Journal of Bioresource Management

Volume 5 | Issue 3 Article 2

7-1-2018

Small Mammals of Family Muridae in Protected Areas of Pakistan

Fakhra Nazir
Capital University of Science and Technology, Islamabad, Pakistan

Andleeb Batool
Department of Zoology, GC University, Lahore, Pakistan

Inayat Ullah Malik
Department of Zoology, University of Lakki Marwat, Lakki Marwat, Pakistan

Safdar Ali Shah
Chief Conservator, Wildlife Peshawar, Pakistan

Sabiha Shamim
Malaysia University of Science and Technology, Selangor, Malaysia, sabihashamim@outlook.com

Recommended Citation

Nazir, F., Batool, A., Malik, I. U., Shah, S. A., & Shamim, S. (2018). Small Mammals of Family Muridae in Protected Areas of Pakistan, *Journal of Bioresource Management, 5* (3).
DOI: https://doi.org/10.35691/JBM.8102.0091

SMALL MAMMALS OF FAMILY MURIDAE IN PROTECTED AREAS OF PAKISTAN

FAKHRA NAZIR[1], ANDLEEB BATOOL[2], INAYATULLAH MALIK[3], SAFDAR ALI SHAH[4] AND SABIHA SHAMIM[5*]

[1]Department of Bioinformatics and Biological Sciences, Capital University of Science and Technology, Islamabad, Pakistan
[2]Department of Zoology, GC University, Lahore, Pakistan
[3]Department of Zoology, University of Lakki Marwat, Lakki Marwat, Pakistan
[4]Chief Conservator, Wildlife Peshawar, Pakistan
[5]Malaysia University of Science and Technology, Selangor, Malaysia

*Corresponding author: sabihashamim@outlook.com

ABSTRACT

Murids to have more than 1300 species globally, forming the largest mammal group. Murids are found nearly everywhere in the world, though many subfamilies have narrower ranges. Murids are not found in Antarctica and many oceanic islands. Five National Parks from Northern areas of Pakistan were physically surveyed. The parks were studied at different times. Dhirkot National Park (DNP) in February 2008, Banjosa National Park (BJNP) from May to June 2009, Pir Lasura National Park (PLNP) from June to July 2009 and Pir Chanasi National Park (PCNP) from April to May 2010. A total of 6 species belonging to the Muridae family were found cumulatively in the study areas.

Key words: mice, rats, mammal, biodiversity, murid

INTRODUCTION

The family Muridae consists of rats, mice, and their relatives from the Old World (Aghova, 2011). Meyers et al. (2017) cite the Murids to have more than 1300 species globally, forming the largest mammal group. Murids are found nearly everywhere in the world, though many subfamilies have narrower ranges. Murids are not found in Antarctica and many oceanic islands. Although none of them is native to the Americas, a few species, notably the house mouse and black rat, have been introduced worldwide. Murids occupy a broad range of ecosystems from tropical forests to tundra. Maqbool (2011) cite *Bandicota bengalensis*, also known as Lesser Bandicoot rat, as a pest of crops, especially rice and wheat in Pakistan. Murids are carriers for several diseases that include eosinophilic meningitis, leishmaniasis and rat-bite fever (Dehghani, 2012).

Meyers et al. (2011) cite the presence of the following subfamilies in the southeast Asian region:

Murinae consist of 529 species that include rats and mice. They are native to Asia, Australia, Africa, and some islands. The physical features of this family vary greatly. They contain both terrestrial and aquatic species.

Figure 1. *Rattus rattus* (Black rat)

Platacanthomyinae consist of 3 species. They are found in Southeast Asia and possibly live in trees. However not much is known about this species.

Figure 2. ***Platacanthomys lasiurus***

Rhizomyinae consist of 15 species. They are found in east-central Africa and southeastern Asia. They dig burrows and are herbivores.

Figure 3. ***Rhizomys sumatrensis***

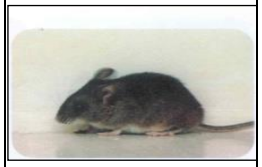
MATERIALS AND METHODS

Five National Parks from Northern areas of Pakistan were physically surveyed. Biodiversity of Murids was studied through a general survey and search of all possible microhabitats available in the five National parks for the direct/indirect presence of different species was conducted. Indirect evidence, like foot prints, calls, fecal pellets, live burrows, etc. Camera traps were set at appropriate places. Data thus collected was compiled to develop an estimate on relative abundance of the different species (Manzoor et al., 2013).

