



Study of medium and large sized mammalian species in Ganga Choti, Himalayan Region, Pakistan

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SUMMARY

The increased output of agricultural areas and urbanization are the necessities of the day, but the protection of all taxa are equally significant. Human activities have ruined natural landscapes, and their involvement in protection cannot be denied. The purpose of this research is to learn about the animals that live in the study region. The mammalian species observation is done from 2017 to 2020 from study area and data collected by single person in day and night hours. Mammalian diversity is examined using direct and indirect observed count methods, and the linear count observation method is being used. The direct observation comprises presence of species and voices, whereas the indirect observation includes the existence of parts, dead body, hairs, fecal pellets, footprints, pug markings, and meeting up with people. Throughout the study, 8 different species of animals were identified.

Keywords: Species, Mammals, Himalaya, Pakistan

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INTRODUCTION

In worldwide, almost 5000 mammalian species and in Pakistan almost 195 mammalian species are identified till now (Roberts, 1997; IUCN, 2002). Therefore the country shows a variety of flora and fauna. Pakistan has an extensive range of land ecosystems within 18 major geographical areas (Roberts, 1997). Naturally occurring habitats have been destroyed and changed into the agricultural and urban areas during the previous ten thousand years (Bouma and Droogers, 1998). Nonetheless, agriculture as well as urban growth began before 21st century (Pimentel *et al.*, 2004) as a result of the situation, there is a conflict between humans and the environment's species diversity (Henle *et al.*, 2008). Though increased agriculture output and urban is necessities of the day, species protection is also vital. Anthropogenic impacts have ruined natural habitats, and human involvement in maintenance cannot be denied (Henle *et al.*, 2008).

Mammalian fauna diversity varies from forest to urban settings, and these variances may be seen in various zones of climate across the world. Like, *Vulpes vulpes* are commonly found in human residential areas in cold locations (Harris and

Smith, 1987) whereas these species are not seen in warm-weather rural landscapes (Uraguchi *et al.*, 2009). The beneficial and bad effects of urbanization have been researched in numerous nations, including the United States, Australia, and Europe, but research in Asia, particularly in Pakistan, is limited.

Ruegg *et al.* (2006) observed that the distribution, diversity, and density of fauna is impacted by climate change, and this change negatively impacts fauna especially large mammals. Many species are being migrated, about 26% to 72% (Sparks and Menzel, 2002). Human activities e.g., agriculture intensification, urbanization, and industrialization are the main reason for green house effect, climate change, and the global warming (Saino *et al.*, 2010). Research on pollution effects on earth began in the early seventeenth century, and the term acid rain was 1st explained during the 1950s.

Some species of animals like to prefer urban habitats, while some prefer to live in peri-urban habitats, and others prefer to stay in natural habitats (Altaf, 2016). Loss of habitat is also a major threat to fauna. Fragmentations reduce the total area and increase the edge. The key objective of the study is to count the medium and large-sized mammalian fauna present in Ganga Choti, Himalayan region.

MATERIALS AND METHODS

AREA OF STUDY

Ganga Choti is present in the lesser Himalayas. The mountains are covered with coniferous forests. However, many rivulets flow are present in this area (Figure 1). Ganga Choti is a peak near the Bani Minhasan. Its major part is in Bagh District and also has some part in district Muzaffarabad. It is located at 3,045 meters in the Pir Panjal Range. The Data was collected from 2017-2020 from study area and data collected by single person in day and night hours.

ASSESSMENT OF MAMMALIAN SPECIES

The linear count observation technique was utilized, and taxa are evaluated through direct as well as indirect observation techniques. The direct count comprises presence of mammalian species and voices of mammals, whereas the indirect observation includes nest presence, hair mounting, fecal pellets, footprints, pugmarks and a group meeting with local people. The "Mammals of Pakistan" were observed using binoculars and a camera.

