



## A Note on the Vulture Population in Panna Tiger Reserve, Central India

Raju Lal Gurjar\*<sup>1</sup> & Priya J. Gawande<sup>2</sup>

1) Wildlife Institute of India, Chandrabani, P.O. Box # 18, Dehra Dun, Uttarakhand 248001, India

2) Nagpur Veterinary College, Nagpur, Maharashtra 440006, India

### Article Info

Short Communication

Received 12 April 2011

Accepted 30 May 2011

### Abstract

Populations of three species of *Gyps* vultures (*G. bengalensis*, *G. tenuirostris* and *G. indicus*) in Central India have declined precipitously over the last decade as a result of their feeding on diclofenac-contaminated livestock carcasses. During this study, a total of 179 individuals and 8 nests of four vulture species were recorded, with the Long-billed Vulture *G. indicus* (160 individuals) being the dominant species. Apparently, Panna Tiger Reserve has suitable habitat for vultures; however, Dhundva, Kemasan and Gahri Ghati appeared to be the best of the nine roosting, resting and breeding sites selected during this study.

### 1. Introduction

Vultures are the major avian scavengers in India and play an important role in keeping the environment clean by scavenging on animal carcasses and thus are thought to contribute to limiting the outbreaks of epidemics. Vultures were formerly extremely abundant throughout the Indo-Pakistan subcontinent, but since the 1990s there have been massive declines in the vulture populations in the subcontinent (Gilbert et al. 2002, Prakash et al. 2003, Green et al. 2004). Three species of *Gyps* vulture, namely Long-billed Vulture *Gyps indicus*, White-backed Vulture *G. bengalensis* and Slender-billed Vulture *G. tenuirostris*, are now considered to be Critically Endangered (BirdLife International 2000). The Indian Government has also listed these three species in 'Schedule-I', and they are protected by the Indian Wildlife (Protection) Act, 1972. The populations of Egyptian Vulture *Neophron percnopterus* and Red-headed Vulture *Sarcogyps calvus* have also declined rapidly (Cuthbert et al. 2006). The status of the Red-headed Vulture has deteriorated from Near Threatened (BirdLife International 2004) to Critically Endangered (Birdlife International

2007a), and that of the Egyptian Vulture has changed from Least Concern to Endangered (Birdlife International 2007b).

### 2. Study Area and Methods

#### 2.1. Study area

The Panna Tiger Reserve (24°27'–24°46'N; 79°45'–80°09'E) is located in the Vindhyan Range and encompasses an area of 542.67 km<sup>2</sup> in Panna and Chattarpur Districts of Madhya Pradesh. The terrain of the tiger reserve is characterised by extensive plateaus and gorges, and can broadly be divided into three distinct tablelands on the Panna side of the Ken River: the upper Talgaon Plateau, the middle Hinnauta plateau and the Ken valley. A series of undulating hills and plateaus rising on the other side of Ken River in Chattarpur District offers suitable roosting, nesting and breeding habitat for vultures. The vegetation in the reserve includes areas of mixed dry deciduous forest interspersed with grassland.

The dominant tree species are *Tectona grandis*, *Diospyros melanoxylon*, *Madhuca indica*, *Buchnaniania latifolia*, *Anogeissus latifolia*, *A. pendula*, *Lannea coromandelica* and *Bosswelia serrata*. The Ken River is home to Gharials (long snouted crocodiles) *Gavialis gangeticus*,

\* Corresponding: [gurjarraju2005@gmail.com](mailto:gurjarraju2005@gmail.com)

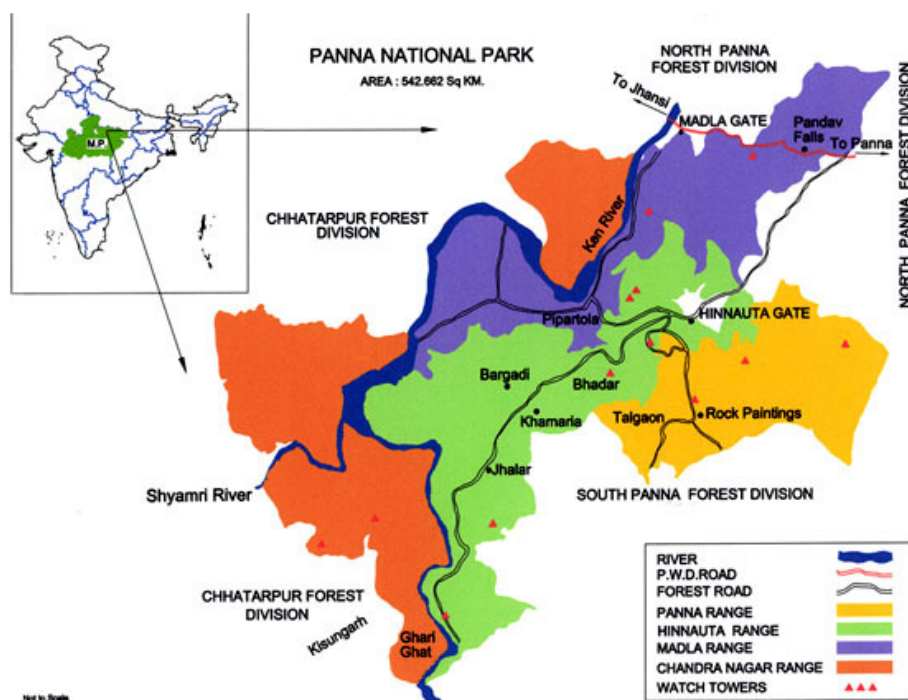


Fig. 1. Map of Panna Tiger Reserve.

