, Pakistan. Pakistan Journal of Ornithology. 1(1-2):23-30.
- Mirza, Z.B. 1975. A Census of Chiltan Markhor *Capra hircus* in Chiltan range, Quetta. Pakistan Journal of Zoology. 7(2): 214-216.
- Moazzam, M. and Ziaullah. 2001. Some observations on the ornithological fauna of the offshore waters of Pakistan. Pak. J. Mar. Biol. 7(1-2):113-134.
- Pandrani, A., Hasnain, SA., Ghalib, SA., and Ahmad, E. 2005. Observations on the waterbirds of Jiwani, Mekran Coast (Balochistan). Pakistan J. Zool. 37(4):301-306.
- Rasool, F. and Hasnain, SA. 2008. Observations on the avifauna of Miani Hor, Balochistan. Pakistan Journal of Marine Science. 17 (2):99-106.
- Roberts, TJ. 1998. The Mammals of Pakistan (Revised Edition). Oxford University Press, Karachi.
- Roberts, TJ. 1992. The birds of Pakistan. (2 volumes). Oxford University Press, Karachi.
- Roberts, TJ. 2005^a. Field guide to the small mammals of Pakistan. Oxford University Press, Karachi, Pakistan. pp280.
- Roberts, TJ. 2005^b. Field guide to the large and medium – sized mammals of Pakistan. Oxford University Press, Karachi, Pakistan. pp260.
- Schaller, GB. and Mirza, ZB. 1971. Observations on Urial and Markhor in West Pakistan. (unpublished report for Pakistan Government).

Schaller, GB. and Khan SA. 1975. Distribution and Status of Markhor(*Capra falconeri*) Biological Conservation. 7:185-198.

Schaller, GB. 1977. Mountain monarchs: Wild sheep and goats of the Himalaya. Wildlife Behavior and Ecology Series, University of Chicago Press. Chicago, IL., USA.

Shafique, CM. and Barkati, S. 2002. Status and ecology of Chiltan Wild Goat (*Capra aegagrus chialtanensis*) (Caprinae). Rec. Zool. Surv. Pakistasn. 14:81-93.

Shafique, CM., Hassan, A. and Nazar, Q. 2002. Wildlife of Hazarganji Chiltan National Park, Balochistan. Rec. Zool. Sur. Pak.14:55-79.

Waqas, U., Hasnain, SA., Ahmed, E., Abbasi, M. and Pandrani, A. 2011. Conservation of Green Turtle (*Chelonia mydas*) at Daran Beach, Jiwani, Balochistan. Pakistan.J. Zool. 43(1): 85-90.

www.wikipedia.org/wiki/Balochistan_Pakistan, 2010.

Received: Sept 5, 2010; Revised and Accepted: Dec 24, 2010