RESULT AND DISCUSSION

During the research, 8 species recorded from study area. *Canis aureus* was observed from Ganga Choti, Himalayan Region, Pakistan. It is also reported from the Hazara, Murree hills, Quetta, Islamabad, Head Khanki, Head Qadirabad, Balochistan, Chotiari Reservoir, Thal desert, Lasbela and AJK. *Hystrix Indica* was seen from Ganga Choti, Himalayan Region, Pakistan. Previously it was also recorded from the Balochistan, Indus plain, Himalayan forest, Lasbela, Kirthar, Shogran, Chitrall, Murree hills, Hazara, Swat, head Khanki, head Qadirabad, Chotiari Reservoir, Head marala, Thal desert, Jammu Kashmir, Mahban and Malka valley and Punjab (Table 1).

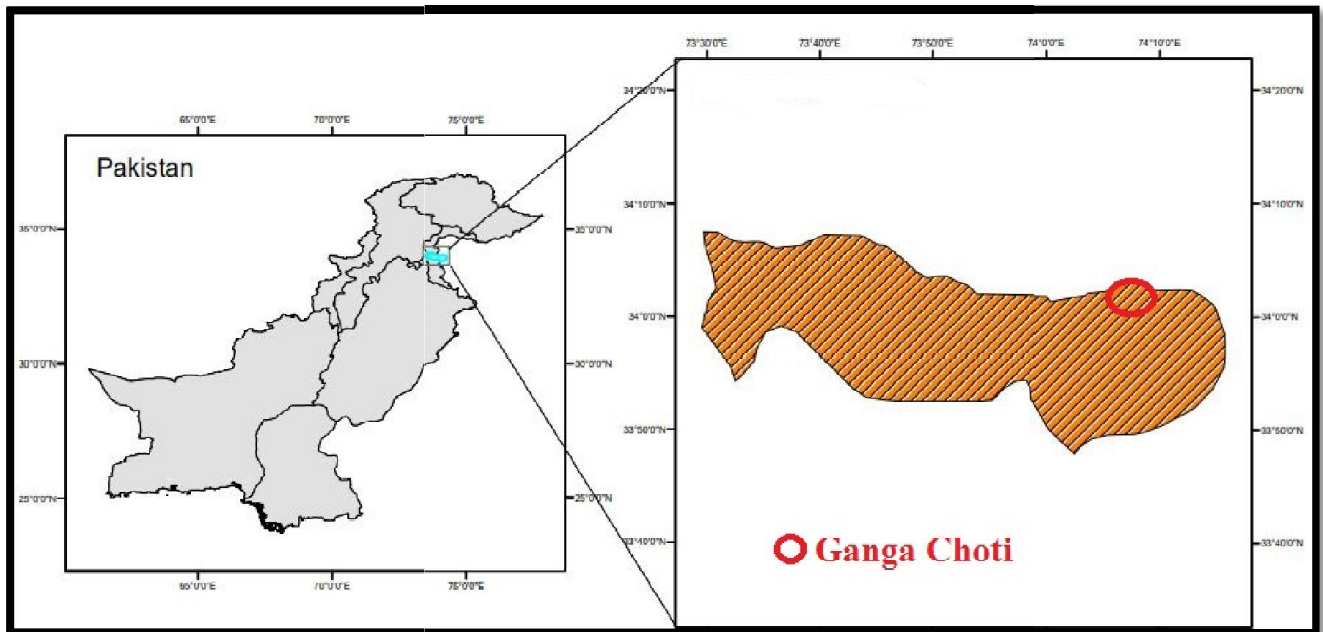


Figure 1: Map of the Ganga Choti, Himalayan Region, Pakistan

Sus scrofa was seen from the study area. Researchers also recorded from the Margalla hills, Murree foothills, Peshawar, Mardan, Dera Ismail Khan, Balochistan, Chitral valley, Punjab, Attock, head Khanki, head Marala, Chotiari Reservoir, Mahaban, and Malka valley. *paguma larvata* was recorded from the study area. Previously it is recorded from Rawapindi, Sergoda, Multan, Dera, Ghazikhan, Hazara, Mansera, and Margalla hills. *Viverricula Indica* was observed from Ganga Choti, Himalayan Region, Pakistan. Previously it was recorded from South Bahawalnagar, Lal Sohanran, Okara, Chichawatni, Jhang, and Sargodha. Red fox (*Vulpus vulpus*) was seen in Ganga Choti, Himalayan Region, Pakistan. Previously this was also recorded from Khunjrabad, Mahaban, Malka Valley, and Ganga Choti, Himalayan Region, Pakistan. Rhesus macaque (*Maccaca multatta*) was recorded from Ganga Choti, Himalayan Region, Pakistan. This was also observed from the Himalayan temperate forest, Chitral, Swat, Kohistan, and Hazara districts (Table 1).

Mammalian diversity was reported by different researchers from different places in Pakistan; Abbaspur, Azad Jammu and Kashmir, Pakistan (Rasheed *et al.*, 2020), Mahaban and Malka Valley District Buner (Akhtar *et al.*, 2018), tharparkar district, Sindh (Khan *et al.*, 2015), Chenab riverine forest, Punjab (Altaf *et al.*, 2014), Gujranwala, Punjab (Altaf *et al.*, 2012), Chenab (Altaf, 2016), district Bagh, Azad Jammu and Kashmir (Faiz, 2022), Dhirkot, Azad Jammu and Kashmir (Riaz and Altaf, 2021), Trimmu, Punjab (Ijaz and Adil, 2021), and Harighal, Azad Jammu and Kashmir, Pakistan (Abbasi, 2021).