Muggers (marsh crocodiles) *Crocodylus palustris* and other aquatic fauna.

### 2.2. Materials and Methods

We searched for vultures during carnivore surveys conducted from a vehicle and on foot. Vultures were counted at roosts in the morning and in the evening from 24 November 2008 to 16 March 2009. All observations were made using 8x42 Bushnell binoculars, a 40x optical zoom video camera and a digital camera. All identifications of vultures were based on Ali & Ripley (1987) and Kazmierczak (2000).

### 3. Results

We observed a total of 179 vultures, including 160 Long-billed (at 7 roosting sites, three of which were also nesting cliffs), 10 Egyptian (at three roosting sites) and one Red-headed Vulture (at a roosting site). In addition, four Himalayan Griffon Vultures *G. himalayensis* and four Red-headed Vultures were

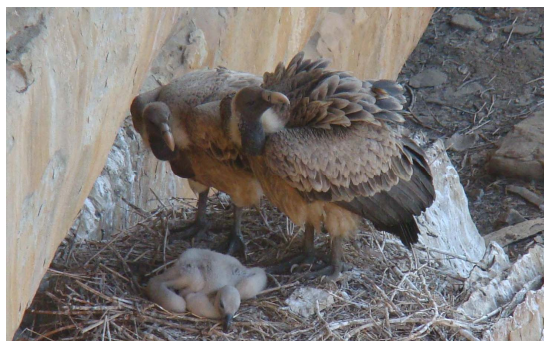
observed feeding on a buffalo at Madla. We found a total of eight nests, all of Long-billed Vultures and all with chicks, in February and March 2009: four in Dhundva, one in Kemasan and three along the Gahri Ghati road. Each nest contained a single chick (Table 1). The breeding and roosting sites of Long-billed Vultures on cliffs were quite inaccessible to humans and wild animals both from the ground and from the top of the cliff. The rocks around the nests were coated with white excrement.



Fig. 2. View of a roosting site of Long-billed Vulture *Gyps indicus* at Dhundva on 23 January 2009.

**Table 1.** Counts of vultures at roosting and nesting sites in Panna Tiger Reserve, India.

Species	Location	Behaviour	Date	Number of Individuals	Nest	Chick
Long-billed Vulture <i>G. indicus</i>	Dhundva	Roosting, Nesting	24 Nov. 2008	55	4	4
	Imaliyaghati (Majholi)	Roosting	13 Jan. 2009	4		
	Tavelaghati	Roosting	13 Jan. 2009	8		
	Rajabadiya	Roosting	16 Jan. 2009	2		
	Kemasan	Roosting, Nesting	07 Feb. 2009	16	1	1
	Gahri Ghati Road	Roosting, Nesting	12 Feb. 2009	55	3	3
Egyptian Vulture <i>N. percnopterus</i>	Khariya	Roosting	16 Mar. 2009	20		
	Dhundva	Roosting	24 Nov. 2008	2		
	Imaliyaghati (Majholi)	Roosting	13 Jan. 2009	6		
Red-headed Vulture <i>G. calvus</i>	Majhgaon	Roosting	20 Jan. 2009	2		
	Madla	Feeding	19 Jan. 2009	4		
Himalayan Griffon <i>G. himalayensis</i>	Dhundva	Roosting	22 Feb. 2009	1		
	Madla	Feeding	19 Jan. 2009	4		
<b>Total</b>				<b>179</b>	<b>8</b>	<b>8</b>

**Fig. 3.** View of a nesting site of Long-billed Vulture *Gyps indicus*.

#### 4. Discussion

In the Panna Tiger Reserve, the top predator is the Tiger *Panthera tigris*, with a population of 15–32 individuals (Jhala et al. 2008). However, no Tigers were found in this reserve during a survey conducted in May 2009 by the Wildlife Institute of India (Times of India, 13 July 2009). More recently, three Tigers were reintroduced (two females, one male). Other predators include Leopard *Panthera pardus*, Striped Hyena *Hyaena hyaena*, Sloth Bear *Melursus ursinus*, Wild Dog *Cuon alpinus*, Jackal *Canis aureus* and other smaller carnivores. The predator populations are high and provide a good supply of left-over prey for vultures (R.L. Gurjar, pers. obs.). The breeding season of the vultures in Central India extends from November to March, and the availability of a good supply of prey is especially important during this period.

