



MAMMALS OF KHYBER-PAKHTUNKHWA: A REVIEW

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ABSTRACT

Pakistan has unique biodiversity, that belongs to a blend of habitat and types of ecosystem. These habitats support a variety of species that contribute to the overall biodiversity. In the present study, 87 species of mammals were recorded through Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) in different prime habitats of wild mammals in Khyber Pakhtunkhwa. The protected sites of the species have been listed, of which the National Parks found to be the most potential sites for the conservation of Woolly Flying Squirrel, Snow Leopard, Indian Pangolin, Indian Wolf, Leopard, Musk Deer, Black Bear, Brown Bear, Markhor, Striped Hyaena, Common Otter etc. The conservation status of the threatened /near threatened species, from IUCN Red List 2017 has been mentioned. A list of wildlife protected areas has also been provided for reference in future scientific studies. Habitat degradation and poaching were recorded as main threats to species. The need for regular monitoring of key species is urgently required for their sustainability.

Keywords: Khyber Pakhtunkhwa, protected areas, endemics species.

INTRODUCTION

Globally, Asian countries have the highest diversity for a number of taxa with unique species (Hughes, 2017). There are 195 species including 13 sub-species of mammals belonging to 10 orders (Roberts, 2005a,b; Altaf *et al.*, 2014) and three Endemics, one species and two sub-species, namely, the Indus Dolphin, Woolly Flying Squirrel (*Eupetaurus cinereus*), Balochistan Black Bear (*Ursus thibetanus gedrosianus*) and Punjab Urial (*Ovis vignei punjabensis*) found in Pakistan (Sheikh and Molur, 2004).

Pakistan has a number of the world's rarest mammalian species like Snow Leopard (*Uncia uncia*) (Fig. 1), Indus River Dolphin (*Platanista minor*) (Fig. 2), Balochistan Black Bear (*Ursus thibetanus gedrosianus*). The Indus River Dolphin is one of the world's rarest mammals and the second most Endangered freshwater river dolphin (wwf.panda.org, 2018).

Pakistan has four provinces: Sindh, Punjab, Khyber Pakhtunkhwa (KPK) and Balochistan. KPK, called North West Frontier Province (NWFP) before 2010, covers an area of 1100 km², sharing the border with Afghanistan. The capital of KPK is Peshawar, which is irrigated by Kabul River and Swat River. The KPK is renowned due to its archeological importance because of the connections with prehistoric empire of Gandhara. Afghanistan is in

northern and western sides of KPK, while Punjab is in southeast, Balochistan province is in southwest. Federally governed tribal areas are present in west along with many other self-governed areas that have cultural connections with KPK but have no legislative associations (Govt. of KPK, 2018).

The province of KPK is the third largest province of Pakistan, it is bordered by Punjab in the east and south, by Afghanistan and Balochistan in the west, and by Afghanistan and China in the north. Approximately, three quarters of the area of 1000,000 km² comprising of 24 districts under the provincial government and the rest is the part of FATA having agencies viz Khyber Agency, Kurram Agency, Mohmand Agency, North Waziristan Agency, South Waziristan Agency, Orakzai Agency and Bajaur Agency.

Pakistan has rich biodiversity sources, which belong to a unique blend of ecosystem and habitat and ecosystem types. These diverse ecosystems have their very own characteristic wild resources (Sheikh and Molur, 2004). The KPK has nine ecological zones viz Permanent snow fields/ Cold deserts, Alpine meadows, Sub-alpine scrub, Dry Temperate Conifers Forest, Moist temperate forest, Sub Tropical pine forests, Sub-Tropical Sub Humid Forests, Foot Hill Plains and Wetlands Eco-system (Roberts, 1991, 1997; Shah, 2011).

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Fig. 1. Snow Leopard (Photo courtesy by Telegraph.co.UK; <http://animalstime.com>).



Fig. 2. Indus River Dolphin.

Pallas valley of Kohistan is internationally recognized as hot spot of biodiversity (BirdLife International, 2003). The province also supports all the four sub-species of Markhor out of five recorded in Pakistan including Kashmir, Kabul, Astor and Suleman (Shah, 2011).

The KPK is important with respect to mammalian species found in the Protected Areas (Table 1).

Table 1. List of Protected/ unclassified Protected Wildlife Areas in Khyber Pakhtunkhwa.

