

Original Research Paper

Zoology

ENERGY BUDGET OF WHITE BACKED VULTURE Gyps bengalensis, TO SUSTAIN NORMAL LIFE IN TERMS OF FOOD INTAKE AND FAECES OUT TAKE, MAHARASHTRA.

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STRA

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In this paper an attempt is made by the author to find out the daily minimum requirement of food to sustain the normal life in the captive breeding of white backed vulture and also to find out the metabolic waste in terms of faeces. The average consumption rate of fresh meat by one bird was nearly 300 gm per day which is equallant to 81 gm of dry weight and the daily average of dry faeces was 10.90 gm. The ratio of food consumed to the waste material in terms of faeces of dry weight was to the tune of 8 :1. This finding will assist the captive breeders to maintain the health of critically endengered vultures in the aviary and in turns their conservation.

KEYWORDS

INTRUCTUCTION

Thje Indian White backed vultures, **Gyps bengalensis**, presently critically endangered species was formerely widely distubred in indai from the Himalayas west to Srinagar, east to Arunachal Pradesh, Assam and the north east hill states, south to the southern Western Ghats in Kerala and Tamil Nadu, Islam and Rahmani (2002). Vultures are important biological agents available in nature for scavenging of meat wastes, Slaughter house offal and unattended animal carcasses, which form major food supply for vultures in many parts of India. Ali 1972) stated that but for vultures, Indian country side will stink with rotting live stock carcasses. Pomeroy (1975) studied major scavengers including Hooded vultures (N. monachus) in the human environment in Uganda and suggested that although man through his various activities provides most of the food for these scavengers, they are beneficial to man in the sense that the food which they eat might otherwise become a health hazard. With increase in human population around towns and cities in the modern times, in India, there is an increase in the availability of livestock carcasses and slaughter bouse waste. This increased availability of food has enabled vultures to proliferate and concentrate, around towns and cities. But the very nature of proliferation of this species gives a forboding of the future status fo vultures in India, Grubh (1983). Mumbai also has a carcass processing plant to dispose of these dead livestock at Bapane, on the Bombay - Ahmedabad National Highway number 8. It is nearly 60 Km away on the outskirts of Mumbay City. All the dead animais from all around Bombay are brought to this place for processing. The unutilised carcasses and offal form a source of food for vultures in this area.

The situation of vultures in India has become worse and worse and their number has been rapidly declined since 1990. Singh and Chakravarthy (2006) studied the food consumption by captive Indian White backed vultures under diffrent feeding conductions. The first vulture care center in Asia was inaugurated at Pinjore near Chandigarh by BNHS from the 1.1 crore grant from the Darwin institute of the British Government to identify the causes of the death, Indian Express (Feb. 13, 2003). Hence, in this paper an attempt is made to find out the minimum requirement of food to sustain the normal life in the captive breeding of white backed vulture and also to find out the metabolic waste in terms of faeces. This will not only help the captive breeders to maintain the birds in the aviary but also their conservation.

STUDY AREA:

The field studies on the whitebacked vulture were conducted at Korakendra, which is a carcass Processing plant situated in

Bapane, Vasai Taluk, Thane District, Maharashtra State. It is situated about 60 Km away from the border of Mumbai on the National Highway - 8 (Bombay - Ahmedabad Highway). The Vasai Taluk lies between 19°16 and 19°35' N. and 72° 44' and 73° 01' E. Korakendra is surrounded by the following villages. To the north of korakendra is Chichoti, to the north-east is kaman, to the east is Poman, to the south-east is Sarjamorij to the south is Sasunavghar and to the north west is Juchandra. A few dairies exist in the vicinity of korakendra.

Korakendra carcass Processing plant processes carcasses from all over the Mumbai and the surroundings and the carcasses include those of buffaloes, cattle, sheep, goat, pigs, dogs, horse and other odd species .On an average about 6-10 big animais (buffalo, cow, horse etc.) and 20-25 smal1 animais (sheep, goat, pigs and dogs) carcasses are brought in daily. So far the plant utilizes almost all parts of the animal carcasses except dog carcasses. The major Products from these carcasses are animal and poultry feed and industrial tal1ow. Carcasses which are decomposed and hence not fit for Processing as well as all dog carcasses and unwanted viscéral parts from cut up carcasses are dumped in the open backyard measuring about. 10-15 acres. The unwanted carcasses and visceral parts from the carcass processing plant provide regular food supply to vultures.

MATERIALS AND METHODS

Observations on the feeding of white backed vultures kept in the aviary were recorded at Korakendra, Mumbai, between 1986 to 1988. The size of aviary was about 70'x 40' X 15'M. and was enclosed with either chicken wire mesh or thick G.I. rectangular wire mesh. The mesh was supported with six metre high mild steel pipes. The entrance of aviary had a main gate of 7'X 8' feets size and adjacent to this gate was the antechamber to keep the necessary equipments and materials to take observations without disturbing birds. Inside the aviary 12 cages of iron mesh wires of 5' X 5' K 5' feets size were placed.

