

## PRELIMINARY INVESTIGATIONS ON FOOD, BEHAVIOUR AND DISTRIBUTION OF MUSK DEER IN NORTHERN AREAS

Ashiq Ahmad\*

**Summary.** Preliminary investigations conducted on Musk deer, *Moschus moschiferous* revealed its distribution in about 60 places in Northern Areas. The animal was observed feeding on flowers of *Peucedanum skardicum*, leaves of *Betula utilis* and *Salix himalayensis* and tuberous roots of *Lindelofia anchusoides*. Some behavioural studies were also conducted.

**Introduction.** Musk deer, *Moschus moschiferous*, belongs to Subfamily Moschinae, family Cervidae, sub-order Ruminantia, order Artiodactyla and class Mammalia. It is smallest of all the deers found in Pakistan. In size it equals a medium sized dog, with coarse fur and hind legs longer than fore ones. They lack horns completely in both sexes and have peculiar upstanding ears which are rounded in outline. Musk deer possesses peculiar type of body hair which are coarse in texture, hollow inside, wavy in outline and brittle in nature. Tail is short and buried completely in the fur of the caudal region.

Males are comparatively bigger in size and look darker in colour when viewed from a distance while females look pale grey with whitish-throat and belly. Canine teeth in the males are developed enormously and extend below the lower jaw. Colour and size of the canine teeth differ with age of the animals, being bigger and paler at the older age and whitish and smaller at young age. A canine tooth, in possession of the author, measures 7.5 cm from the outer outline, denoting older age of the animal. Tail in the male is semi-naked in its proximal part with a slit shaped gland on the ventral surface and terminating in a small terminal hair tuft. Tail in female is slender, covered uniformly with hair and lack the slit gland. More prominent feature in male is the presence of a large abdominal scent gland which is in the form of a roughly circular pouch, and known commonly as musk pod. It emits a pleasant scent when dried and is used in perfumes and medicines.

Musk deer occurs within the sub-alpine zone, above 2500 m altitude. In summer it occurs mostly between 3350 m and 4000 m in association with dense birch forest and, sometimes also with dwarf juniper, *Juniperus polycarpus*. Narrow gullies and steep slopes with dense birch cover are particularly favoured.

Since, no detailed account is yet available on this deer in Pakistan, a research project is being initiated by the Wildlife Management Branch and in this context, the following preliminary investigations were carried out.

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\*The author is Wildlife Management Specialist at the Pakistan Forest Institute, Peshawar.



**Method and Material.** Various localities of musk deer occurrence were determined initially with the help of questionnaires, distributed to about 200 shikaris in Northern Areas and later confirmed in several localities through self observations. Expert shikaris and local inhabitants were also interviewed for collecting informations on some aspects of the life of musk deer to form basis for further study.

Behavioural studies were conducted partly through 8 x 10 mm binoculars and 15-60 x 60 mm spotting scope and partly through following the foot tracks of the animal.

Places of abode were approached physically and investigations carried out.

**Results and Discussion.** Food: Musk deer feeds preactically on all types of herbs, young leaves and grasses in summer while they resort to eating the barks and twigs of willow (*Salix himalayensis*) wild currant (*Ribes emodense*) and honey suckle (*Lonicera heterophylla*) (Robert 1977). The author found the animal feeding on leaves of birch, salix, and flowers of *Peucedanum skardicum* during the month of August. The deer was also observed digging the soil with their hooves and uprooting plants of *Lindelofia anchusoides*. Only tuberous root of such plant was found fed by the musk deer.

**Behaviour:** Musk deer is by nature, a shy, secretive and solitary animal. During observations, a single female was spotted for about 25 minutes without any young, presence of which was evident from its foot tracks in same locality. At another place, a two months old young was found feeding alone. Similarly, faecal pellets and body hair of both young and adult animals were collected from separate abodes. Besides other reasons, it denotes an extreme solitary nature of the animal whereby, even mother and young, do not keep to one common abode rather she gets a separate place for its young and will probably visit only when it is time to suckle it.