Declines in vulture populations in India were first recorded at Keoladeo National Park in eastern Rajasthan during the late 1980s and early 1990s. The wild populations of the three *Gyps* species, *i.e.* Long-billed, White-backed and Slender-billed Vultures, have declined by more than 98% (Gilbert et al. 2002, Prakash et al. 2003, Green et al. 2004) over the past decade. One of the major causes of the decline in vultures in South Asia has been the widespread use of the non-steroidal anti-inflammatory drug (NSAID) ‘Diclofenac’ (Green et al. 2004, Oaks et al. 2004, Shultz et al. 2004). Diclofenac is a pain-killing drug used to treat inflammation and fever in livestock, and is toxic to *Gyps* species at levels they encounter in the wild (Oaks et al. 2004). After feeding on carcasses contaminated with diclofenac, the vultures develop gout and kidney failure. Diclofenac has now been banned for veterinary use in Pakistan, Nepal and India. Meloxicam, another non-steroidal anti-inflammatory drug, is safe for vultures and has been recommended as a substitute. Diclofenac is not being used in and around the Panna Tiger Reserve, and according to officials of the Forest Department, vulture populations are now increasing in the reserve.

#### Acknowledgements

These observations were carried out during fieldwork on the Panna Tiger Project of the Wildlife Institute of India and Forest Department. We are grateful to Dr K. Ramesh and Dr J. Antony Johnson

(Panna Project Coordinators) and Dr. Y. V. Jhala and Shri Qamar Qureshi (Scientists) for providing facilities and infrastructure. Thanks are also due to all the staff of the Wildlife Institute of India, National Tiger Conservation Authority and Forest Department of Panna Tiger Reserve for their constant help and facilitation. We express our gratitude to Prof. S. M. Mohnot, Dr Anil Chhangani, Ved Prakash Ola, Nimai Chand Palai, Randeep Sing, Devendra Thakur and Aniruddha Majumdar for their guidance.

#### References

- Ali S. & Ripley S.D. 1987. *Compact handbook of the Birds of India, Pakistan, together with those of Bangladesh, Nepal, Bhutan and Sri Lanka*. Oxford University Press, New Delhi, 737pp.
- BirdLife International, 2000. Threatened Birds of the world. Lynx Edicion. Barcelana and BirdLife International, Cambridge.
- BirdLife International 2004. Threatened Birds of the World 2004. CD-ROM. *Bird Life International*, Cambridge, UK.
- BirdLife International 2007. *Sarcogyps calvus*. **In:** IUCN 2007. 2007 IUCN Red List of Threatened Species. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 27 September 2007 & ([http://www.iucn.org/en/news/archive/2007/09/12\\_pr\\_redlist.htm](http://www.iucn.org/en/news/archive/2007/09/12_pr_redlist.htm))
- BirdLife International 2007b. Egyptian Vulture - BirdLife Species Factsheet. Retrieved 2007-AUG-28.
- Cuthbert R., Green R.E., Ranade S., Saravanan S., Pain D.J., Prakash V. & Cunningham A.A. 2006. Rapid population declines of Egyptian vulture (*Neophron percnopterus*) and red-headed vulture (*Sarcogyps calvus*) in India. *Animal Conservation* 9: 349–354.
- Gilbert M., Virani M.Z., Watson R.T., Oaks J.L., Benson P.C., Khan A.A., Ahmed S., Chaudhry J., Arshad M., Mahmood S., Shah Q.A. 2002. Breeding and mortality of oriental white-backed vulture *Gyps bengalensis* in Punjab Province, Pakistan. *Bird Conservation International* 12: 311–326.
- Green R.E., Newton I., Shultz S., Cunningham A.A., Gilbert M., Pain D.J. & Prakash V. 2004. Diclofenac poisoning as a cause of population declines across the Indian subcontinent. *J. Appl. Ecol.* 41: 793–800.
- Jhala Y.V., Gopal R. & Qureshi Q. (Eds.). 2008. *Status of the tigers, co-predators, and prey in India*. New Delhi & Dehradun: National Tiger Conservation Authority, Govt. of India & Wildlife Institute of India. TR08/001 pp 164
- Kazmierczak K. 2000. *A Field Guide to the Birds of India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and the Maldives*. London: Pica Press / Christopher Helm.
- Oaks J.L., Gilbert M., Virani M.Z., Watson R.T., Meteyer C.U., Rideout B.A., Shivaprasad H.L., Ahmed S., Chaudry M.J.I., Arshad M., Mahmood S., Ali A. & Khan A.A. 2004. Diclofenac residues as the cause of population decline of vultures in Pakistan. *Nature* 427: 630–633.
- Prakash V., Pain D.J., Cunningham A.A., Donald P.F., Prakash N., Verma A., Gargi R., Sivakumar S. & Rahmani A.R. 2003. Catastrophic collapse of Indian white-backed *Gyps bengalensis* and long-billed *Gyps indicus* vulture populations. *Biological Conservation* 109: 381–390.
- Shultz S., Baral H.S., Charman S., Cunningham A.A., Das D., Ghalsasi G.R., Goudar M.S., Green R.E., Jones A., Nighot P., Pain D.J. & Prakash V. 2004. Diclofenac poisoning is widespread in declining vulture populations across the Indian subcontinent. *Proc. Royal Soc. Lond B (Suppl)* 271: S458–S460, DOI 10.1098/rsbl.2004.0223