Table 1: Summary of mammalian species in Ganga Choti, Himalayan Region, Pakistan and comparison with the previous record (Roberts, 1997; Maan and Chaudhry, 2001; Awan *et al.*, 2004; Ghalib *et al.*, 2007; Qureshi *et al.*, 2011; Rais *et al.*, 2011; Altaf *et al.*, 2014; Khan *et al.*, 2015; Faiz and Fakhar-i-Abass, 2016; Azad *et al.*, 2018; Chughtai *et al.*, 2018; Iqbal *et al.*, 2018; Younus *et al.*, 2018).

Sr.	Name	Order Family	IUCN status	Previous record
1.	Asian palm Civet <i>Paguma larvata</i> , Smith 1827	Carnivores Viverridae	LC	Rawapindi, Sergoda, Multan, Dera, Ghazikhan, Hazara, Mansera and Margalla hills.
2.	Asiatic Jackal <i>Canis aureus</i> Linnaeus, 1758	Carnivora Canidae	LC	NWFP, Hazara, Murree hills, Quetta, Islamabad, Head Khanki, Head Qadirabad, Balochistan, Chotiari Reservoir, Thal desert, Lasbela, and Azad Jammu and Kashmir.
3.	Common Leopard <i>Panthera pardus</i> Linnaeus, 1758	Carnivora Felidae	VU	Himalayan forest, Waziristan, Balochistan, Sindh, Kohistan, Kala Chitta hills, Murree hills, Gilgit, Kohistan and Hazara.
4.	Indian Crested Porcupine <i>Hystrix indica</i> Kerr, 1792	Rodentia Hystricidae	LC	Balochistan, Indus plain, Himalayan forest, Lasbela, Kirthar, Shogran, Chitral, Murree hills, Hazara, Swat, head Khanki, head Qadirabad, Chotiari Reservoir, Head marala, Thal desert, Jammu Kashmir, Mahban and Malka valley and Punjab.
5.	Indian Wild Boar <i>Sus scrofa</i> Linnaeus, 1758	Cetartiodactyla Suidae	LC	Margalla hills, Murree foothills, Peshawar, Mardan, Dera Ismail Khan, Balochistan, Chitral valley, Punjab, Attock, head Khanki, head Marala, Chotiari Reservoir, Mahban and Malka valley.
6.	Red Fox <i>Vulpes vulpes</i> Linnaeus, 1758	Carnivora Canidae	LC	Khunjrab, Mahaban, Malka Valley and Bagh.
7.	Rhesus Macaque <i>Macaca mulatta</i> Zimmermann, 1780	Primates Cercopithecidae	LC	Himalayan temperate forest, Chitral, Swat, Kohistan, Hazara district.
8.	Small Indian Civet <i>Viverricula indica</i> Desmarest, 1817	Carnivores Viverridae	LC	South Bahawalnagar, Lal Sohanran, Okara, Chichawatni, Jhang and Sargodha.

