DISTRIBUTION IN BUMDELING RAMSAR SITE (BRS)

In BRS, different species of small mammals are found in different habitat types viz. Agricultural land, Fallow land, Open Grassland, Riparian, *Alnus* Dominated Forest and Oak Dominated Forest based on the availability of resources, required niche and minimal conservation threats.

CONSERVATION THREATS IN BUMDELING RAMSAR SITE

- Habitat degradation and fragmentation caused by intensive livestock grazing, extraction of timbers/poles, lopping for fodder, clearing unknowingly, road construction, movement of feral dogs, collection of leaf litters/mould, chemical fertilizers/pesticides, flood, etc.
- Poisoning caused by the use of pesticides.
- Retaliatory killing of small mammals because consider as invasive species.

CONSERVATION EFFORTS IN BUMDELING RAMSAR SITE

- Livelihood development of the local communities is balance by conservation and awareness programme.
- Local developmental activities were monitor through set of rules and regulations by discouraging unethical activities.
- Discourage of raising dogs by local communities.
- Local communities were encouraged to raise higher breed cow (Jersey) to minimize the impact of ecology.
- Local farmers were discouraged of chemical pesticides used and encouraged to replace with organic/ local farm manure.
- Discourage retaliatory killing of small mammals because they are environmental indicators.

SMALL MAMMALS FACTS

Number of species: 3821+
Number of families: ?
Order: Rodentia, Eulipotyphla, Scandentia, Lagomorpha, Pholidota, Chiroptera, etc.
Class: Mamalia
Phylum: Chordate
Kingdom: Animalia

KNOW THE SMALL MAMMALS OF YOUR LOCALITY, AND LET'S JOIN HANDS OF ALL WALKS OF LIFE TO PROTECT AND CONSERVE THEM IN THE NATURE.

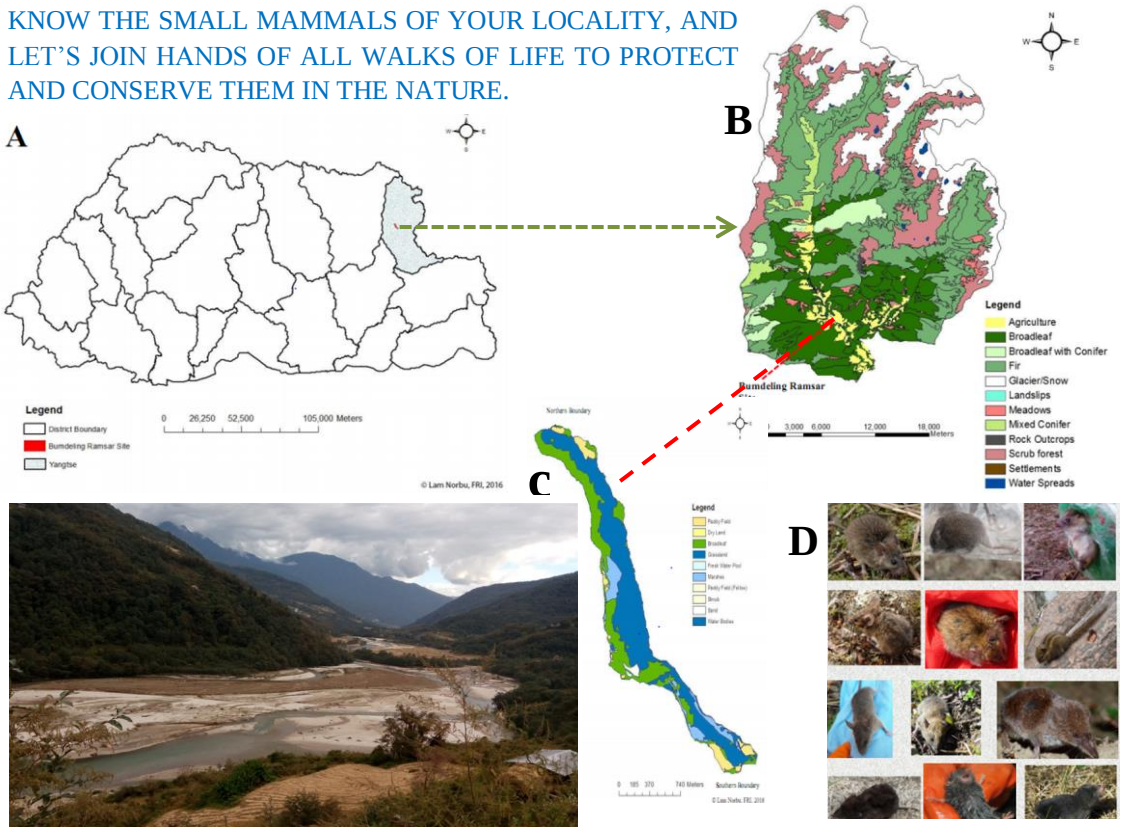

Figure: (A) Map of Bhutan showing Trashi yangtse District, **(B)** Bumdeling Block, **(C)** Bumdeling Ramsar Site and **(D)** Small mammals of Bumdeling Ramsar Site.