The parks were studied at different times. Dhirkot National Park (DNP) in February 2008, Banjosa National Park (BJNP) from May to June 2009, Pir Lasura National Park (PLNP) from June to July 2009 and Pir Chanasi National Park (PCNP) from April to May 2010.

RESULTS

Table1. List of species of family Muridae recorded from the study area

S No.	Names	Pictures	Food	Breeding season	Remarks	Status	
						Local sightings (%)	Global *
1	*Apodemus rusiges* Himalayan wood or field mouse		Mainly herbivorous but can eat all kinds of seeds, berries, wild fruits, insect larvae, crustacean, toadstool	Spring- till late summer Litter size: 4-5	Confined to woodlands and highly adaptable ecologically. Nocturnally active, quite gregarious.	(55- BNR) (46-DNR) (19-PCNP) (45-PLNP) (53-TNP)	LC
2	*Bandicota bengalensis* Indian mole rat or lesser bandicoot rat		Rice, succulent shoots, grain heads when at soft and milky stage, succulent roots of dab grass (*Eragrostis cynosurioides*), roots and tubers of Dher (*Scirpus maritimus*), seeds of sorghum, millet crops (*Pennissetium typhoides*) fruits of egg plant (S*olanum melongena*), Ochra (*Hibiscus esculentus*), S*alsola foetida* and fiddler crabs	Throughout year Litter size: 5-10	Needs damp soil for burrowing and favors embankments around rice cultivation. Prolific, nocturnal.	(20- BNR) (21- DNR) (28-TNP)	LC

3	*Mus musculus* House mouse		Omnivorous in feeding habits, seeds, vegetable matter, insects, all kinds of human food (cooked rice, meat soap and leather) even on human faeces in villages.	Almost every month Litters size: 12	Found in crevices of under walls, of buildings, villages, cities. Nocturnal and omnivorous	(40- BNR) (30- DNP) (27 - PCNP) (34-PLNP) (42-TNP)	LC
4	*Nesokia indica* Short tailed mole rat		Dab grass (*Eragrostis cynosurioides*), Subterranean rhizomes and roots, green leaves, seeds, sedge grass.	July- April Litter size: 8	Penetrated into mountainous areas around streams. Requires damp soil for burrowing, and succulent grass roots or bulbs.	(21- BNR) (10- DNP) (24-TNP)	LC
5	*Rattus rattus* Roof rat or house rat		Practically omnivorous in food habits, heavily depend on food grains, garbage, green vegetable food, seeds, grains, fruits, meat, insects, wheat, coconuts, even leather and candle wax.	Almost every month Litter size: 6-7	Largely commensal of man, and associated with villages and human habitation. Intelligent, bold, omnivorous	(36- BNR) (34- DNP) (23-PCNP) (41-PLNP) (37-TNP)	LC
6	*Rattus turkestanicus* Turkestan rat		Omnivorous in food habits, Maize, walnuts, chapattis (Unleavened wheat bread) and even soap.	Almost every month Litter size: 4-6	Adapted to forests and rocky mountainsides. Intelligent, bold, resourceful, omnivorous	(39- BNR) (21- DNP) (37-TNP)	LC

*** 2008 IUCN Red List Category (http://www.iucnredlist.org/apps/redlist/details/)**
Abbreviations:
*** LC = Least Concern**

DISCUSSION

Apodemus rusiges (Himalayan wood or field mouse) is mainly herbivorous but can eat all kinds of seeds, berries, wild fruits, insect larvae, crustacean, toad stool. Local sighting of this species was 55% in BNR, 46% in DNP, 19% in PCNP, 45% in PLNP and 53% in TNP. Global status of this species according to IUCN is LC.

Local sightings of *Bandicota bengalensis* (Indian mole rat or lesser bandicoot rat) were 20% in BNR,28% in TNP and 21% in DNP at AJK. Global status of this species according to IUCN is LC but its population is increasing globally. Rana et al. (2006) cite this species as the most significant rodent pest of crops in Pakistan.