S. No.	Protected Areas	Number
1	National Parks	6
2	Wildlife Sanctuaries	3
3	Game Reserves	38
4	Wildlife Refuges	2
5	Private Game Reserves	16
6	Wildlife Parks	8
7	Ramsar Sites.	3

There are as many as six National Parks (Table 2), Three Wildlife Sanctuaries (Table 3), 38 Game Reserves (Table 4), two Wildlife Refuges (Table 5). Sixteen Private Game Reserves and eight Wildlife Parks. Also, three Ramsar Sites (Table 6) in KPK (KPK, 2012).

Table 2. List of National Parks in Khyber Pakhtunkhwa.

S. No.	Name
1	Ayubia National Park, Abbottabad
2	Brogil National Park, Chitral
3	Chitral Gol National Park, Chitral
4	Lulusar and Dodipath National Park, Mansehra
5	Saiful Maluk National Park, Mansehra
6	Sheikh Budin National Park, D.I. Khan

Table 3. List of Wildlife Sanctuaries in Khyber Pakhtunkhwa.

S. No.	Wildlife Sanctuaries
1	Agram Basti Wildlife Sanctuary, Chitral
2	Boraka Wildlife Sanctuary, Kohat
3	Manshi Wildlife Sanctuary, Mansehra

Table 4. List of Game Reserves in Khyber Pakhtunkhwa.

S. No.	Game Reserves
1	Bagra Game Reserve, Haripur
2	Kalinjar Game Reserve, Haripur

3	Mang Game Reserve, Haripur
4	Pind Hashim Khan Game Reserve, Haripur
5	Rakh Sardarn Game Reserve, Haripur
6	Balyanium Game Reserve, Kohat / Hangu
7	Shinawarai Game Reserve, Hangu
8	Shawaki, Chukhtoo Game Reserve, Kohat
9	Rakh Topi, Kohat
10	Resi, Toi Banda, Kohat
11	Kachai Marai, Kohat
12	Ghurzandi, Kohat
13	Jabbar, Kohat
14	Marchungee, Kohat
15	Darmalak, Kohat
16	Dhoda, Kohat
17	Togh Mangara, Kohat
18	Sheikhan, Kohat
19	Teri, Isak Kumari, Karak
20	Thanedarwala, Bannu
21	Drosh Gol, Chitral
22	Gehrait Gol, Chitral
23	Purit Gol and Chinar, Chitral
24	Tooshi Gol, Chitral
25	Goleen Gol, Chitral
26	Indus River, D. I. Khan
27	Zarkani, D. I. Khan
28	Nizampur, Nowshera
29	Shamshtoo, Nowshera
30	Marola, Nowshera
31	Totalai, Buner
32	Kingar Goli, Buner
33	Sewagalai, Swat
34	Sudham, Mardan
35	Qalandarabad, Abbottabad
36	Makhnial, Mansehra
37	Kamrani, Lower Dir
38	Thana Palai, Malakand Agency

Table 5. List of Wildlife Refuges in Khyber Pakhtunkhwa.

S. No.	Wildlife Refuge
1	D.I, Khan Waterfowl Refuge
2	Lakki Crane Refuge

Table 6. List of Ramsar Sites in Khyber Pakhtunkhwa.

S. No.	Ramsar Sites
1	Tanda Dam, Kohat
2	Chashma Barrage, D. I. Khan
3	Thanedarwala, Peshawar

Biological diversity in Khyber Pakhtunkhwa has never been systematically evaluated and only a partial picture

exists. In this paper the authors has reviewed the potential sites for the conservation of Woolly Flying Squirrel, Snow Leopard, Indian Pangolin, Indian Wolf, Leopard, Musk Deer, Black Bear, Brown Bear, Markhor, Striped Hyaena, Common Otter and listed key mammals of Khyber Pakhtunkhwa.

MATERIALS AND METHODS

During the study, surveys were undertaken in different important ecological zones of the province particularly in the Protected Areas for the collection of data. Information from secondary data was also collected. Some data came through the IEE/ EIA studies undertaken in the province recently for the gas exploration and other development projects.

RESULTS AND DISCUSSION

A total of 87 species of mammals (Table 9) have been recorded so far based on recent surveys undertaken in 2015- 2017 and from the secondary data available. Most of the key species (Table 7) of the Province are already protected and declared threatened/ near threatened and are included in IUCN Red List, 2017. Out of 12 such species, four species are endangered, three are vulnerable and five are near threatened (Table 8).

