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Research Article

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Current Status of Vulture Population in Chambal Valley of Kota, Rajasthan

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ABSTRACT

In India vultures are ecologically, socially and culturally significant as scavenger. They helps to keep the environment clean by disposal of carcase. They are excellent indicators of biological status of environment in a particular area. Nine species of vultures are recorded in the Indian subcontinent; seven out of them can be seen in Rajasthan including resident and migratory species. Among these seven Four species are observed in selected study area. Present study was carried out along with river valley of National Chambal Sanctuary. A good and flourishing population of Vultures roosts on rocks in gorges and canyon in Riverine valley area. Direct observations were made at feeding and roosting sites to assess the population size and vulture activities. Identifications were confirmed using proper literature and field guides. Observations were made with the help of 10×50 Olympus field binoculars and Nikon and Canon Cameras. Total 161 vultures were sighted (127 were adult and 34 young ones) during study period. Among these Long billed Vulture was in highest while King Vulture formed the minimum population.

Key words: *Scavenger, Chambal Valley, Feeding and Roosting, Population, Long Billed Vulture.*

INTRODUCTION

Raptor is a much diversified group of avian fauna and found in almost all habitats in the world. Among these Vultures are major avian scavengers and play an important role in keeping the environment clean by scavenging on animal carcasses and thus checking the outbreaks of epidemic[3]. All vulture species belongs to the family *Accipitridae*. They provide a range of ecological, economic and cultural services. Vultures are the alone documented obligate scavengers and are uniquely adapted to a scavenging lifestyle[5]. All over the world there is 23 species of vulture, of these nine species are found in India[2,4]. Slender-billed Vulture is the most critically endangered vulture in the world and perhaps the most endangered raptor with less than 200 pairs surviving in the wild[1]. There are seven vulture species found in Rajasthan[8], Long-billed vulture (*Gyps indicus*), White-backed vulture (*Gyps bengalensis*), Red-headed vulture (*Sarcogyps calvus*) and Egyptian vulture (*Neophron percnopterus*) as breeding residents, Himalayan griffon (*Gyps hymalayensis*), Eurasian griffon (*Gyps fulvus*) and Cinereous vulture (*Aegypius monachus*) are winter migratory species here.

Reasons for decline of vulture species: A variety of explanations and hypotheses like reduction in food availability, poisoning, habitat loss, pesticide intoxication, calcium deficiency, infectious disease or a viral disease have been proposed.[9,10]. The clear cause of mortality remains unidentified but is suspected to be an infectious disease[10,11]. Recently diclofenac residues have been identified as a cause for declining gyps vulture population in South Asia[12].

Present study provides sizeable population of vultures in the study area and the study will give us information about factors favourable for successful breeding and help us in *in-situ* conservation.

STUDY AREA:

The complete field studies was carried out along with Chambal River between Geparnath to Garadiya Mahadev which is located in buffer zone of Mukandara Hills Tiger Reserve and Natonal Chambal

Sanctuary, Kota district of Rajasthan during the session of 2013-. (Map-1) The study area is approximate 16.1 km long along with Chambal river valley coordinates varied from 25°03'-25°08' N to 75°43'-75°45' E. The feeding route of above mentioned vulture species are Borabas village, Ananthpura caracas yard and Kota Thermal Power Station area.

On the basis of suitability for the sharp observation, appropriate data collection and to know current status of specific area the study area was divided into five Zones. (Table-1) Zone I is the cut of the Chambal River and within gorge form view of valley of canyon, obsidian rock by molten lava with descending slope downwards and other four Zones are along with Chambal River within barren land covered by mostly obsidian rock.

