A Letter
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Current status of Mammals in District Buner Khyber Pakhtunkhwa, Pakistan

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Abstract
Current study was conducted in District Buner Khyber Pakhtunkhwa in the period of January to October 2014. During the current study the mammals identified were Grey Goral, Porcupine, Fox, Monkey, Wild boar, Jackal, Hare and Bat. Among these species the Grey Goral was found threatened. The main causes of the species declining in the study area were deforestation, overpopulation and over hunting. Protective measurements are required to save the mammalian fauna of district Buner.

Keywords Mammalian fauna; Buner; Pakistan

Introduction
The first complete systematic review of all mammals of the world was produced by Trouessart, 1897-1905 followed this number of taxonomical research has been made on mammal species of the world by Simpson and Gaylord, 1945, Walker, 1964, Nowak, 1991, Sokolov, 1973-79, Corbett and Hill, 1980, McKenna and Bell, 1997.

As per Wilson and Reeder (2005), a total of 5,416 species of mammal belonging to 154 families and 29 orders have been reported from the globe. In India the classification of mammals was dealt by many authors such as the fauna of British India Mammalia (Pocock, 1939, 1941), checklist of Indian and Palaeartic mammals (Ellerman and Morrison-Scott, 1951), the book of Indian animals (Prater, 1971), Indo-malayan region mammals (Corbet and Hill, 1992), checklist of mammals of India (Alfred et. al.,2002), field guide to Indian mammals (Menon, 2003), checklist of Scandentia and Pholidata (Srinivasalu and Srinivasalu, 2004), Chiroptera (Talmale and Pradhan, 2009) and Rodentia (Pradhan and Talmale, 2011).

Pakistan has highly diverse geographical area, which includes majestic mountain ranges of the Himalayas, Karakorum, and Hindu Kush, the Indus plains, deserts and coastal areas. Altitudinal variations range from world's second highest mountain (K2) in the north to the sea level in the south (Khan, 2006). The country has a rich variety of wetlands, and other wildlife habitats and landscapes with their associated fauna and flora. Varied habitats range from permanent snow fields/glaciers to dry alpine and cold deserts, alpine scrub/moist alpine, Himalayan dry coniferous, Himalayan moist temperate forest, sub-tropical pine forest, subtropical dry mixed deciduous scrub forest, Balochistan juniper/pistachio scrub forest, dry sub-tropical & temperate semi-evergreen forest, tropical thorn forest, sand dune desert and mangrove/littoral (Roberts, 1997). The present varied and interesting composition of biodiversity in Pakistan is largely due to its being a transitional zone between two of the world’s six major zoogeographical regions, the Palearctic, and the Oriental, species have also come from as far as the Ethiopian region (Roberts, 1997; Zaman, 2008).

Wildlife management and conservation initiatives are only possible with the appropriate information on wildlife and its habitat (Kafley, 2008). Wildlife habitat basically comprises of food, cover and water. Each species require a particular habitat or the space, food, shelter and other needs of survival so much so that species are said to be the product of their habitat (Smith, 1974). Wildlife management is much more than the preservation of certain plant and animal species; it involves management of a complete ecosystem. Information collected with a GPS receiver may be combined with other geographic data using...
GIS technology for habitat mapping of key fauna species (Lenton et al., 2000). The ability to model spatial distribution and changes in distribution of wildlife is of considerable importance for wildlife management. Once spatial distribution can be adequately modeled, the distribution and abundance can be monitored efficiently over time, and future changes can be predicted. These spatial characteristics and relationship are often difficult to identify and hard to display with traditional ground survey or statistical model. Therefore, using Geographic Information System (GIS) has become an evitable trend in ecology studies and developing wildlife habitat model (Kafley, 2008). The characteristics of spatial analysis and spatial display of GIS not only provides efficient way of data handling, storage, and analyzing, more importantly, it also enables mapping of wildlife distribution, identification of patterns, and generation of habitat spatial characteristics, hence, a useful tool in decision making for conservation and wildlife management (Scott et al., 1992, Long et al., 1993, Ji-Wei and Clinton 2000, Lenton et al., 2000).

Biodiversity is the variation of life forms within a species, ecosystem, biome, or an entire planet and is a measure of the health of ecosystems. Biodiversity varies greatly across the globe as well as within regions. In terrestrial habitats, the tropical regions are rich while Polar Regions support fewer species. Among other factors, the diversity of all living organisms depends on temperature, precipitation, altitude, soil, geography and the presence of other species. About 1% of the existent species of the Earth are extant due to environmental changes that caused mass extinctions (Raup, 1994). There are five major mass extinctions that have led to large and sudden drops in biodiversity on Earth. The Phanerozoic con

marked a rapid growth in biodiversity via the Cambrian explosion. The next 400 million years included repeated, massive biodiversity losses classified as mass extinction events (Sahney et al., 2010; Sahney and Benton, 2008; Benton, 2001). The Holocene extinction due to habitat destruction by humans caused loss of genetic diversity. Generally terrestrial biodiversity is up to 25 times greater than ocean biodiversity (Ehrlich and Ehrlich, 1981).