STATUS OF SMALL MAMMALS

Small mammals constitute highest species diversity in the class "Mammalia". In International Union for Conservation of Nature's (IUCN) Red List of Threatened Species, small mammal's status range from **"Extinct to Data Not Evaluated"**. As of 2015, the report made by IUCN, of 4167 small mammal species 49 was extinct. Under, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), **Appendix I**, **II** and **III** lists many small mammal species.

In many countries of South Asia, small mammals are not listed in their Wildlife Protection Act and any schedule except India for conservation. Similarly, Bhutan has not yet recognized even a single species of small mammals in Wildlife Protection Chapter and Schedules I of Forest and Nature Conservation Act (FNCA) of Bhutan, 1995. Under Wildlife Protection Act of India (WPA), 1972 small mammals are placed in **Schedule V** and revealed as vermin.

DEFINITION OF SMALL MAMMALS

The word being comparative term, it is difficult to define and small mammals do not constitute strict taxonomic entities as well. However, wildlife researchers define that Small mammals are animal weighing ≤ 500g or 1 kg when adult (Barnett and Dutton, 1995) or the upper size limit that can easily be caught in commercially produced live traps (Hoffmann, *et al.,* 2010).

SPECIES DIVERSITY OF SMALL MAMMALS

Small mammals constitute nearly 75% of the world mammalian diversity. In 2015, IUCN reported that of 4127 species of small mammals globally (Volant and Non-Volant). South Asia alone contributes 185 small mammal species (Molur, 2005).

DISTRIBUTION OF SMALL MAMMALS

Small mammals are known to be occurred in all zoogeographic realms except Antarctica. Ubiquitous and occupy from desert to wetlands, scrub to forest except in extreme polar habitats. Insectivore in Neotropic is only few however, in Australian region it is replaced by marsupials (Padmanabhan, 2009).

Globally, diversity and distribution of small mammals upsurge from poles to the tropics. Pattern of distribution is also influence by habitat complexity and heterogeneity, altitudes, vegetation, micro and macro habitat, surrounding influences, seasonal variation, predators, evolutionary history, degree of specialisation (generalist or specialist), behaviour, resources, climatic and ecological variables, anthropogenic attributes and reproductive cycle.

HABITAT PREFERENCE BY SMALL MAMMALS

Habitat selection by small mammals can be varying accordingly to their physiological needs, nutrition, social and anti-predation requirements. Foraging, escape, mate searching, refuge use, nesting site, abundance of competitors, territoriality and environmental variables are also some of the factors. Besides, macro and micro-habitats, food, climatic variables and moonlight status determine selection of habitat. Follow nocturnal or diurnal period.

However, selection of habitat differs from species to species. Some spend in the underground system, others burrow, few arboreal, some gliders, others for semi-aquatic life and some alongside of human habitations.

IMPORTANCE OF SMALL MAMMALS

Small mammals are known be an essential natural resources that play significant role to ecology, economy, social and cultural values. Further, they are indicator species to the environment.

DIET SELECTION BY SMALL MAMMALS

Small mammals require constant feeding, resulted to varieties of feeding habit on wide diversity of taxonomic group as key strategies for resource partition. Few are carnivorous or insectivorous but mostly omnivorous. Some are generalist, opportunistic feeders to specialist and diurnal to nocturnal forms.

CHARACTERISTIC AND BREEDING STRATEGY

Small mammal is r-selected species characterized by a high reproductive/ biotic potential, prolific breeders, low survival rate and high density tolerance. However, many small mammals are small, cryptic and nocturnal, mating behaviour is difficult to observe. They used scent gland while search for mate. Mating system is monogamy to polygamy. The gestation period and number of progeny varies from species to species. They live entirely solitary to highly social and some living in aggregations. Most of the small mammals are camouflage to surrounding environment.

CONSERVATION THREATS TO SMALL MAMMALS

Worldwide, small mammals are facing substantial threats because of habitat fragmentation, loss of habitats, use of chemical pesticides and insecticides, alien species, hunting, persecution, anthropogenic intrusion, shifting cultivation, loss of wetlands, predators, natural calamities and climate change. It is further compounded due to lack of explicit information and conservation advocacy.

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