

**FOOD PREFERENCE AND BEHAVIOR STUDY OF WHITE
SPOTTED MOUSE DEER (*Moschiola meminna*) IN CAPTIVITY**

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1. Abstract

Scientific studies on the White spotted mouse deer (*Moschiola meminna*) which is endemic to the dry zone of Sri Lanka are scanty. Although the management of these animals under captivity differs from that of them in natural habitats, behavioural studies in captivity are important to optimize the welfare status of animal in captivity. The aim of this study was to record the behaviour of white spotted mouse deer, with a particular emphasis on their feeding behaviours and the food preference in order to improve their welfare in the captivity. The study was carried out in the National Zoological Gardens, Dehiwala, Sri Lanka. Fifteen animals were observed to collect data. The general behaviour in captivity was observed and recorded as an ethogram. Ingredients that composed of their usual diet were separated and offered in separate trays to determine their food preferences. Food preference for a wild diet (food which they consumed in their natural habitat) was

also observed and recorded (present diet supplied as a control). Scan sampling method was used to collect behavioural data. White spotted mouse deer showed selective feeding reflecting their nutritional requirements. High preference was observed for natural food that they would get in wild than the diet they were usually offered in the zoo. Laying was the most obvious behaviour and 54.3% animals showed this observation. Stationary and resting behaviours were prominent than active behaviours such as locomotion, grooming and social interactions. Social interactions and parental care were also found to be relatively low. They preferred to eat boiled chickpea (*Cicer arietinum*) (18.09%) and water

spinach (*Ipomea aquatica*) (12.62%) in the morning diet and Sweet potato (*Ipomea batata*) (16.9%) and water spinach (10.48%) in the evening diet. They desired more natural food from the wild rather than the usual diet given to them. However preference for the wild diet is not significant. Though a comprehensive study is important to confirm whether this animal is nocturnal, semi nocturnal or diurnal.

Key Words : moue deer, Behavior, Captivity, Ethogram, White spotted

2. Introduction and research problem/issue

Chevrotains are the most primitive ruminant type in the world and these small ungulates are considered as a living fossil. There are mainly three mouse deer species in Sri Lanka they are endemic to the island (Gamini and Ratnavira, 2013).

Humans maintain wild animals in zoological parks for the purposes of education, conservation, research, and recreation (Mench and Kreger, 1996). In zoological environment their natural behavior is restricted. The feeding of animals in zoological environment is challenging since ensuring the diversity in feeds, feeding behavior and nutritional requirements of captive animals. Unlike domesticated animal species, there are few standard feeding preferences of wild animals. Due to ease of management these animals are fed with a diet recommended by veterinarians. Their natural feeding behavior, requirements may not be fulfilled and animal welfare problems such as stereotypic behaviors may occur.

Behavioral studies are needed to improve their living conditions and animal welfare by identifying enrichment programs, habitat enrichments and supplying more natural food according to their needs.

The main objective of this research was to study behavior of white spotted mous captivity, with particular emphasis on their feeding behavior.

3. Research Methodology

This study was carried out in captivity. Sampling site was selected as National Zoological Gardens, Dehiwala, Sri Lanka. Fifteen individual animals were subjected to the study. All these animals belong to the same species (*M. meminna*) and same age. All of them born in captivity.

Behavioural data was collected by doing an observational survey of 15 individual animals. Behaviours of white spotted mouse deer were observed using scan sampling method. In scan sampling method data is collected at predetermined specified time intervals and noting instantaneous activity or behaviour state of all animals in the group (Altmann, 1973) and recorded as an ethogram. Data was collected within an hour during two minutes by following one minute interval. Another experiment was done to observe their selective feeding behaviour. Under this existing diet was placed separately in plastic trays. Same colour, same size identical trays were used to prevent unnecessary attraction of animals. Preference was determined by the visiting frequency of animals to each tray during an hour.

And also observed their food preference variation when they fed with more natural food which they consumed in natural habitats. Their existing diet was supplied as a control. Preferences for the two diets were counted as an ethogram.