REFERENCES

- Abbasi, Z. 2021. Diversity and folklore medicinal uses of mammalian species of Harighal, Azad Jammu and Kashmir, Pakistan. *Journal of Wildlife and Ecology*. 5: 60-65.
- Akhtar, N., R. Muhammad, K. Saeed, M.F. Khan, M. Shah, J. Zeb, S. Ahmad, A.J. Afridi, A. Hussain. 2018. Distribution of wild mammalian fauna of Mahaban and Malka Valley District Buner. *Pakistan Journal of Zoology*. 50.
- Altaf, M. 2016. Assessment of Avian and Mammalian Diversity at Selected Sites along river Chenab. University of Veterinary and Animal Sciences, Lahore, Pakistan.
- Altaf, M., A. Javid, Irfan, M. Munir, S. Ashraf, M. Umair, K. Iqbal, A. Khan, Z. Ali. 2014. Diversity of wild mammalian fauna of Chenab riverine forest, Punjab, Pakistan. *Journal of Animal and Plant Sciences*. 24: 1342-1347.
- Altaf, M., A.M. Khan, M. Umair, Irfan, M.A. Munir. 2012. Status of wild birds and mammals in urban habitats of Gujranwala, Punjab, Pakistan. *Punjab University Journal of Zoology*. 27 9-12.
- Awan, M.S., R.A. Minhas, K. Ahmed, N. Dar. 2004. Distribution, food and habitat preferences of small mammals in Machiara National Park, district Muzaffarabad, Azad Kashmir, Pakistan. *Punjab Univ. J. Zool.* 19: 17-31.
- Azad, M., M. Altaf, B. Safeer, I. Manzoor, S. Yasrub. 2018. Assessment of human-red fox conflict in district Bagh, Azad Jammu and Kashmir. *Journal of Wildlife and Ecology*. 2: 1-10.
- Bouma, J., P. Droogers. 1998. A procedure to derive land quality indicators for sustainable agricultural production. *Geoderma*. 85: 103-110.
- Chughtai, M.S., M. Altaf, I. Manzoor, B. Safeer, S. Yasrub. 2018. Assessment of human and wild boar (*Sus scrofa*) conflict from district Bagh, Azad Jammu and Kashmir, Pakistan. *Journal of Wildlife and Ecology*. 2: 10-21.
- Faiz, A., Fakhar-i-Abass. 2016. Mammalian diversity of Tolipir National Park, Azad Jammu and Kashmir, Pakistan. *Pakistan Journal of Zoology*. 48: 1209-1212.
- Faiz, R.H.a.M. 2022. Diversity of Medium and Large-sized mammals of district Bagh, Azad Jammu and Kashmir, Pakistan. *International Journal of Forest Sciences*. 2: 27-31.
- Ghalib, S.A., A. Jabbar, A.R. Khan, A. Zehra. 2007. Current status of the mammals of Balochistan. *Pakistan Journal of Zoology*. 39: 117.
- Harris, S., G. Smith. 1987. Demography of two urban fox (*Vulpes vulpes*) populations. *Journal of Applied Ecology*. 75-86.
- Henle, K., D. Alard, J. Clitherow, P. Cobb, L. Firbank, T. Kull, D. McCracken, R.F. Moritz, J. Niemelä, M. Rebane. 2008. Identifying and managing the conflicts between agriculture and biodiversity conservation in Europe—A review. *Agriculture, Ecosystems & Environment*. 124: 60-71.
- Ijaz, S., S. Adil. 2021. Anthropogenic impacts on the distribution of mammalian species in the vicinity of Head Trimmu, Punjab, Pakistan. *Journal of Wildlife and Ecology*. 5: 168-175.
- Iqbal, M.A., M.Z. Khan, G.S. Gachal, S. Zubair. 2018. Distribution and Status of Vertebrate Fauna of Mahal Kohistan Wildlife Sanctuary, Khirthar Protected Area Complex, Sindh. *Sindh University Research Journal-SURJ (Science Series)*. 50: 287-294.
- IUCN. 2002. Red Lists of IUCN.
- Khan, A.A., W.A. Khan, A.A. Chaudhry. 2015. Mammalian diversity in thar desert habitat of tharparkar district, Sindh, Pakistan. *Pakistan Journal of Zoology*. 47.
- Maan, M.A., A.A. Chaudhry. 2001. Wildlife diversity in the Punjab (Pakistan). *PJBS*. 1: 417-420.

