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Diversity and folklore medicinal uses of mammalian species of Harighal, Azad Jammu and Kashmir, Pakistan

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SUMMARY

Six bio-geographic regions are present in whole world; out of total, some parts of these three regions i.e. Oriental, Palearctic and Ethiopian are present in Pakistan; due to this reason this country has rich of biodiversity. More than 195 species are documented in Pakistan, out of these; almost 81 species of mammals have threats. This study was designed to know the diversity and traditional uses of mammalian species of Harighal. Linear count method was utilized to know the diversity of mammals. For this purpose direct (i.e. physical count as well as sound records) and indirect (i.e. carcasses, molted skin and group questionnaire Survey) methods were utilized for the analysis of mammalian fauna in concerned area. During the research noted that having 13 species recorded from Harighal. House shrew (*Suncus murinus*) and small Kashmir flying squirrel (*Eoglaucomys fimbriatus*) are dominant species of the study area. Skin and fat of *Panthera pardus* and *Sancus murinus* are used to treat measles, chicken pox, energy and impotency. Hair and fat of *Hystrix indica* are used to treat boil and impotency. Fat of *Canis aureus* and *Vulpes vulpes* are used to treat impotency and skin diseases.

Keywords: Fat, skin, ethnomedicine, diversity, mammals

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INTRODUCTION

More than 4763 mammalian species are documented, out of these, approximately 1137 species of mammals have threats by IUCN (2002), while more than 195 species are documented by Roberts (1997), out of these, almost 81 species of mammals have threats by Molur (2003). And 41 mammalian species recorded from Azad Jammu and Kashmir, Pakistan. Total bio-geographic regions which are six; out of total, some parts of these three regions i.e. Oriental, Palearctic and Ethiopian are present in Pakistan. Due to this reason this country has rich of biodiversity (Roberts, 2005b, a).

Ethnomammalogy is branch which deals with study of interaction of the people with mammalian species; this research can improve conservation works, for the reason that it would enhance information about biodiversity (Alves and Souto, 2015; Altaf *et al.*, 2017). Local people awareness and the biodiversity of areas must be observed for mammalian conservation. On the other hand, traditional studies are ignored, while few scientists focus on folklore wildlife studies in Pakistan (Roberts,

2005b, a; Altaf *et al.*, 2017; Altaf *et al.*, 2018). So, this study was designed to know the diversity and traditional uses of mammals in study area.

MATERIALS AND METHODS

STUDY AREA

Harighal is located in western Himalayan (Figure 1), area is 712 km^2, and 155 km away from city of Islamabad, and 98 km away from capital of Azad Jammu and Kashmir i.e. Muzaffarabad. Its altitude ranges are between 900 and 2300 m. The climate is subtropical-temperate. The winters is cold (2 °C) during January and the summer is hot (40 °C). Dominant vegetation is *Olea ferruginea, Quercus incana, Pinus roxbughaii* and *Pinus wallichianaat*. The region has diverse ethnic values with Sudhan, Khawaja, Rajputs, Maldial, Jat and Gujar. Approximately all of the population is Muslims in study area. Popular languages of Harighal are Pahari, Kashmiri, Hindko and Gojri; but most of the inhabitants can speak Urdu. (Akhlaq *et al.*, 2018; Amjad *et al.*, 2020).