4. Results and findings

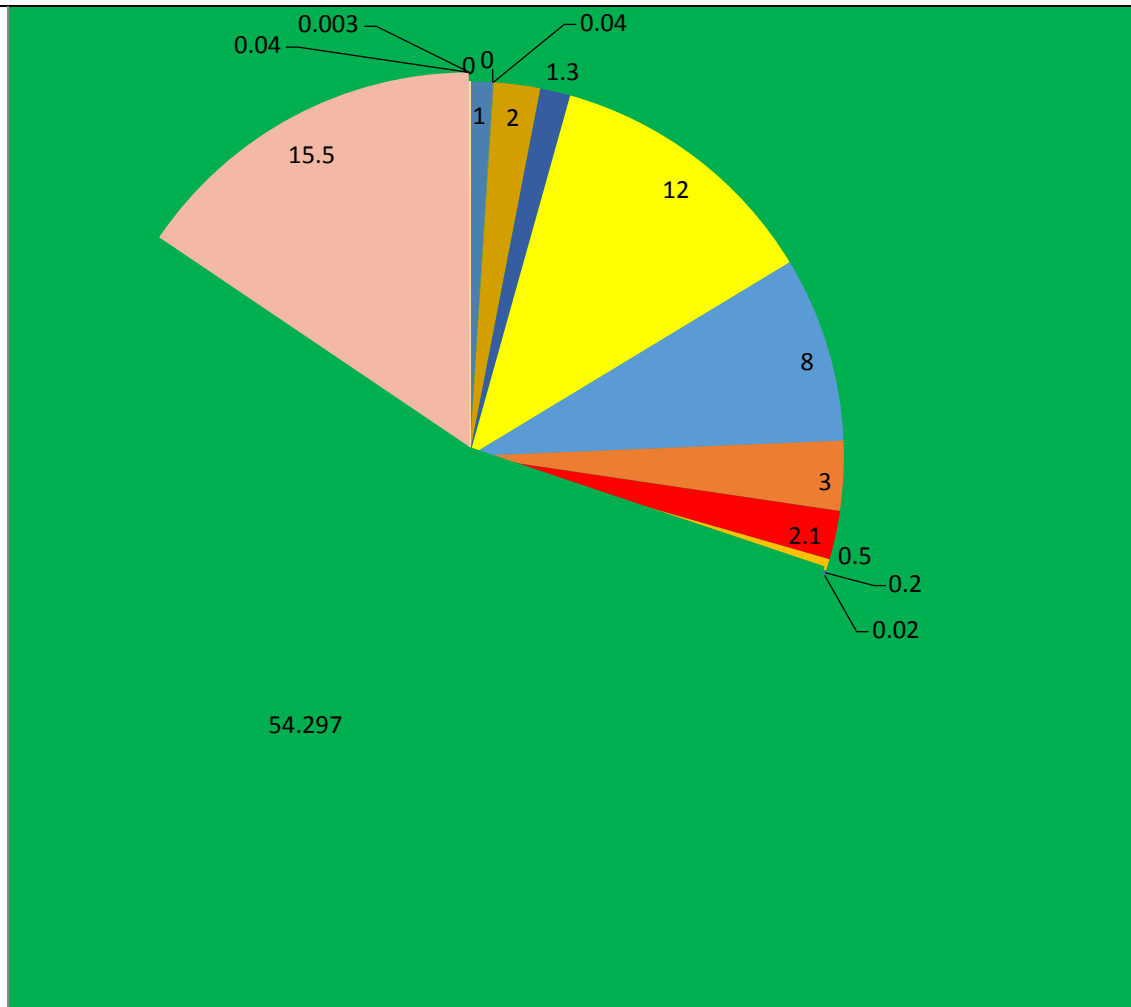


Figure 4.1 Daily activity budget of the white spotted mouse deer

According to the activity budget of mouse deer, most obvious behaviour is laying. Eating, ruminating, standing, walking behaviours are prominent than other observed behaviours. Parental care is relatively low when compared to other mammals. Gamini and Ratnavira (2013)

have also observed parental care was relatively low among mouse deer. No any stereotypic behaviour was recorded in the group.

Table 4.2 Relationship of some obvious behaviours with the session

Licking, eating and laying behaviours has relationship with the session. Behaviours might be changed with sessions due to environmental temperature, visitor influence and other animal interactions.

Table 4.3 Food selectivity in the morning

Food item	Preference (%)
Water spinach	12.62
Sour plantain	4.24
Watermelon	1.43
Papaw	0.48
Cucumber	0.24
Chickpea	18.09
Salad leaves	5.24
Other eating	5.24

Sharma, *et al.* (1996) showed that according to the Morphological adaptations of the muzzle an mouse deer is a d anterior dentition of lesser mouse deer, concentrate selector and selective browser . In this study also preferred boiled chickpea followed Chick white spotted mouse deer by water spinach . Other food items were eaten in lesser amounts.

pea being legume provides protein and water

spinach may serve as an energy source and

accounts for high water content since white spotted mouse deer mouse is a ruminant animal.

Figure 4.4 Food selectivity in the afternoon

Food item	Preference (%)
Watermelon	1.43
Papaw	0.24
Cucumber	0.71
Sour plantain	1.19
Apple	3.10
Sweet potato	16.9
Water spinach	10.48
Other eating	5.95

to their energy requirement.
their nutrition requirement

during morning and

Preference for sweet potato mainly due

According to the food preference test carried out based on lesser mouse deer indicates male mouse deers select sweet potato afore and female deers select carrot afore according to (Abdullah *et al.*,1999).

Figure 4.5 Variation of feeding activities afternoon sessions

Behavior	Morning	Afternoon
Eating	12.94%	19.27%
Other eating	2.72%	2.61%
Drinking	0%	0.72%
Ruminating	9.39%	8.55%

Eating and drinking water has a relationship with the session. Drinking is relatively low and it is about 0.72% for the whole period.

White spotted mouse deer is highly preferred water spinach that has the highest water content when compared to the other food items. When they fed with more natural diet under food preference test, they ate succulent plant parts, ripen berries, flowers and buds except rough parts. They contribute high water content for the metabolic water requirement of the body. Their stationary behaviours are more observable in morning and afternoon sessions than locomotion behaviours. That may be another reason for low water requirement from outside.

Eating percentage of both wild and existing diets in the morning (wild

Behaviour	P Value (Chi square)
Laying	0.028
Eating	0.000
Standing alert	0.499
Ruminating	0.383
Smelling	0.157
Licking	0.006
Walking	0.264
Standing	0.559
Other eating	0.915

-28.93%, existing

23.45%) was high when compared to the evening (wild -21.31%, existing -10.48%). This result indicates more wild diet provided in captivity compromised animal welfare.

With the increase of environmental temperature, transpiration is also increasing. So water content of the plant parts are getting low due to withering. That may be the reason for their low wild diet intake in the

evening. However their preference is not significant for the normal and wild diet.

5. Conclusions, implications and significance

Moschiola meminna has a selective feeding behaviour according to their nutrition requirement. They preferred to eat boiled chickpea and water spinach in the morning diet and also sweet potato and water spinach in the evening diet. Water intake is relatively low due to ingest of succulent plant parts. They desired more natural food from the wild rather than the diet provided (when consider the percentage of eating), but statistically not significant. Stationary behaviours are most obvious however their social behaviours are relatively low.

6. References (Selected)

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