- Pimentel, D., B. Berger, D. Filiberto, M. Newton, B. Wolfe, E. Karabinakis, S. Clark, E. Poon, E. Abbett, S. Nandagopal. 2004. Water resources: agricultural and environmental issues. *BioScience*. 54: 909-918.
- Qureshi, R., W.A. Khan, G. Bhatti, B. Khan, S. Iqbal, M.S. Ahmad, M. Abid, A. Yaqub. 2011. First report on the biodiversity of Khunjerab National Park, Pakistan. *Pak. J. Bot.* 43: 849-861.
- Rais, M., M.Z. Khan, D. Abbass, G. Akber, R. Nawaz. 2011. A qualitative study on wildlife of Chotiari Reservoir, Sanghar, Sindh, Pakistan. *Pakistan Journal of Zoology*. 43.
- Rasheed, S., M. Bashir, A. Jaddon. 2020. Diversity and status of mammalian fauna of Abbaspur, Azad Jammu and Kashmir, Pakistan. *Journal of Wildlife and Ecology*. 4: 85-93.
- Riaz, T., M. Altaf. 2021. Diversity and cultural uses of mammals in Dhirkot, Azad Jammu and Kashmir, Pakistan. *Journal of Wildlife and Ecology*. 5: 159-167.
- Roberts, T.J. 1997. *The Mammals of Pakistan*. Oxford University Press. New York.
- Ruegg, K.C., R.J. Hijmans, C. Moritz. 2006. Climate change and the origin of migratory pathways in the Swainson's thrush, *Catharus ustulatus*. *Journal of Biogeography*. 33: 1172-1182.
- Saino, N., R. Ambrosini, D. Rubolini, J. von Hardenberg, A. Provenzale, K. Hüppop, O. Hüppop, A. Lehikoinen, E. Lehikoinen, K. Rainio. 2010. Climate warming, ecological mismatch at arrival and population decline in migratory birds. *Proceedings of the Royal Society B: Biological Sciences*. rspb20101778.
- Sparks, T.H., A. Menzel. 2002. Observed changes in seasons: an overview. *International Journal of Climatology*. 22: 1715-1725.
- Uraguchi, K., K. Yamamura, T. Saitoh. 2009. Estimating number of families for an urban fox population by using two public data sets. *Population ecology*. 51: 271-277.
- Younus, S., S. Nazer, M. Altaf, I. Manzoor, B. Safeer, S. Yasrub. 2018. Study of human and Asiatic Jackal (*Canis aureus*) conflict from Bagh district, Azad Jammu and Kashmir, Pakistan. *Journal of Wildlife and Ecology*. 2: 1-10.