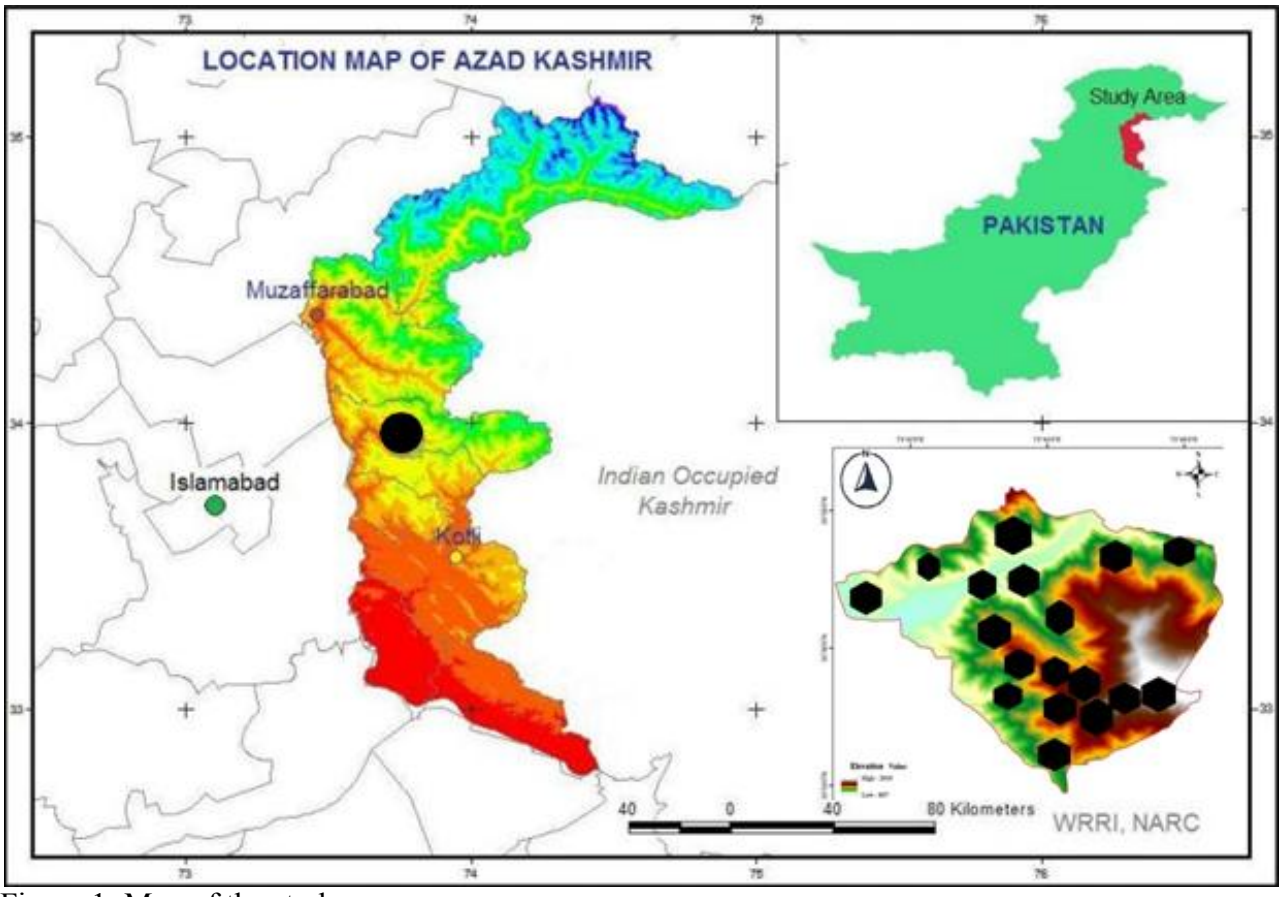

Figure 1: Map of the study area.

METHODOLOGY

Data were collected from January 2020 to December 2020. Linear count method was utilized to calculate population of mammalian species in the study area. For this purpose direct (i.e. physical count as well as sound records) and indirect (i.e.

carcasses, molted skin and group questionnaire Survey) methods were utilized for the analysis of mammalian fauna in concerned area (Altaf, 2016).

STATISTICAL ANALYSIS

To know the diversity of mammalian species in Harighal, Shannon-Weiner diversity index was utilized that to inform about diversity of mammalian fauna species in the vicinity Harighal. Calculation was completed by Shannon and Weaver (1949).

"H' = - [ΣPI In PI]"

Where, H' = i.e. mammalian fauna Shannon-wiener diversity index

Where, PI = i.e. proportion of the mammalian fauna relative to the total number of mammalian fauna

In PI = i.e. Natural logarithm of PI

RESULTS AND DISCUSSION

Data were collected from the male respondents (100). During surveys noted that most of the respondents are literate (74%) and while other (26%) are illiterate. Respondents having different occupations i.e. govt. employers, teachers, students, housewives, farmers, shopkeepers and homeopathic doctors and most of the people belong to 20 to 30 years of ages (Figure 2).

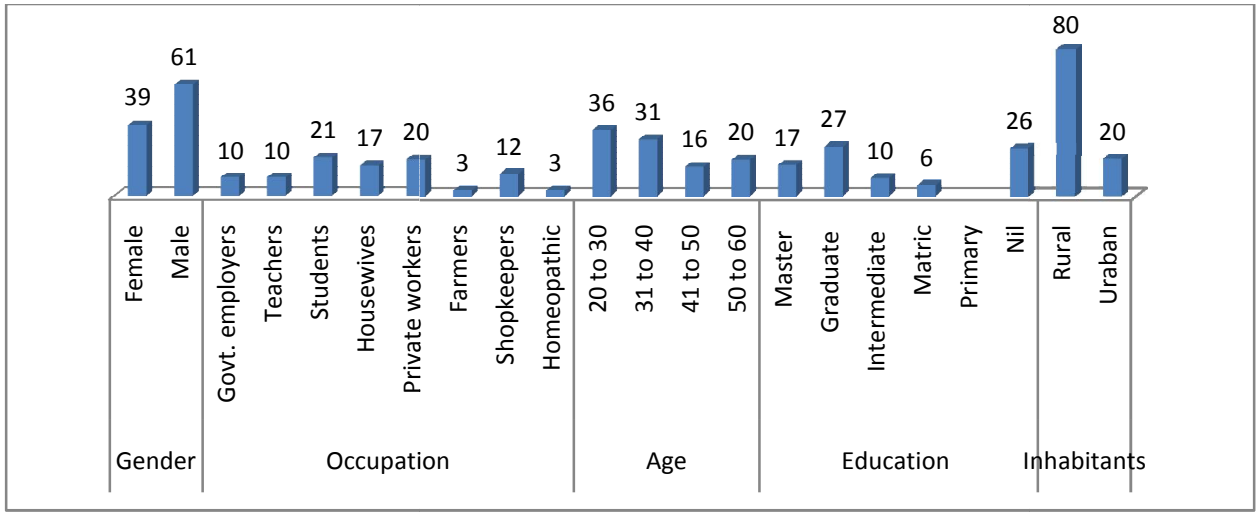

Figure 2: Respondents of study areas.