Most of the important wildlife of the province is restricted to the Protected Areas, that have been under threat due to habitat degradation, hunting and poaching which is a widespread problem throughout the province due to weak enforcement of the wildlife laws and regulations in the tribal community.

There is a need for the strengthening and capacity building of the Wildlife Department. This will help create public awareness regarding environmental conservation. Opportunities for a large scale development of ecotourism in the province could be explored.

Commendable efforts made to safeguard Snow Leopard in the province through the conservation work of Snow Leopard Foundation (SLF) should be encouraged and supported. Such efforts are also needed for other threatened species.

Table. 7. List of Key Mammals of Khyber Pakhtunkhwa.

S. No.	Common Name	Scientific name
1	Snow Leopard	<i>Uncia uncia</i>
2	Common Leopard	<i>Panthera pardus</i>
3	Langur	<i>Semnopithecus entellus</i>
4	Musk Deer	<i>Moschus chrysogaster</i>
5	Flying Squirrel	<i>Petaurista petaurista</i>
6	Black Bear	<i>Ursus thibetanus</i>
7	Brown Bear	<i>Ursus arctos</i>
8	Markhor	<i>Capra falconeri</i>
9	Urial	<i>Ovis vignei</i>
10	Himalyan Ibex	<i>Capra ibex</i>
11	Blanford's Fox	<i>Vulpes cana</i>
12	Grey Goral	<i>Naemorhedus goral</i>
13	Indian Wolf	<i>Canis lupus</i>

Table. 8. Threatened Mammals of Khyber Pakhtunkhwa.

S. No.	Common Name	Scientific Name	Status
1	Woolly Flying Squirrel	<i>Eupetaurus cinereus</i>	EN
2	Indus River Dolphin	<i>Platanista minor</i>	EN
3	Snow Leopard	<i>Uncia uncia</i>	EN
4	Indian Pangolin	<i>Manis crassicaudata</i>	EN
5	Leopard	<i>Panthera pardus</i>	VU
6	Musk Deer	<i>Moschus chrysogaster</i>	VU
7	Black Bear	<i>Ursus thibetanus</i>	VU
8	Markhor	<i>Capra falconeri</i>	NT
9	Himalayan Goral	<i>Naemorhedus goral</i>	NT
10	Grey Langur	<i>Semnopithecus entellus</i>	NT
11	Striped Hyaena	<i>Hyaena hyaena</i>	NT
12	Common Otter	<i>Lutra lutra</i>	NT

EN: Endangered, VU: Vulnerable, NT: Near Threatened

CONCLUSION

Some of the key mammals of Khyber Pakhtunkhwa are quite unique as they are not found in other provinces. These species are well established in their specific habitats due to the efforts of the wildlife department, the

province also supports largest population of Kashmir Markhor. Recently Government of KPK has approved "Khyber Pakhtunkhwa Wildlife and Biodiversity (Protection, Preservation, Conservation and Management) Act, 2015" for the conservation, protection and management of important wildlife and protected areas.

Table. 9. Checklist of Mammals of Khyber Pakhtunkhwa.

