

**A Production Report on:
Feeding management and body weight of spotted deer
in captive condition at Chattogram zoo**



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ABSTRACT

The study was conducted to know the feeding management, and live weight of spotteddeer, in captive condition, at Chattogram zoo from 24th February to 2nd November, 2021. Information were collected from two groups of spotted deer consisting of 04 Buck in one group and 5 Doe. The experimental study was carried out emphasizing on the feeding management and live weight of spotted deer in captive condition at Chattogram zoo. The average body weight that are found from this study was 4.15kg at birth in male and 3.86 in female, respectively. The average adult body weight was 77 kg and 67 kg in male and female spotted deer, respectively. The deer was fed with the green roughages and concentrated mix. Supplied feeds and metabolic energy were calculated and the values were 8.16 kg/deer/day and 15.138 MJ/deer/day, respectively.

Key words: Spotted deer, body weight, captive, feeding.

CHAPTER 1:INTRODUCTION

There are four species of deer available in Bangladesh, these are spotted deer(*Axis axis*), barking deer(*rusa unicolor*), sambar deer(*rusa unicolor*) and hog deer(*Axisporcinus*). Among them, spotted deer, locally known as 'The Chital' or 'Chitra', is the most common species of deer in the forests of Indian subcontinent (Prater 1998). They are usually seen in the Himalayan foothills, in the jungles of Terai, and in the Madhya Pradesh of India (Prater 1998). They are densely populated in the woodlands across India, Bangladesh and Sri Lanka (Niraz 1998). In Bangladesh, the population density of spotted deer seems to be higher in the marine grasslands of Sundarbans. The Chital or spotted deer is listed by the IUCN as Least Concern "because it occurs over a very wide range within which there are many large populations". However population densities are below ecological carrying capacity in many places due to hunting and competition with domestic livestock. Two primary reasons for its good conservation status are its legal protection as a species and a network of functioning protected areas. The estimated population of spotted deer approximately ranges from 52000 to 80000 individuals (Azad 2005). As a reference, in a private farm of Bohaddarhat in Chittagong district it was seen that the deer faring is successful. Although they have no formal record they had increased about three times in number of Chital within six years i.e. from 15 to 20. It is also in good condition in Bongobundhu Sheikh Mujibur Rahman Safari Park, Dulahazara, Cox'sbazar. Breeding in captivity at the Safari Park to be satisfactory (Deodatus and Ahmed, 2002). In Chittagong zoo, deer are conserved in captive condition and these three types of deer keep separately in different shed and open corral in which the animal can move easily to and fro for relaxation and comfortable leading of life.

There are 52 spotted deer in Chattogram zoo consisting of 25 Bucks and 27 Does. Though spotted deer are feed on green leaves, fruits and grasses, In captive condition concentrated feeds such as chickpea, soybean meal, wheat bran, vitamin, salt are supplied additionally (Suresh 2013). The growth of Spotted deer varies in Captive condition from wild individuals due to the effect of surroundings and feeding management. The average body weight of mature hinds ranges from 46 kg in Sri Lanka to 57 kg in India and the stag from 64 kg in India to 98 kg in Sri Lanka (Rofiqul, 2019). But the average body weight of spotted deer, in captive condition, is ranges from 64 to 76 kg (Suresh 2013).

In this study, the productive and reproductive traits as well as feeding and breeding management on spotted deer was studied.

CHAPTER 2

METHODS AND MATERIALS

2.1. Study area:

For this study, the necessary data were collected from Chattogram zoo located at Khulshi, Pahartali, Bangladesh adjacent to Foy's lake. The Zoo was established at 28th February, 1989 having total area is about 6.0 acres and covered with sloppy, hilly, flat bends along the side lakes with steep sides. Here the rain falls for 183.8 days and collects up to 1579 mm of precipitation in the current year. The study area coordinates 22°36`N 91°79`E. The average temperature in summer is 27.2°C and, in winter 19 °C.