During the research noted that having 13 species recorded from Harighal (Table 1). House shrew (*Suncus murinus*) is recorded from the study area with relative abundance was as 0.18. Small Kashmir flying Squirrel (*Eoglaucomys fimbriatus*) is recorded from the study area with relative abundance was as 0.11. Indian crested porcupine (*Hystrix indica*) is recorded from the study area with relative abundance was as 0.25. House rat (*Rattus rattus*) is recorded from the study area with relative abundance was as 0.19.

House mouse (*Mus musculus*) is recorded from the study area with relative abundance was as 0.07. Indian grey mongoose (*Herpestes edwardsii*) is recorded from the study area with relative abundance was as 0.02. Asiatic jackal (*Canus aureus*) is recorded from the study area with relative abundance was as 0.14.

Common leopard (*Panthra pardus*) is recorded from the study area with relative abundance was as 0.01.

Indian wild boar (*Sus scrofa*) is recorded from the study area with relative abundance was as 0.01. Red fox (*Vulpes vulpus*) is recorded from the study area with relative abundance was as 0.01. Small Indian civet (*Viverrricula indica*) is recorded from the study area with relative abundance was as 0.01. Asian palm civet (*Paguma larvata*) is recorded from the study area with relative abundance was as 0.01. Long-eared desert hedgehog (*Hemiechinus collaris*) is recorded from the study area with relative abundance was as 0.02.

Altaf *et al.* (2012), Altaf *et al.* (2014) and Altaf (2016) were documented the mammalian species along the river Chenab and also documented the anthropogenic impact on the distribution of mammalian species.

Skin and fat of *Panthera pardus* (common leopard) is used to treat measles, chicken pox, energy and male potential (Table 2). Fat and skin of *Sancus murinus* (house shrew) are used to treat joint pain and male potential. Hair and fat of *Hystrix indica* (Indian crested porcupine) are used to treat boil and impotency. Fat of *Canis aureus* (Asiatic jackal) is used to treat skin diseases and impotency. *Vulpes vulpes* (red fox) is used to treat impotency (Table 2).

Altaf *et al.* (2017) and Altaf *et al.* (2018) documented the cultural uses of mammalian species viz. superstitious, narratives, food, magic, product use, hunting, export and medicine uses of mammals along river Chenab. Flesh, blood, milk, eggs and fats were used to treat various diseases viz. paralysis, weakness, fever, fever, joint pain, allergy, impotency, epilepsy and etc.

Table 1: Mammals of Harighal, Azad Jammu and Kashmir, Pakistan.

Common name	**Scientific name**	Pi	LogPi	PiLogPi
House shrew	*Suncus murinus*	0.18	-0.75253	-0.13304
Small Kashmir flying squirrel	*Eoglaucomys fimbriatus*	0.11	-0.95665	-0.10571
Indian Crested Porcupine	*Hystrix indica*	0.25	-0.60447	-0.15028
House rat	*Rattus rattus*	0.19	-0.71361	-0.13799
House mouse	*Mus musculus*	0.07	-1.14374	-0.08215
Indian grey mongoose	*Herpestes edwardsii*	0.02	-1.65562	-0.03659
Asiatic jackal	*Canus aureus*	0.14	-0.85974	-0.11875
Common leopard	*Panthra pardus*	0.01	-2.25768	-0.01247
Indian wild boar	*Sus scrofa*	0.01	-2.25768	-0.01247
Red fox	*Vulpes vulpus*	0.01	-1.95665	-0.02162
Small Indian civet	*Viverrricula indica*	0.01	-1.95665	-0.02162
Asian palm civet	*Paguma larvata*	0.01	-2.25768	-0.01247
Long-eared desert hedgehog	*Hemiechinus collaris*	0.02	-1.69897	-0.03398
				-0.87915

Table 2: Ethnopharmacological applications of mammals in Harighal, Azad Jammu and Kashmir, Pakistan

No	Scientific name Species Authority Common name, local name	Parts used	Application	Diseases	Respondents
1	*Panthera pardus* Linnaeus, 1758 Common Leopard cheetah/tanduwa	Skin, fat	T	Measles, chicken pox, energy, Impotency	5
2	*Sancus murinus* Linnaeus, 1758 House shrew Choa	Fat, skin	T	Joint pain, male potential	3
3	*Hystrix indica* Kerr, 179 Indian crested porcupine Say	Hair, fat	T	Boil, impotency	9
5	*Canis aureus* Linnaeus, 1758 Asiatic jackal Gedar	Fat	T	Skin diseases, impotency	5
6	*Vulpes vulpes* Linnaeus, 1758 Red fox Phand	Fat	T	Impotency	3

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