

OBSERVATIONS ON THE OCCURRENCE OF MAMMALS IN TAWANG DISTRICT, ARUNACHAL PRADESH, INDIA

Anil Kumar

Arunachal Pradesh Regional Centre
Zoological Survey of India
Itanagar- 791 113, Arunachal Pradesh, India

Present Address: Northern Regional Centre, ZSI, Dehradun-248195, Uttarakhand.
(e-mail: anilsonata@gmail.com)

Abstract

Tawang district in Western Arunachal Pradesh is an important part of Himalayan Global Biodiversity Hotspot and known for the occurrence of a number of rare and/or endemic species. Field surveys were undertaken during December 2005 to May 2010, to document the mammals of Tawang district. On the basis of direct sightings and indirect evidences, 20 species of mammals belonging to five orders and 11 families were recorded in the area. Three species of macaques and one species of marten were sighted directly apart from sightings of three species of squirrels. Red Fox (*Vulpes vulpes*), Large-eared Pika (*Ochotona macrotis*) and House Rat (*Rattus rattus*) were also observed. One pair of Yellow-Throated Marten *Martes flavigula* was observed in four-bridge area near Jang. Interestingly, a Marbled Cat (*Pardofelis marmorata*) was sighted in Tawang town. Habitat degradation due to increasing anthropogenic pressure in terms of harvesting of fuel wood, timber, foliage and medicinal plants are possible threats for sustainability of mammals of Tawang.

Key words: Mammals, Carnivora, Artiodactyla, Tawang, Western Arunachal Pradesh.

INTRODUCTION

Arunachal Pradesh is an important part of Himalayan Global Biodiversity Hotspot and known for rich diversity of animal and plant life (Mishra *et al.* 2004; Datta *et al.* 2008; Kumar 2014 a & b). The state has 68,621 km² of forest occupying nearly 82% of the total geographic area (83,743 km²). This includes 54,510 km² of closed forest, 14,151 km² of open forest, but the true picture of recorded forest cover, appears to be around 51,540 km², comprising 61.5% of the total area of the state (Kalita and

Haridasan 2001; FSI 2000). Out of this, unclassified forest is 70.25% and the protected forest is merely 0.02% (FSI, 2000). An area of 9527.99 km² representing nearly 11.68 % of the geographic area of the state, has been brought under Protected Area Network for conservation and development of biodiversity resource, which includes two national parks and eleven wildlife sanctuaries (Sinha 2008). Outside this network, there is a large area, equally rich in faunal wealth, mostly unexplored and worth

considering for faunal studies (Islam and Rahmani 2004). Therefore, there is a need to document faunal diversity of such areas to fill the gaps in information. In the present study an effort has been made to provide information on mammals of a least studied area i.e. Tawang district of Arunachal Pradesh. Located in Western Arunachal Pradesh, Tawang is drained by mainly two major rivers i.e. Tawang Chu and Nyamjung Chu and their tributaries. Entire area is comprised of high altitude mountains (about 1500 m to >4500 m), different types of forests such as temperate, pine, alpine, broad leaved, coniferous and mixed forests. Study of literature revealed that most area of Tawang is still unexplored. The information on mammals of this area is scanty and based on some short term/opportunistic surveys (Choudhury 2003; Mishra *et al.* 2004; Kumar *et al.* 2005). Choudhury (2003) published a book on the mammals of Arunachal Pradesh, which enclosed a checklist of 206 species, including some of them reported/ observed in Tawang area. Between August and October 2003, Mishra *et al.* (2004) undertook an expedition in the high altitude areas of Tawang and West Kameng

districts and documented the occurrence of 34 mammalian species including Chinese Goral (*Nemorhaedus caudatus*) a new addition to the list of large mammals of the Indian sub-continent. Arunachal Macaque (*Macaca munzala*) was recently discovered species of primate (Mishra *et al.* 2006).

METHODOLOGY

Field surveys were undertaken during December 2005 to May 2010, to document the mammals of Tawang Chu valley and adjacent localities (Table 1). Observations were made every day starting from morning to evening (6.00 am to 3.00 pm; with few exceptions), with the help of prismatic field binocular (10x50) and identification of species was carried out with the help of field guide to Indian mammals (Menon 2003). Indirect evidences such as pug-marks, dung/ pellets, carcass and skins were also considered to infer the occurrence of a species. With the help of local field guide, some villagers were also interviewed. The presence/ absence of species were also discussed with forest officials and relevant information was incorporated in data. In case of inadequate sightings/ doubtful identification, the data was excluded from the present study.

Table 1: Details of the different areas and localities of Arunachal Pradesh covered in field surveys for the faunal studies.