2.2. Study duration:

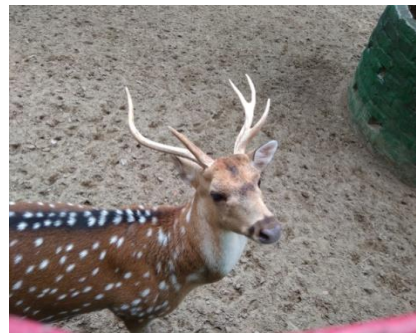
The duration of the study was approximately 9 (nine) months. The study was conducted from 24th April and ended up in 2nd November.

2.3. Collection of data:

Data was collected through direct observation by the researcher using predesigned well-structured questionnaire.

2.4. Target population:

Target population was the captive spotted deer at Chattogram zoo. Data were recorded from two groups of spotted deer; one group consisting of 04 bucks and another group consisting of 05 does.



1: Figure Spotted Deer: Buck and Doe (left), Buck (right)

2.5 Body weight of buck and doe

The body weights of deer at birth, and 30 days interval up to weaning and adult males and females were taken using a digital weighing machine and measuring tape.

2.6. Feeding management:

Feeding management was also included with types and amount of feed given to each deer per day. Data collected on different characteristics (e.g. frequency of feeding per day, types of feed supplied, amount of feed offered) by direct visual observation, from record books and by conducting a discussion with the employees who are directly involved in management of deer.



Figure 2: Feeding management of Spotted Deer

CHAPTER 3

RESULTS AND DISCUSSION

The body weight of males and female deer from birth to weaning and the adult is presented in Table 1. From this Table 1, it was observed that the average birth weight of male and female spotted deer was 4.15 and 3.86 kg, respectively. The findings were similar to the findings of Mulley (1984), who reported the mean birth weights of male and female spotted deer fawn was 4.5 and 4.2 kg. On the other hands, Kay and Stain (1981), reported the average birth weight of males and females spotted deer fawn were 3.5 and 3.0 kg. Average Weight of spotted deer at weaning age was 18.62 kg for male, and 19.1 kg for female, which is in range of weight at weaning age stated in the experiment of Ables (1977), who stated average weaning weight ranges from 18 to 21 kg. Average adult weight of male spotted deer was 74 kg for male and 67 kg for female (Table1). This value was similar to the findings of Mulley (1984), who recorded the average adult weight of male and female spotted deer about 85 and 70 kg for male and female, respectively.

Table1: Average body weight of male and female spotted deer.

Sex	Birth weight (kg)	Weight at 30 days	Weight 60 at days	Weight at 90 days	Weaning weight (kg)	Adult body weight
Male (Buck)	4.15±0.404	7.475±0.287	13.25±0.354	21.35±0.778	19.16667±3.617	74±1.414
Female (doe)	3.86±0.328	6.82±0.228	12.77±1.124	19.07±0.513	19.1±2.162	67±2.549

Average age of male spotted deer at weaning is 15.7 weeks and, of female is 15.5 weeks which is in the ranges of age stated in the experiment of Kelly (1978) and Moore (1978) where they stated the weaning ages ranged from 12 weeks to 20 weeks. According to the findings from Table 2, average age of sexual maturity of spotted deer is 13.75 in male and 10.2 in male which is nearly similar to the findings of Rafiqul (2019).

Table2: Weaning age and age at sexual maturity of spotted deer

Sex	Weaning age (weeks)	Age at sexual maturity (months)
Male	15.74±0.828	13.55±0.820
Female	15.8±1.789	10.2±0.836

Feeding management of captive spotted deer was observed during the study period and the findings are shown in Table 3. At Chattogram zoo, sweet pumpkin (Cucurbitapepo), para grass (Brachariamutica), Poi shak (Basella alba), Goose berry (Phyllanthusemblica), Carrot (Daucuscarota) and papaya (Carica Papaya) as leafy vegetables, wheat bran, gram and rice polish supplied regularly to the deer twice in a day as concentrate feed. Vitamin premix, common Salt are used additionally. As shown at Table 3, Total 8.16 kg feed is provided to each spotted deer, on an average, in a day at Chattogram Zoo. Feeds provided to the spotted deer, are separated and given at two times; 4.45 kg at Forenoon and 3.7 kg at Afternoon.