Map-1: Map showing study sites

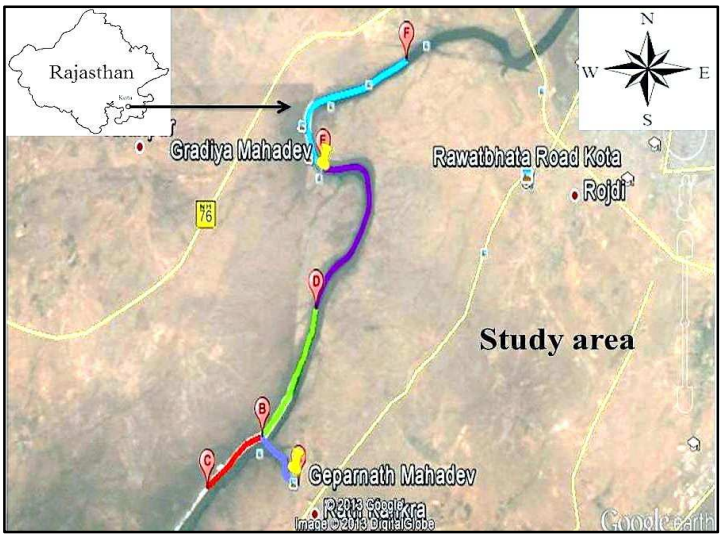


Table-1: Zonation of study area

Zone	Length of Zone (from … to ...)	GPS reading range of particular zone	
		Start point reading	End point reading
Zone I	1.60 km (A to B)	N- 25°03'33.66" E- 75°43'23.42"	N- 25°04'06.30" E- 75°42'44.64"
Zone II	2.00 km (B to C)	N- 25°04'06.30" E- 75°42'44.64"	N- 25°03'31.02" E- 75°41'45.76"
Zone III	3.20 km (B to D)	N- 25°04'06.30" E- 75°42'44.64"	N- 25°05'32.90" E- 75°43'42.08"
Zone IV	4.80 km (D to E)	N- 25°05'32.90" E- 75°43'42.08"	N- 25°07'08.87" E- 75°43'49.41"
Zone V	4.50 km (E to F)	N- 25°07'08.87" E- 75°43'49.41"	N- 25°08'22.09" E- 75°45'18.96"

METHODOLOGY:

Observational Survey: During the study regular and extensive surveys of nesting, roosting and feeding sites were conducted at all dumping grounds[13]. Though this method is simple but quite reliable to survey raptor species. With the aid of a pair of binoculars, survey was conducted between early mornings to sundown periods when vultures make use of thermals to ascend high in the sky. In twilight vultures were completely settled therefore counting them was too easy.

Head count method: The population status and number of active nests of different species of vulture was studied by means of the head counting method, supported by photography and video recordings[5].

During study period GPS location of nesting, roosting and feeding sites was recorded; photographs were captured to identify vulture species perfectly; head count through binoculars to estimate individuals and had been done.

In flight and feeding vulture groups on carcasses were chased with field binoculars which gave a clear indication of the direction. In addition, some prospective breeding habitats were also surveyed. During the data collection and observation reference book[14], Digital Camera, Binocular and GPS- Garmin 72 like equipments were used.

OBSERVATION AND RESULT

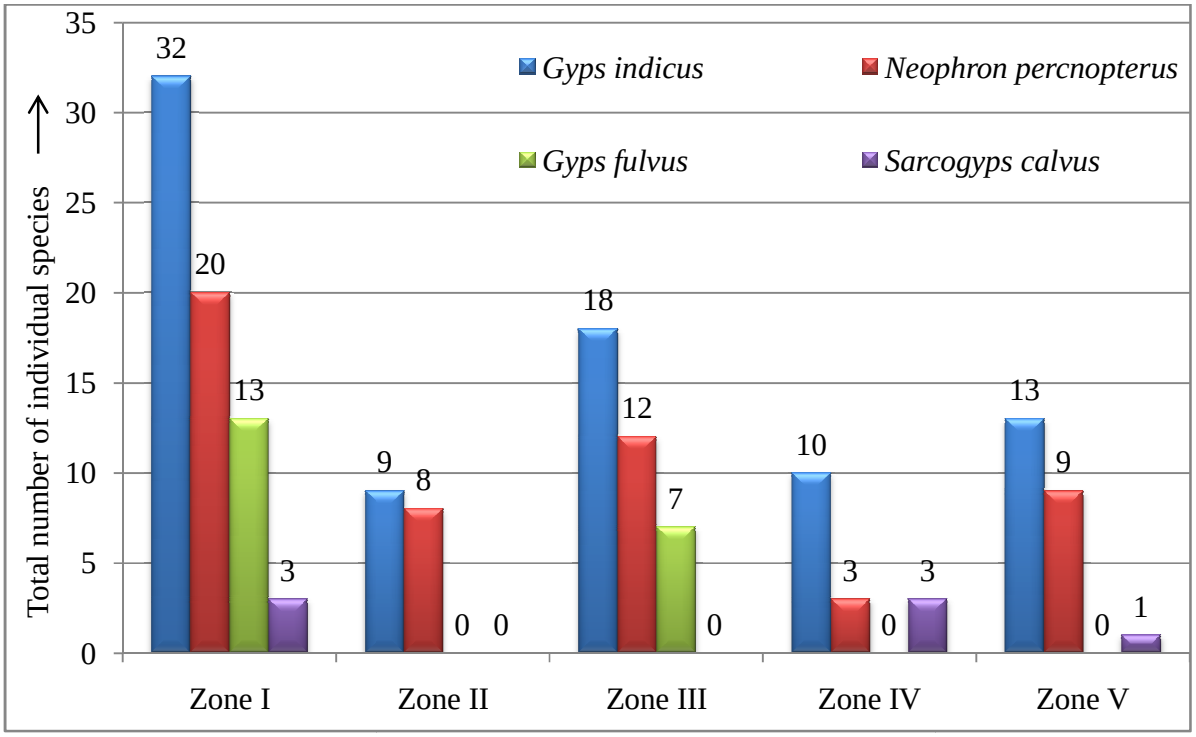
Population status of vulture species: Out of the seven species of the vulture in Rajasthan, four vulture species were sighted during the study period including: Long-billed Vulture *(Gyps indicus)*, Egyptian vulture *(Neophron percnopterus)*, Eurasian Griffon Vulture *(Gyps fulvus)* and Red Headed Vulture *(Sarcogyps calvus)*.