Sl. No.	Areas surveyed for faunal studies	Dates from- to-	Locations covered during the surveys
1.	Tawang Chu Valley and adjacent localities	05-12-2005 to 12-12-2005	PTso, Tawang town, Surbhi village, Kitpi village, Jung, and Dirang area.
2.	Tawang Chu Valley and surrounding area	23-10-2007 to 02-11-2007	PTso, Tawang town, Surbhi village, Kitpi village, Jung, and Dirang area.
3.	Tawang Chu Valley and adjacent areas	09-05-2009 to 26-05-2009	PTso, Y-junction lakes, surrounding of Tawang town, Surbhi village, Kitpi village, Jung, Mirba, Mukto, LGG and MJG area
4.	Tawang Chu Valley	10-05-2010 to 28-05-2010	Tawan Chu and adjacent areas, and Nyamjang Chu valley.

Both sides of Tawang Chu valley are flanked by high altitude (>3000 m) mountains (Figure 2). The upper areas of hills are covered with scattered scrub vegetation and grassy meadows. Most common plant species were *Saxifrage*, *Artemesia*, *Leontopodium*, *Stipa*, *Rhododendron*, *Anaphalis*, *Berberis* and *Allium* etc. Comparatively lower areas (roughly up to 2000 m) of the hills were covered with patches of mixed broadleaved vegetation such as *Quercus*, *Larix*, *Tsuga*, *Picea*, *Rhododendron*, and *Daphne* and cultivated areas developed by villagers. Small patches of Blue Pine, *Pinus wallichiana* were also common.

RESULTS AND DISCUSSION

On the basis of direct sightings and indirect evidences, 20 species of mammals belonging to five orders and 11 families were recorded in the area. Three species of Macaques and one species of Marten were sighted directly apart from sightings of three species of squirrels (Table 2). Large-eared Pika (*Ochotona macrotis*) (figure 3) was observed and photographed in PTso area. One species of rodent i.e. House Rat (*Rattus rattus*) was also observed. On 24.10.2007, one individual of Red Fox (*Vulpes vulpes*) was sighted about 7-8 km from Jang towards Sela-pass. One pair of Yellow-Throated Marten (*Martes flavigula*) was observed in four-bridge area near Jang. Interestingly, one Marbled Cat (*Pardofelis marmorata*) was sighted near DFO house in Tawang town in morning hours (between 8.30 to 9.00 am on 12.05.2009). Recently discovered species i.e. Arunachal Macaque (figure 3) was observed at different places. It was often seen between Lumla and Jimithang. One troop of Rhesus Macaques was also sighted (9 individuals) about 6 km. from Jang towards Tawang. Among squirrels (Order: Rodentia; Family: Sciuridae) three species

were sighted. Himalayan Striped Squirrel (*Tamiops maccllellandi*) was common. This was a small smoky brown coloured species. It had three black strips on the dorsal side. The tips of external ears were white. Seven individuals were observed at different locations. They were sun-basking on the trees of *Quercus* sp. Orange-bellied Himalayan Squirrel (*Dremomys lokriah*) was observed only at two places. One road kill near Tawang town was also seen during the survey. This was a medium sized (about 40 cm long), brownish coloured and arboreal species. It is also a fairly common species of forests of NE. Hoary-bellied Himalayan Squirrel (*Callosciurus pygerytrus*) was also observed. The digging signs of Wild Boars (*Sus scrofa*) were also seen at some places. I saw the skins of Goral (*Naemorhedus goral*) and Sambar (*Cervus unicolor*) in a house. Skulls of Indian Muntjac (*Muntiacus muntjak*) were also showed. The occurrence of Clouded Leopard (*Neofelis nebulosa*), Golden Cat (*Catopuma temmincki*) and Marbled Cat (*Pardofelis marmorata*) were also reported by villagers, when interviewed. Presence of Yellow-throated Marten (*Martes flavigula*), Himalayan Palm Civet (*Paguma larvata*), Capped Langur (*Trachypithecus pileatus*), Wild Dog (*Cuon alpinus*) was also confirmed by villagers. Sightings of one species of Otter was also reported but could not be confirmed at species level. Presence of some species (at least 4 to 6 taxa) of rats/mice and two species of bats were also reported but could not be identified due to inadequate information. In view of fairly good number of sightings of different species, it seems that the Tawang district supports a sizable number of mammals. It is most probably due to non-hunting attitude of tribes of the area. Most dominant tribe is Monpa tribe. They are Buddhist and usually dislike killing the animals.

Table 2: List of mammals identified on the basis of direct and indirect evidences in Tawang district.

