

## FEEDING AND MANAGEMENT OF ZOO ANIMALS

The field of wildlife nutrition is limited comparatively with domesticated animal commercial nutrition. The basic principle of nutrition of wildlife mammals are same with domesticated mammals, both mammals require 45 to 47 known nutrients.

Nutrients are water, carbohydrate, protein, fat, minerals (calcium and phosphorus, magnesium, sodium, chlorine, potassium, sulfur, iron, copper, iodine, cobalt, zinc, manganese, selenium) and vitamins (vitamin A, E, D, K, Thiamin, Riboflavin, Pantothenic acid, Niacin, Folic acid, Pyridoxine, Biotin, Cyanocobalamin, Vitamin C).

In most of the Indian Zoos, animals are fed on the basis of their natural food habit and from experiences from animal and Zoo keepers. Such type of diet may not be balanced to the animal and may result in deficiency.

Recent research (2013) on standardization of animal diet in Indian Zoos on 50 species in 34 Zoos of the country suggests guidelines in general as follows:-

Sl No	Name of animal (Captive)	Weight of animal	Food suggested and their weight
1	Spotted deer	70 kg	6 (six)kg quality green fodder with 500 gm balanced concentrate feed/animal/day. Fruits and vegetables are not recommended.
2	Hog deer	40 kg	3.75 kg quality green fodder with 280 gm balanced concentrate feed/animal/day.
3	Brow-Antlered Deer	100 kg	7-9 kg of quality green fodder with 500 gms balanced concentrate feed/animal/day.
4	Barking deer	25 kg	2-3 kg quality green fodder with 250 gms concentrate feed/animal/day. Daily ration should be divided into 3-4 times. Fruits to be avoided.
5	Sambar	150 kg	Quality green fodder 9 kg/animal/day ; tree fodder 2 kg/animal/day; concentrate 7.5 kg/animal/day
6	Black Buck	40 kg	Quality green fodder 2.5-3 kg/animal/day with 250 gms concentrate feed/animal/day
7	Four-horned Antelope		Quality fodder 2-2.5 kg green fodder with 200 gms concentrate feed animal feed .
8	Gaur	800 kg	0.500 kg Ground nut cake 3 kg Wheat bran, 1 kg horse gram or any other pulses ,green fodder 15 kg, 2 kg leguminous fodder and 50 gms green fodder.
9	Giraffe	800 kg	Wheat bran 3.5 kg, Bengal gram 0.750 kg/animal, crushed maize 0.5 kg; 45 kg Leguminous fodder , 15 kg Banana 2 kg apple, 200 gms sweet lime, carrot 2 kg , 2kg onion, 1kg cabbage 1 kg ,sweet potatoe 250 gms, jaggery 50 gms, common salt 50 gms.
10	Wild Pig	100 kg	Mash (maize 57%, wheat bran 18%, SBM 116%, Min mixture 2%)=1000 gms; Green fodder=1250 gms ; Potato/sweet potato=500 gms; vegetables= 500 gms

11	Indian Rhinoceros	1600-2200 kg	2-3 kg balanced concentrate; 110-150 kg green fodder. Fruits and vegetables are not encouraged.. Food may be offered in different feeding stations. Food should not given ground as Sand colic reported due to this practice.
12	Asian Elephant	3.5-4 Ton	165-225 kg green fodder and 5-6 kg balanced concentrate . In addition browses to be added about 30-40 kg
13	Crested Indian Porcupine		100 gms banana,150 gms leafy vegetables, 100 gms soaked Bengal gram, 200 gms carrot, 200 gms tuber is adequate and to be at least twice a day.
<b>Sl. No</b>	<b>Name of animal (captive)</b>	<b>Weight of animal</b>	<b>Food suggested and their weight</b>
14	Rhesus macaque	5.3 – 7.3 kg	Vegetables 400 gms, fruits 200 gms, cooked or processed cereals or soaked or germinated pulses, tuber 200gms, browses should be added in diet. Food should be provided 3 times in a day.
15	Bonnet macaque	3.5 – 4.5 kg	-do-
16	Pig – tailed macaque	6.2 – 14.5 kg	100-1200 gms fresh food to given containing 100 gms processed cereals and 50 gms of soaked gram , rest hard fruits and browses to be thrice a day. Forages to be fed ad libitum. Feeding soyabean flakes, peanut and gram may not be necessary.
17	Stump-tailed macaque	9.9 – 10.2 kg	-do-
18	Lion-tailed macaque	6-10 kg	700-800 gms fresh food is required by L.T.M. to be 3-4 times a day conaining cooked cereals and soaked pulse 50 gms each in the morningfollowed by some seeds and insects in the noon and 200 gms leafy vegetables in after noon and finally 225 gms vegetables, 200gms fruits and 50 gms other products i.e.egg etc
19	Common Langur	12.5 – 17.5 kg	50 gms bread,50 gms tuber, 100 gms apple, 100 gms pears/guava, 50 gms sprouted pulse, 100 gms soaked gram, 300 gms mixed vegetables, , 200 gms leafy vegetables with browses to fed ad libitum.
20	Assamese macaque	5 – 10 kg	Diet schedule same as Rhesus macaque
21	Capped Langur	10 – 11 kg	250 gms bottle guard, 200 gms cucumber, 100 gms apple, 200 gms other vegetables, 100 gms soaked gram, 200 gms banana, 200 gms gold mohur leaves, 100 gms spinach and 200 gms china rose is adequate with browses ad libitum.
22	Golden Langur	9.5 – 12 kg	100 gms apple/pears/guava, 100 gms citrous fruits, 100 gms tubers, 100 gms beans, 100 gms cabbage, 200 gms other vegetables, 200 gms leafy vegetables, 300 gms browses, 100 gms soaked gram and 50 gms bread would be adequate.