Table 3: Supplied feed to spotted deer per day

Supplied feed to Spotted Deer (Kg/deer/day)				
Feed ingredients	Scientific name	Forenoon	Afternoon	Total(Kg/deer/day)
Para grass	<u>Urochola mutica</u>	1	1	2
Wheat bran	<u>Triticumaestivum</u>	1	0.75	1.75
Poi shak	<u>Basella alba</u>	0.25	0.25	0.5
Pappya	<u>Carica papaya</u>	0.2	0.2	0.4
Sweet pumpkin	<u>Cucurbitapepo</u>	1	0.5	1.5
Carrot	<u>Daucuscarota</u>	0.5	0.5	1
Goose berry	<u>Phyllanthusemblica</u>	0.1	0.1	0.2
Cabbage	<u>Brassicaoleracea</u>	0.3	0.3	0.6
Salt		0.1	0.1	0.2
Vitamin premix		0.005	0.005	0.01
Total		4.455	3.705	8.16

From the supplied feed, each spotted deer can get 3618.3 Kcal per day or 15.138 Mega joule per day (shown at Table 4). But, An adult spotted deer require only for maintenance energy was 16-18 MJ (Kelly 1978)where as a protein diet having 13-16% range is required for the successful growth, antler development and reproduction (Mylrea 2004). Comparing between the supplied a required ME, It can be observed that the Metabolic energy (15.138 MJ) of supplied feed is nearly similar to the standard value of required ME (16-18 MJ) of Spotted deer which is shown at Table 5.

Table 4: Metabolic energy supplied to spotted deer per day.

Metabolic Energy Supplied to Spotted Deer(Megajoule/Deer/ day)		
Feed ingredients	Total feed (Kg/deer/day)	Total energy (Kcal/deer/day)
Para grass	2	400
Wheat bran	1.75	2100
Poi shak	0.5	136
Pappya	0.4	168
Sweet pumpkin	1.5	0.3
Carrot	1	570
Goose berry	0.2	88
Cabbage	0.6	156
Total	8.16	3618.3 Kcal/deer/ day Or,15.138 MJ/deer/day

Table 5: Comparison with supplied ME.

Parameters	Supplied ME(MJ/deer/day)	Required ME(MJ/deer/day)	ME needed to Balance (MJ/deer/day)
Metabolic energy	15.138	16	0.862

CHAPTER 4

CONCLUSION

It can be concluded that the feeding management of spotted deer in Chattogram zoo was standard and live weight of spotted deer in captive condition was increases with the increases of age. The average body weight of male and female spotted deer at different ages were found to be varied between male and female. This study showed that if any one supplied feeds maintaining metabolic energy the deer weight will be archived proportionately.

CHAPTER 5

LIMITATIONS

The number of spotted deer and duration of study (only 09 months) wasn't sufficient to obtain a precise conclusion. Within this short period of time, it was possible to get only some limited information on productive and reproductive performance of spotted deer, which was another obstacle to analyze the data as well as to carry out the study.

CHAPTER 6: REFERENCES

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The author

BIOGRAPHY

I'm MohammadGolamAzam, An undergraduate student, currently enrolling as an intern veterinarian at chattogram veterinary and Animal Sciences University. Here I'm pursuing a specialized degree named Doctor of Veterinary medicine. I, son of Hadi Md. Mohsin and ShahinAkteer, was born and raised up in Chattogram city and received my elementary, secondary and Higher secondary education under chattogram education board. My career vision is to become a skilled veterinarian.