Sl. No.	Common name	Species	Observations/evidences	Consevation status
	Order: Primates			
	Family:			
	Cercopithecidae			
1.	Arunachal Macaque	<i>Macaca munzala</i>	Direct sightings	-
2.	Assamese Macaque	<i>Macaca assamensis</i>	Direct sighting	Vulnerable
3.	Rhesus Macaque	<i>Macaca mulatta</i>	Direct sightings	Least Concern
4.	Capped Langur	<i>Trachypithecus pileatus</i>	Indirect evidence	Endangered
	Order: Artiodactyla			
	Family: Cervidae			
5.	Sambar	<i>Cervus unicolor</i>	Indirect evidence	Least Concern
6.	Indian Muntjac	<i>Muntiacus muntjak</i>	Indirect evidence	Least Concern
	Family: Bovidae			
7.	Goral	<i>Naemorhedus goral</i>	Direct Sighting	Least Concern
	Family: Suidae			
8.	Wild Pig	<i>Sus scrofa</i>	Indirect evidence	Least Concern
	Order: Carnivora			
	Family: Canidae			
9.	Wild Dog	<i>Cuon alpinus</i>	Indirect evidence	Vulnerable
10.	Red Fox	<i>Vulpes vulpes</i>	Direct sighting	Least Concern
	Family: Felidae			
11.	Clouded Leopard	<i>Neofelis nebulosa</i>	Indirect evidence	Vulnerable
12.	Marbled Cat	<i>Pardofelis marmorata</i>	Direct sighting	Vulnerable
13.	Golden Cat	<i>Catopuma temmincki</i>	Indirect evidence	Vulnerable
	Family: Mustelidae			
14.	Yellow-Throated Marten	<i>Martes flavigula</i>	Direct sighting	Least Concern
	Family: Viverridae			
15.	Himalayan Palm Civet	<i>Paguma larvata</i>	Indirect evidence	Least Concern
	Order: Lagomorpha			
	Family: Ochotonidae			
16.	Large-eared Pika	<i>Ochotona macrotis</i>	Direct sighting	Least Concern
	Order: Rodentia			
	Family: Sciuridae			
17.	Himalayan Striped Squirrel	<i>Tamiops maccllellandi</i>	Direct sighting	Least Concern
18.	Orange-bellied Himalayan Squirrel	<i>Dremomys lokriah</i>	Direct sighting	Least Concern
19.	Hoary-bellied Himalayan Squirrel	<i>Callosciurus Squirrel</i>	Direct sighting pygerytrus	Least Concern
	Family: Muridae			
20.	House Rat	<i>Rattus rattus</i>	Direct sighting	Common

CONCLUSION

Present study revealed that Tawang district supports a rich assemblage of mammals including some endangered and rare species. However, habitats are degrading very fast due to increasing anthropogenic pressure in terms of harvesting of fuel wood, timber, foliage and medicinal plants. Presence of skins with villagers indicates that some local people also involved in wildlife hunting. Further systematic long-term studies/ intensive surveys are needed to document mammals of the area.

ACKNOWLEDGEMENTS

I am grateful to Dr. Kailash Chandra, Director-in-Charge, ZSI, Kolkata, for encouragement and support and Officer-in-Charge, APRC, ZSI, Itanagar, for extending departmental facilities. My sincere thanks are due to my colleague Dr. D. Suresh Chand, ZSI, and field staff (Shri P. B. Thapa, Shri Dhan Bhadur Tamang, Shri Pradeep Chakraborty and Shri D. Bhowmick) for support and active cooperation in field. Kind support and active cooperation at various levels from Forest Department of Arunachal Pradesh is also gratefully acknowledged.

REFERENCES

1. **Choudhury, A. U. (2003).** *The Mammals of Arunachal Pradesh*. Regency Publications, New Delhi.
2. **Datta, A., Naniwadekar, R. and Anand, M. O. (2008).** *Hornbills, hoolocks and hog badgers: Long-term monitoring of threatened wildlife with local communities in Arunachal Pradesh, north-east India. Final report to the Rufford Small Grants Program (UK)*. Nature Conservation Foundation, Mysore, India. 80 pp.
3. **Islam, M. Z. and Rahmani, A. R. (2004).** *Important Bird Areas in India: Priority sites for conservation*. Indian Bird Conservation Network: Bombay Natural History Society and BirdLife International (UK). Pp. xviii + 1133.
4. **Kalita, S. N. and Haridasan, K. (2001).** Forest and wildlife management in Arunachal Pradesh. *Arunachal Forest News*, 19(1&2): 26-31.
5. **Kumar, A. (2014a).** *Conservation issues and possible solutions for sustainability of faunal diversity of Arunachal Pradesh*, pp. 243-261. In Management of water, energy and bio-resources in the era of climate change: Emerging issues and challenges (eds. N. Janardhana Raju, Wolfgang Gossel, A. Ramanathan and M. Sudhakar). Jointly published by Capital Publishing Co., New Delhi, and Springer, India, pp. 364.
6. **Kumar A. (2014b).** Little known area: Tawang district, Arunachal Pradesh, India: *Birding ASIA*, 22: 76-82.
7. **Kumar, R. S., Mishra, C. and Sinha, A. (2005).** Discovery of the Tibetan Macaque *Macaca thibetana* in Arunachal Pradesh, India. *Curr. Sci.* 88(9): 1387-1388.
8. **Menon, V. (2003).** *A field guide to Indian mammals*. Dorling Kindersley (India) Pvt. Ltd., Delhi. Pp. 1-200.
9. **Mishra, C., Datta, A. and Madhusudan, M. D. (2004).** *The high altitude wildlife of Western Arunachal Pradesh: a survey report*. CERC Technical Report No. 8. Nature Conservation Foundation, International Snow Leopard Trust, and Wildlife Conservation Society (India Program), Mysore, India. Pp. 1-49.
10. **Mishra, C., Madhusudan, M. D. and Datta, A. (2006).** Mammals of the high altitudes of western Arunachal Pradesh, eastern Himalaya: as assessment of threats and conservation needs. *Oryx*, 40(1), 1-7.
11. **Sinha, G. N. (2008).** *Forest and forestry in Arunachal Pradesh*. *SFRI Information Bulletin*, 27, pp. 1-67.