Table-2: Zone-wise population of Vulture species

(Note: A-Adult and H-Hatchling)

SL. No.	Zone name	LBV		EV		EGV		KV		Total
		A	H	A	H	A	H	A	H	
1.	Zone I	23	9	14	6	13	0	3	0	**68**
2.	Zone II	7	2	6	2	0	0	0	0	**17**
3.	Zone III	13	5	9	3	7	0	0	0	**37**
4.	Zone IV	8	2	3	0	0	0	3	0	**16**
5.	Zone V	9	4	8	1	0	0	1	0	**23**
Total		60	22	40	12	20	0	7	0	**161**
Grand Total		**82**		**52**		**20**		**7**		

Graph-1: Zone-wise population of individual Vulture species



A total of 161 vultures of four species LBV (Long Billed Vulture), EV (Eurasian Vulture), EGV (Egyptian Vulture) and KV (King Vulture or Read Headed Vulture) were observed whle soaring, roosting and nesting in all the five Zones selected area; of which 127 were adult vulture and 34 hatchlings (Table-2). Out of o127 adult vultures observed total 60 were of LBV, 40 of EV, 20E of GV and 7 of KV. Out of 34 hatchlings 22 of LBV and 12 of EV were recorded during study. For above four vulture species nesting, roosting and soaring time was maintained from 9:00 am to 4:30 pm in well weathering sunny day. That was the best time to observe, identify and to count to estimate vulture population in study area.

DISCUSSION AND CONCLUSION

Status of vulture population and habitat status in favour of survival of the vulture: Four species of vulture were observed, Long billed vulture, Egyptian vulture, Eurasian griffon vulture and King Vulture. During study 161 Vulture were counted out of these maximum population of Long billed vulture was observed 82 (60 adults and 22 hatchlings) and lowest population of King Vulture (Table-2 & Graph-1). The maximum vulture species was detected in Zone I and the lowest vulture species was detected in Zone IV. In this study vulture population was high in gorges and less observed in the riparian area. Over the entire vulture habitat was good due to the availability of water (as unpolluted), food, roosting, nesting and soaring sites.

Vulture population of the Kota region in 2006 and 2013:

Table 3: Populations of the vulture in 2006 of Kota region and2013 of the study area

Particulars	LBV	WBV	EGV	KV	EV	Total
2006	39	47	0	10	14	110
2013	82	0	20	7	52	161

Chhangani[14] in 2006, the total vulture population observed was 110 in Kota region, therefore comparing the current data it is found that the population of vulture or the growth rate of vulture population showed an increase by 46.36%. EGV was not observed by Chhangani (2006) and in present study WBV (White backed vulture) was not observed. In this area the different anthropogenic activities observed were wood cutting, browsing, lopping, grazing, fishing, mining, presence of road etc. The presence of road, historical places stone mining were the main cause that factor affected the decline of vulture population due to loss of habitat for nesting and roosting, wood cutting, lopping, grazing were the other main factor that affected the decline in vulture population. In the year 2006 (Chhangani[14]), stone mining was high as per need of the local people due to this nesting habitat lost which was the main cause of the vulture decline. The other anthropogenic activities as wood cutting and lopping cause the loss of nesting and roosting habitat. Fishing was also factor affecting the vulture habitat due to human interference or interaction increase and cause the habitat degradation of vulture survival in this area.

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