The expeimental white backed vultures were obtained mostiy from the neighbourhood of Gir forest, Gujrat state which lies in the Southern region of Khatiawar peninsula in western India. The birds were then transported by road to korakendra, Bapane near Mumbai. The birds were weighed. And measurements on different morphoiogical parameters were recorded on the B N H S special vulture banding forms. To monitor the activities of white backed vultures, the individuals were marked with the standard size spécial metallic ring of Bombay Natural History Society (BNHS).). Fig. 1a and 1b.



The 12 vultures in individual cages were offered known quatity of fresh meat (mainly buffalo) daily and the amount of food consumed by each bird was recorded.. The birds in individual cages were provided with drinking water in plastic pans of 1.5' x 2.0' feet size, Each cage was provided with a perching site in the form of horizontal wooden poles (4' x 5'feet For collection of faeces samples, a polythene sheet of the size of cage floor was spread under each cage and the droppings were collected with the help of spoon. After collection the faeces were sun dried and stored separately till further processing. All the faeces samples of one month were owen dried in the BNHS laboratory at the constant temperatureof 60C. It took nearly 12 hrs to get the constant dry weight at this temperature. The samples were weighed using chemical balance.

RESULTS AND DISCUSSION :

The average consumption rate of fresh meat, mostly of buffalo by vultures when offered daily varied from 101 to 507 gm per day. Among the 12 birds the average minimum consumption rate of an individual was 214 gm and the average maximum consumption was 377 gm per day. The consumption rate of meat by vultures varied widely. When the detailed data covering the consumption rate of meat by vultures was critically looked at it was found that on some days brids hardly fed. The data further reveated considerably variation in feeding habits among individuals. For instances the bird no. 1 consumed from 32 to 690 gm per day and bird no 2 consumed from 0 to 660 gm per day. Among the 12 individuals observed the maximum consumption rate varied from 440 to 800 gm and a minimum 0 to 60 gm. The average consumption rate of one bird was nearly 300 gm per day (Table 1 and diagrame A).

TABLE 1. FOOD CONSUMPTION BY INDIVIDUAL VULTURE PER DAY (TOTAL OBSERVATION = 30).

Birds no.	Avg. consumption		
1	284		
2	315		
3	925		
4	214		
5	281		
6	370		
7	268		
8	240		
9	306		
10	377		
11	316		
12	340		
Average	300		

DIAGRAME A. FOOD CONSUMPTION BY INDIVIDUAL VULTURE PER DAY



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FAECES The daily faceal collection from individual in one month is given in table 20. It was found that the total faeces from individual birds varied between 182.82 gm to 481.71 gm and daily collection from 12 birds in one month varied between 84.99 to 222.43 gm and of daily average of one bird varied between 6.85 to 18.63 gm. In one month total3925.63 gm faeces was collected from 12 and the average of per day was 130.85 gm. In one month average total faeces collection from each bird was 327.05 gm and of daily average was 10.90 gm. (Table 2 and diagrameB).

TABLE	2.	DRY	WEIGHT	OF	FAECES	FROM	INDIVIDUAL
VULTURE PER DAY (gm.) TOTAL OBSERVATION=30							

Birds Nos,	Avg. Wt.
1.	14.44
2.	15.05
3.	9.37
4.	11.60
5.	12.69
6.	12.69
7.	7.61
8.	6.09
9.	2.52
10.	6.15
11.	9.07
12.	12.66
Avg	10.90

DIAGRAME B. DRY WEIGHT OF FAECES FROM INDIVIDUAL VULTURE PER DAY.



In the present study on vulture consumed on an average 300 gm per day. Grubh (1974) had reported that the quantity of fresh meat consumed was 318 gm per day bird. Both the observations were made with capive vultures. The above feeding figures are more or less same. This suggest that the untake capacit of white backed vulture who feed on fresh carasses is nearly 300 gm. The captive birds at Korakendra did not follow any definite pattern over time with respect to feeding on carcasses. Grubh (1974) had also made the similar observations in the feeding pattern of white backed vulture on animal carcasses at Gir forest.

FAECES :

In the present study strong relationship could be found between the dry weight of faeces and food. The dry weight of 100 gm of fresh meat (wet) of buffalo was calculated having 27 gm (Houston, 1973; Grubh, 1974). In the present study one individual vulture ate 300 gm of fresh meat daily on an average. This value is equal to 81 gm of dry weight of meat. So, from the results it can be said that the ratio of food and faeces (dry) was 8 :1 and the average percentage of faeces was 13.45 %. These data after converting into the actual amount of energy will be helpful in calculating the energy budget of vultures.

CONCLUSION

In the present study it was obseved that on an average white backed vulture require 300gm of meat per day to sustain the normal life and the end product of food in terms of faeces was about 11gm. The ratio of food consumed to the waste material in terms of faeces of dry weight was to the tune of 8 :1. This finding will assist the captive breeders to maintin the health of vultures in the aviary and in turns the conservation of vultures.

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