Maximum time of the day and night is spent in a shallow scrape protected by an overhanging stone or rock. Such scrapes were found usually in natural caves or, most commonly, near the main trunk of spruce, fir, willow and birch. Lowest branches of such trees had dense foliage enough to screen the sun rays and cover the ground from all sides.

Heaps of faecal pellets of the musk deer were usually seen near its abode showing its peculiar habit of depositing faeces regularly at one place. Size of the heap indicate approximately the period for which the same abode was occupied by the animal. when disturbed, such places are abandoned by the animal. Musk deer leaves its abode early in morning or late in afternoon for feeding purposes. Such a walk is characteristic one where a path covered by the animal resembles a semi-circle or sometimes a distended balloon.

It avoids isolated forest patches for permanant occupation although, these are visited occasionally for feeding purposes.



The animal was observed feeding at intervals between slow and smooth leaps which gave a swimming impression from a distance. During browsing, the animal stands on hind legs when the required branch is not approachable in normal way. Musk deer prefers open grassy grounds beyond tree line but keep near the dense and continuous birch patches probably for easy escape during emergency. The animal was also observed feeding within birch forests appearing frequently in small bits of open grounds. When disturbed, musk deer show a characteristic habit. It runs in leaps for about 10 metres up the slope, moves its head back and stares at the intruder for a while and runs again. The action is repeated until the deer vanishes from the sight. Similar behaviour is rarely observed when the animal flees down the slope, may be, the shorter fore legs cause inconvenience to the deer in swift downward movements and thus it has to concentrate more on quick escape rather than watching back which it does frequently during uphill escape.

**Distribution.** Musk deer was once common throughout the sub-alpine zone of Northern Areas but has been wiped out from many places through hunting in the recent past. It is, however still reported in the remote and inaccessible sites of the following localities:

**Chilas Forest Division.** *Astore Forest Range:* Rama, Rupal, Chichi, Bubind, Blushbar, Chugam, Kalapani, Shikang nullah, Chashma nullah, Twey nullah, Churiphiao, Chumokhar, Dangodas, Riat, Chittinaddi, Ghurial, Faqir Kot, Kuchak.

*Minimarg Forest Range.* Domail, Sattar nullah, Mapno nullah, Nagai nullah, Gujran nullah, Neru nullah, Rattak nullah, Geozat nullah, Doodgai nullah, Crit nullah, Qamri nullah, Budgai.

*Bunji Forest Range:* Urdung nullah, Darlung nullah, Sherubas, Gharey, Awatibhar, Kashroniril, Harchuniril, Kilakush, Mamochal.

*Kunar Forest Range:* Lichigah, Patoro Forest, Khusto, Tato, Mothat, Showa Shut.

**Skardu Forest Division.** *Rundu Forest Range:* Shogartah, Rundu valley.

*Gulteri Forest Range:* Land nullah, Gungmelungma, Frinzat nullah, Konar nullah, Palafar nullah, Chundo nullah, Pazan, Sufaid Pani, Thali nullah, Akbar nullah, Chamaluk nullah, Shawalun nullah, Danyar nullah, Das nullah.

It can be safely concluded that musk deer is not extinct, at least in some places of Northern Areas; although exact status of the animal is yet unknown. Population estimates made at Prizot, Blushbar and Rama revealed the presence of at least 12 animals. The available population can be increased to sizable number if intensive management is carried out in those units of the available



habitat where more than 10 animal heads survive presently. Such units, duely protected from poachers can be established after a thorough survey is carried out in the above listed pockets.

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### Reference

ROBERT, T. J. (1977). The Mammals of Pakistan. Ernest Benn Ltd; London and Tonbridge.

Survival	Percentage	Repetition				Shade				Open			
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1		9	9	7	10	7	8	10	10	7	10	8	10
2		7	8	7	10	7	8	10	10	7	8	9	10
3		9	10	7	8	7	10	9	10	9	10	7	8
4		8	8	10	10	10	10	8	10	8	8	7	4
Total		33	35	31	38	31	35	31	38	31	31	33	32
Survival	Percentage	83	88	78	90	78	90	78	90	78	78	75	80