S. No.	Order	Family	Scientific Name	Common Name	Status
1	Insectivora	Erinaceidae	<i>Hemiechinus collaris</i>	Long-eared Desert Hedgehog	Not assessed
2	Insectivora	Erinaceidae	<i>Hemiechinus hypomelas</i>	Brandt's Hedgehog	LC
3	Insectivora	Soricidae	<i>Sorex thibetanus</i>	Asiatic Pygmy Shrew	Not assessed
4	Insectivora	Soricidae	<i>Suncus murinus</i>	House Shrew or Musk Shrew	LC
5	Insectivora	Soricidae	<i>Suncus etruscus</i>	Savi's Pygmy Shrew	Not assessed
6	Insectivora	Soricidae	<i>Crocidura pullata</i>	Asiatic White-toothed Shrew	DD
7	Chiroptera	Pteropodidae	<i>Pteropus giganteus</i>	Indian Flying Fox	LC
8	Chiroptera	Pteropodidae	<i>Rousettus leschnaultii</i>	Fulvous Fruit Bat	NA
9	Chiroptera	Rhinolophidae	<i>Rhinolophus blasii</i>	Peters' Horseshoe Bat	Not assessed
10	Chiroptera	Rhinolophidae	<i>Rhinolophus ferrumequinum</i>	Greater Horseshoe Bat	Not assessed
11	Chiroptera	Rhinolophidae	<i>Rhinolophus maerotis</i>	Big-eared Harseshoe Bat	NA
12	Chiroptera	Rhinolophidae	<i>Rhinolophus lepidus</i>	Blyth's Horseshoe Bat	Not assessed
13	Chiroptera	Vespertionilidae	<i>Myotis muricola</i>	Dark Whiskered Bat	LC
14	Chiroptera	Vespertionilidae	<i>Eptesicus nasutus</i>	Sindh Bat, Sindh Serotine or Persian	Not assessed
15	Chiroptera	Vespertionilidae	<i>Eptesicus serotinus</i>	Common Serotine	Not assessed
16	Chiroptera	Vespertionilidae	<i>Nyctalus noctula</i>	Common Noctule	Not assessed
17	Chiroptera	Vespertionilidae	<i>Nyctalus leisleri</i>	Leisler's Noctule or Hairy-armed Bat	Not assessed
18	Chiroptera	Vespertionilidae	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	LC
19	Chiroptera	Vespertionilidae	<i>Pipistrellus savii</i>	Savi's Pipistrelle	LC
20	Chiroptera	Vespertionilidae	<i>Pipistrellus tenuis</i>	Least Pipistrelle	LC
21	Chiroptera	Vespertionilidae	<i>Pipistrellus paterculus</i>	Thomas's Pipistrelle	Not assessed
22	Chiroptera	Vespertionilidae	<i>Plecotus austriacus</i>	Grey Long-eared Bat	Not assessed
23	Chiroptera	Vespertionilidae	<i>Scotophilus heathii</i>	Common Yellow-bellied Bat	Not assessed
24	Chiroptera	Vespertionilidae	<i>Otonycteris hemprichii</i>	Hemprich's Long-eared Bat	LC
25	Primates	Cercopithecidae	<i>Macaca mulatta</i>	Rhesus Macaque	LC
26	Primates	Cercopithecidae	<i>Semnopithecus entellus</i>	Grey Langur or Hanuman Langur	NT
27	Pholidato	Manidae	<i>Manis crassicaudata</i>	Indian Pangolin or Scaly Anteater	EN
28	Carnivora	Canidae	<i>Canis aureus</i>	Asiatic Jackal	Not assessed
29	Carnivora	Canidae	<i>Canis lupus pallipes</i>	Wolf	LC
30	Carnivora	Canidae	<i>Vulpes cana</i>	Blanford's Fox or King Fox	LC
31	Carnivora	Canidae	<i>Vulpes vulpes</i>	Common Red Fox	Not assessed
32	Carnivora	Canidae	<i>Vulpes vulpesmontana</i>	Tibetian Red Fox	Not assessed
33	Carnivora	Canidae	<i>Vulpes vulpes griffithi</i>	Hill Fox	Not assessed
34	Carnivora	Canidae	<i>Panthera pardus</i>	Panther or Leopard	VU
35	Carnivora	Canidae	<i>Uncia uncia</i>	Snow Leopard or Ounce	EN
36	Carnivora	Felidae	<i>Prionailurus bengalensis</i>	Leopard Cat	LC