23	Slow Loris	1.1 – 1.6 kg	50 gms banana, 50 gms citrous fruits, 50 gms apple/pomegranate/ pears/guava, 25 gms bread, 25 gms grape, 25 gms chiku, 50 gms cucumber, 25 gms carrot, and 30 gms egg may fed . In addition, 5% insects should be included in total diet.
24	Hoolock Gibbon	6.1 – 6.9 kg	150 gms banana, 100 gms soaked gram, 50 gms apple, 100 gms pomegranate/ pears/ guava, 100 gms cabbage, 100 gms beans, 50 gms leafy vegetables, 100 gms tuber, 50 gms egg and browses ad lib.
25	Jackal	8 – 11 kg	750 gms to 1 kg of beef with bone / day except on Fridays
26	Tiger	140 – 221 kg	6 -8 kg of beef with bone/ day except on Fridays
27	Lion	110 – 190 kg	5 -6.750 kg beef with bone/ day except on Fridays
28	Leopard	29 – 70 kg	2 – 2.5 kg beef with bone/ day except on Fridays
29	Clouded Leopard	11 – 20 kg	Dressed chicken 1.3 – 1.5 kg /day except on Fridays
30	Leopard cat	0.55 – 3.6 kg	250 gms of meat /day except on Fridays
31	Common Palm Civet	3.1 kg	100 gms meat/day except on Fridays and 200 gms banana/day
32	Otter	7 – 12 kg	1.0 – 1.5 kg Fish/day
33	Himalayan Black Bear	65 – 150 kg	400 gms cereals, 200 gms pulses, 1200 gms high protein calcium vegetables, 45 gms jaggery, 1 kg milk, 15 gms honey per day may be with mineral mixture.
34	Binturong	13 – 20 kg	250 gms soaked gram, 350 gms banana, 100 gms apple, 75 gms orange, 35 gms egg, 400 gms bottle guard per day
35	Pea Fowl	2.75 – 6 kg	100 gms green leafy vegetables, 50 gms coloured vegetables, 5 gms garlic, 50 gms onion, 25 gms boiled egg, 100 gms poultry mash and 100 gms grain is adequate per day
36	Pelican	10 kg	1 – 1.5 kg Fish/ day
37	Indian Pied Hornbill	1 kg	50 gms banana, 100 gms rice/roti, , 20 gms sattu, besan,
38	Great Hornbill	3.4 kg	150 gms banana, 300 gms apple, 300 gms seasonal fruits, 300 gms minch meat, 60 gms cooked rice/roti, 60 gms sattu with 1.5 gms calcium Carbonate would be adequate.
39	Python	30 -52 kg	1.25 – 1.5 kg chicken/2 weeks 2 – 2.25 kg chicken/rabbit per 3 weeks



**Browses are made available for herbivores at the Zoo**



**Green grass supply at the Zoo**



**Mixing feed supplement with concentrate for herbivores (Elephant)**



**Feeding of herbivores (Serow)**

### **Housing of Zoo animals:-**

Housing facility to be designed in such a way that each and every animal should get proper space to move showing normal behaviour like hiding, playing, mating with provision for potable water and proper drainage system. Zoo alone can not construct any housing facility unless approved by Central Zoo Authority, New Delhi. In housing facility, there should be display area, off display area for breeding, treatment area of animals to be housed. Each animal has their approved area required for their housing.

### **References:**

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