Mus musculus (House mouse) Local sightings of this species were 40% in BNR,42% in TNP, 30% in DNP, 27% in PCNP and 34% in PLNP at AJK which shows that it is frequently seen. Global status of this species according to IUCN is LC.

Nesokia indica (Short-tailed mole rat) Local sightings of this species were 21% in BNR, 24% in TNP, 10% in DNP at AJK. Global status of this species according to IUCN is LC.

*Rattus rattus (*Roof rat or house rat) Local sightings of this species were 21% in BNR, 24% in TNP, 10% in DNP at AJK. Although native to Pakistan, this species is considered widely invasive and a pest (CABI, n.d.). Since this species can adapt to a wide range of terrain types, loss of habitat is not a factor that currently affects its numbers. Singla et al. (2014) cite this species as a pest to crops and a carrier of diseases. Global status of this species according to IUCN is LC.

Rattus turkestanicus (Turkestan rat) Local sightings of this species were 39% in BNR, 37% in TNP, 21% in DNP at AJK. Global status of this species according to IUCN is LC.

Awan et al. (2004) conducted a similar study in Machiara National Park, AJK, Pakistan where they report the presence of *R. rattus, R. turkestanicus, A. rusiges* and *M. musculus*. Unlike the current study, *R. turkestanicus* and *A. rusiges* was found to be rare in Machiara National Park (Awan et al., 2014).

CONCLUSION

At the time of survey, the five national parks hosted a total of 6 species belonging to the Muridae family. The species distribution in all the study sites was different. *A. rusiges, M. musculus* and *R. rattus* were found in all sites. *B. bengalensis, N. indica* and *R. turkestanicus* were not found in Pir Chanasi and Pir Lasura National Parks.

REFERENECES

Aghova T, Yuri K, Bryja, J, Dobigny G, Granjon L, Kergoat GJ (2011). Fossils know it best: using a new set of fossil calibrations to improve the temporal phylogenetic framework of murid rodents (Rodentia: Myomorpha: Muroidea: Muridae). 16. doi:10.1101/180398.

Awan MS, Minhas RA, Ahmed KB, Dar NI (2004). Distribution, food and habitat preferences of small mammals in Machiara National Park, District Muzaffarabad, Azad Kashmir, Pakistan. Punjab Uni. J. Zool. 19: 17-31.

CABI (n.d.) Rattus rattus. Accessed from: https://www.cabi.org/isc/datasheet/46831#tosummaryOfInvasiveness on 16 January 2018.

Dehghani R, Vazirianzadeh B, Asadi MA, Akbari H, Moravvej SA (2012). Infestation of Rodents (Rodentia: Muridae) Among Houses in Kashan, Central Iran. Pakistan J. Zool. 44(6): 1721-1726.

Manzoor M, Riaz A, Iqbal Z, Mian A (2013). Biodiversity of Pir Lasura National park, Azad Jammu and Kashmir, Pakistan. Sci. Tech. and Dev., 32 (2): 182-196

Maqbool S, Khan AA, Awan MS (2011). Burrowing Characteristics and Food Hoarding Behaviour of Bandicota bengalensis wardi Wroughton in Wheat Fields, Muzaffarabad, Azad Jammu & Kashmir, Pakistan. Pakistan J. Zool. 43(5): 987-992.

Myers P, Espinosa R, Parr CS, Jones T, Hammond GS, Dewey TA (2017). The Animal Diversity Web. Accessed at https://animaldiversity.org.

Rana SA, Rana N, Iqbal MZ, Shahbaz F (2006). Seasonal demographic variation in bandicoot rats, *Bandicota bengalensis* (gray) in irrigated crops. Pak. J. Agri. sa, 43: 1-2.

Singla N, Thind RK, Mahal AK (2014). Potential of Eucalyptus Oil as Repellent against House Rat, Rattus rattus. Sci. World J. 2014: 1-2

Steppan SJ, Schenk JJ (2017). Muroid rodent phylogenetics: 900-species tree reveals increasing diversification rates. PLoS One. 12(8). Doi:10.1371/journal.pone.0183070