37	Carnivora	Felidae	<i>Otocolobus manul</i>	Pallas' Cator Steppe Cat	LC
38	Carnivora	Felidae	<i>Lynx lynx</i>	Himalayan Lynx	Not assessed
39	Carnivora	Felidae	<i>Caracal caracal</i>	Caracal or Red Lynx	LC
40	Carnivora	Felidae	<i>Felis silvestris</i>	Indian Desert Wild Cat	LC
41	Carnivora	Herpestidae	<i>Herpestes edwardsii</i>	India Grey Mongoose	LC
42	Carnivora	Hyaenidae	<i>Hyaena hyaena</i>	Striped Hyaena	NT
43	Carnivora	Ursidae	<i>Ursus arctos isabellinus</i>	Brown Bear	Not assessed
44	Carnivora	Ursidae	<i>Ursus thibetanus</i>	Asiatic Black Bear	VU
45	Carnivora	Mustellidae	<i>Lutra lutra</i>	Common Otter	NT
46	Carnivora	Mustellidae	<i>Martes flavigula</i>	Yellow throated Marten	LC
47	Carnivora	Mustellidae	<i>Martes foina</i>	Stone Marten	LC
48	Carnivora	Mustellidae	<i>Mellivoraca pensis</i>	Ratel or Honey Badger	LC
49	Carnivora	Mustellidae	<i>Mustela altaica</i>	Alpine Weasel or Pale Weasel	Not assessed
50	Carnivora	Viverridae	<i>Mustela erminea</i>	Stoat or Ermine	LC
51	Carnivora	Viverridae	<i>Vormela peregusna</i>	Marbled Polecat	VU
52	Artiodactyla	Suidae	<i>Paguma larvata</i>	Masked Palm Civet	LC
53	Artiodactyla	Moschidae	<i>Sus scrofa</i>	Wild Pig or Indian Wild Boar	Not assessed
54	Artiodactyla	Moschidae	<i>Moschus chrysogaster</i>	Himalayan Musk Deer	VU
55	Artiodactyla	Bovidae	<i>Naemorhedus goral</i>	Himalayan Goral or Grey Goral	NT
56	Artiodactyla	Bovidae	<i>Capra ibex sibirica</i>	Himalayan Ibex	LC
57	Artiodactyla	Bovidae	<i>Capra falconeri megaceros</i>	Straight Horned Markhor	NT
58	Lagomorpha	Bovidae	<i>Ovis vignei</i>	Ladakh Urial	LC
59	Lagomorpha	Leporidae	<i>Lepus capensis</i>	Cape Hare	LC
60	Lagomorpha	Leporidae	<i>Lepus nigricollis</i>	Indian Hare or Black-naped Hare	LC
61	Lagomorpha	Leporidae	<i>Ochotona rufescens</i>	Afghan Pika or Collared Pika	LC
62	Rodentia	Sciuridae	<i>Ochotona roylei</i>	Royle's Pika or Indian Pika	LC
63	Rodentia	Sciuridae	<i>Funambulus pennantii</i>	Northern Palm Squirrel	LC
64	Rodentia	Sciuridae	<i>Marmota caudate</i>	Longtailed Marmot	LC
65	Rodentia	Sciuridae	<i>Hylopetes fimbriatus</i>	Small Kashmir Flying Squirrel	LC
66	Rodentia	Hystriidae	<i>Petaurista petaurista</i>	Giant Red Flying Squirrel	Not assessed
67	Rodentia	Hystriidae	<i>Hystrix indica</i>	Indian Crested Porcupine	LC
68	Rodentia	Zapodidae	<i>Sicista concolor</i>	Chinese Birch Mouse	LC
69	Rodentia	Muridae	<i>Dryomys nitedula</i>	Forest Dormouse	LC
70	Rodentia	Muridae	<i>Apodemus rusiges</i>	Himalayan Wood Mouse	LC
71	Rodentia	Muridae	<i>Rattus rattus</i>	Roof Rat or House Rat	LC
72	Rodentia	Muridae	<i>Rattus turkestanicus</i>	Turkestan Rat	LC
73	Rodentia	Muridae	<i>Mus booduga</i>	Little Indian Field Mouse	LC
74	Rodentia	Muridae	<i>Mus musculus</i>	House Mouse	LC
75	Rodentia	Muridae	<i>Golunda ellioti</i>	Indian Bush Rat	LC
76	Rodentia	Muridae	<i>Bandicota bengalensis</i>	Lesser Bandicoot Rat	LC
77	Rodentia	Muridae	<i>Nesokia indica</i>	Short tailed Mole Rat	Not assessed
78	Rodentia	Muridae	<i>Tatera indica</i>	Chinese Birch Mouse	LC
79	Rodentia	Muridae	<i>Calomyscus bailwardi</i>	Mouse-like Hamster	LC
80	Rodentia	Muridae	<i>Meriones crassus</i>	Sundevall's Jird	LC

81	Rodentia	Muridae	<i>Meriones hurrianae</i>	Indian Desert Jird or Desert Gerbil	LC
82	Rodentia	Muridae	<i>Meriones libycus</i>	LiybyanJird	LC
83	Rodentia	Muridae	<i>Meriones persicus</i>	Persian Jird	C
84	Rodentia	Muridae	<i>Alticola roylei</i>	Royle's High Mountain Vole	Not assessed
85	Rodentia	Muridae	<i>Hyperacrius fertilis</i>	True's Vole or Burrowing Vole	NT
86	Rodentia	Muridae	<i>Hyperacrius wynnei</i>	Murree Vole	LC
87	Cetacea	Platanistidae	<i>Platanista minor</i>	Indus Dolphin or Bhulan	EN

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