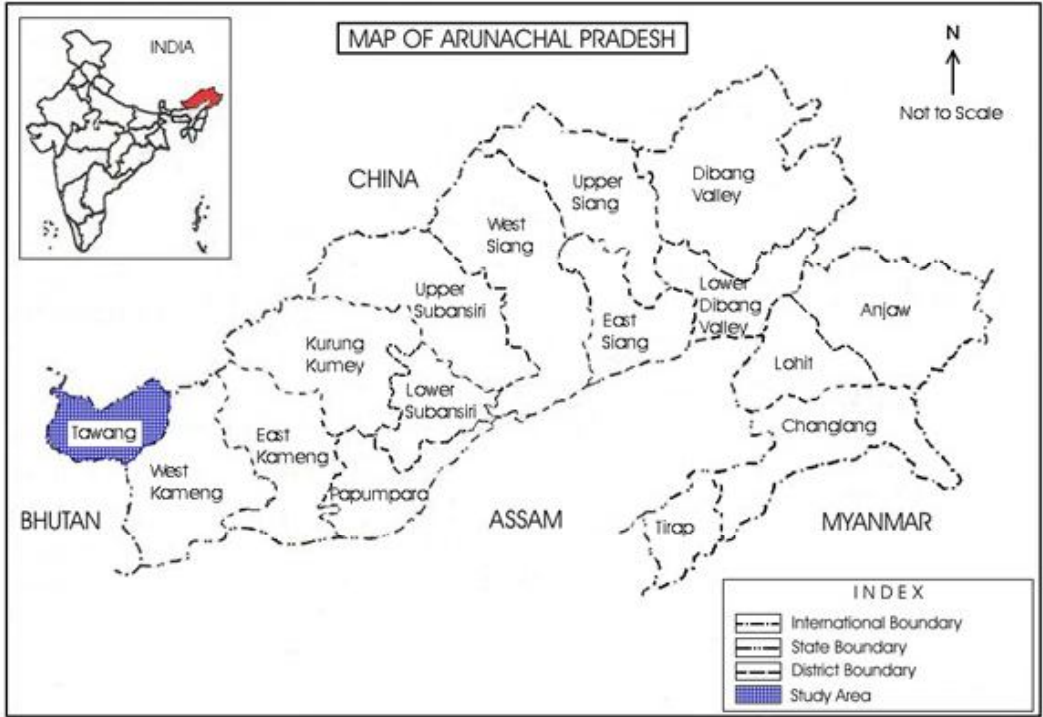


Figure 1: - Map of Tawang district - the study area



Figure 2: - Map of Tawang district - the study area



Figure 3: (A) A mosaic view of agricultural fields, adjacent forests and settlements (village) in Tawang Chu Valley



Figure 3: (B) A high altitude landscape located near P.Tso, Tawang



Figure 4 : (A)



Figure 4 : (B)



Figure 4 : (C)



Figure 4 : (D)



Figure 4 : (E)



Figure 4 : (F)

Figure 4: Some mammals of the Tawang district. (A) Arunachal Macaque (*Macaca munzala*), (B) Pugmark of Marbled Cat (*Pardofelis marmorata*), (C) Large-eared Pika (*Ochotona macrotis*), (D) Yellow-Throated Marten (*Martes flavigula*), (E) Hoary-bellied Himalayan Squirrel (*Callosciurus pygerytrus*), and (F) Orange-bellied Himalayan Squirrel (*Dremomys lokriah*).