The natural forests of Pakistan are rapidly declining at a rate of 4-6% per year, resulting in a decline in population size of both flora and fauna (Haq et al., 2010). The forests of Pakistan require special attention for the conservation of environment and sustainable utilization of natural resources. The decrease in forest cover and associated major changes in community composition has led to the decline in population size of many important plant and animal species (Haq, 2012).

District Buner is situated between 340-11’ and 340-43’ North _ Latitude and 720-13’ and 720- 45’ East _ Longitude in Khyber Pakhtunkhwa province of Pakistan. The District is surrounded by Swat district on North, Malakand Agency on the West Mardan district on the South and Hazara Division on the east having altitudinal range 366-291m, with a total area of 1865km2 and population of 506,048 individuals. District Buner is made up of plain and undulating land and mountain slopes. The plain and undulating areas are lying on the lower elevation and mountain slopes with barren rocks are on higher elevation. The hydrology of the District is covered by seasonal streams (Khan et al., 2012).

There is less work documented on the mammalian fauna of district Buner. It was the first attempt to explore mammals in district Buner.

Table 1: Mammals identified during study

| Order          | Family         | Scientific name          | Common name  |
|----------------|----------------|--------------------------|--------------|
| Artiodactyla   | Suidae         | Nemorhaedus goral        | Grey Goral   |
| Carnivora      | Canidae        | Canis aureus             | Jackal       |
| Carnivora      | Canidae        | Vulpes bengalensis       | Fox          |
| Chiroptera     | Vespertilionidae | Myotis lucifugus     | Bat          |
| Lagomorpha     | Leporidae      | Lepus nigricollis        | Hare         |
| Primates       | Cercopithecidae | Macaca mulatta           | Monkey       |
| Rodentia       | Hystricidae    | Hystrix indica           | Porcupine    |
2 Results
During the current study 8 species were recorded from district Buner. The details are given in Table 1. Endemic species are those that are only found in a particular geographical area. Such species have high conservation value. There are five mammal species identified as endemic to Pakistan (Sheikh & Molur, 2004 and Gippoliti, 2008) which include Indus Dolphin (Platanista gangetica minor), Balochistan Black Bear (Ursus thibetanus gerardiana), Punjab Urial (Ovis vignei punjabiensis), Woolly Flying Squirrel (Eupetaurus cinereus) and Balochistan Dormouse (Dryomys niethammeri) (Ali et al., 2012). The endemic species found in district Buner are Grey Goral, Porcupine, Fox, Monkey, Wild bore, Jackal, Hare and Bat.

Ninety species of mammals of Balochistan have been recorded so far belonging to 9 orders and 27 families; of these, 21 species are threatened, 4 species are endemic to Balochistan, 14 species are of special conservation interest, 8 sites are important for mammals. Special efforts are being made to conserve the important mammals particularly in the protected areas especially in Chiltan Hazarganji National Park and the Hingol National Park (Ali et al., 2012). The mammals of district Buner belongs to 5 orders and 6 families. The threatened fauna of district Buner include Nemorhaedus goral.

Species richness is a relative term that refers to the number of species in a community, and is directly associated with measuring the diversity of species in a given area (Ali et al., 2012). Factors contributing to habitat loss are: overpopulation, deforestation (Haq, 2012), pollution, global warming and climate change. Other threats include introduced and invasive species (Mooney and Cleland, 2001) that may be predators, parasites, or may simply outcompete indigenous species, Genetic pollution, overexploitation (Grafton et al., 2007), hybridization and Holocene extinction (Ehrlich and Ehrlich, 1981; Burney and Flannery, 2005; Dunn, 2005). District Buner is facing such like activities like deforestation, overpopulation etc which results in the endangering of some species like Nemorhaedus goral. Hunting, shooting and trapping of wild fauna, extensive grazing, deforestation and loss of habitat are the primary causes of species extinction in the district Buner (Haq, 2012). Damage to the plants are careless and illicit cutting and smuggling of trees and shrubs, overgrazing, and loss of habitat. Converting the plan slopes in the forests for cultivation also exert enormous stress on the vegetation and result in environmental degradation (Raup, 1994; Sahney et al., 2010).

In our study it was found that the hunting and trapping of the wild animals are the primary causes of species extinction as discussed by (Haq, 2012) which is leading to declining of species in the area. The over grazing, over population and deforestation leads to the loss of habitat of the species as it provide shelter and food. The wildlife authorities are requested to take necessary actions to save the wildlife of district Buner.

Materials and Methods
The current survey was conducted to evaluate the current status of Mammals in District Buner Pakistan. The surveys were conducted in the game reserves, proposed community and private game reserves in collaboration with the Buner Wildlife Department in the period of January to October 2014.

Conclusion
It is concluded from the current study that deforestation and over population are the main causes of species extinction. Awareness among the peoples should be created through exhibitions, seminars and other media.

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