Population Threat to Vultures In India
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Abstract
Currently vulture population in India is at risk of extinction. During 1980’s, there were nearly 40 million vultures in India. It was mainly due to captive breeding in the birds. The alarming population decline was recorded in the late 1990s by the Bombay Natural History Society (BNHS). Three Gyps species are in the verge of extinction due to use of diclofenac in livestock in India, Nepal and Pakistan. Due to this, already 95% of vulture population has already declined and only 60,000 of these important scavengers are left. This has lead to the extinction of many species and many are under threat and on the verge of extinction. In 2003, the BNHS raised a campaign against use of diclofenac as the drug was widely used for poisoning the scavengers. In 2006, Government of India issued a ban on the production, sale use of the drug for use in veterinary purposes, diclofenac. Proper conservation efforts are still in needed to be planned in well organized manner for preventing this menace.

Key words: Vulture, Extinction, Threat, Natural hazard

Introduction

Vultures normally scavenge on carcasses of animals. Antarctica and Oceania are the two continents which are devoid of vultures. Except that they are found in every continent. Vultures are generally carnivorous in their feeding habit and they do not hunt down their prey and so are classified under raptor group. In ornithology, they are classified into raptor or non-raptor groups and so are used for testing DNA and to survey relationship with other groups of birds. Dr. Formica, a post-doctoral research associate at the University of Virginia along with colleagues Dr. Elaina Tuttle and Marisa Korody at the Molecular Ecology Laboratory at Indiana State University studied how to perfect a DNA-based method for sexing birds (WCV, 2011). Vultures have head devoid of feathers or hair. They keep their head uncontaminated during feeding on prey. Their dehaired skin helps in thermoregulation as per research conducted (Ward et al., 2008). Group of vultures is called a wake, committee, or venue (James, 1993; Westvalley.edu., 2010). Sometimes called Geier (German language) does not have a precise meaning in ornithology.
The decline in vulture population in India in general and Bharatpur in particular was first highlighted in the paper by Dr. Vibhu Prakash of the Bombay Natural History Society (BNHS) in his pioneering work on the raptors of Keoladeo National Park way back in the 1990s (Prakash, 1999).

**Present population status in India**

Of the nine species of vultures found in India, seven have been observed in the Great Indian Thar Desert of Rajasthan, viz., the King vulture (*Sarcogyps calvus*), Cinereous vulture (*Aegypius monachus*), Egyptian vulture (*Neophron percnopterus*), Eurasian griffon (*Gyps fulvus*), Himalayan griffon (*Gyps himalayensis*), Long-billed vulture (*Gyps indicus*) and White-backed vulture (*Gyps bengalensis*). Of these, the king vulture, long-billed vulture, white-backed vulture and Egyptian vulture are residents and breed in the region, whereas the Eurasian griffon, Himalayan griffon and cinereous vulture are winter visitors. Populations of both resident and migratory vultures were observed during the present study (Chhangani, 2009). There have been evidences of serious decline in population of *Gyps* spp. Vultures in Asia and the Indian subcontinent (Pain et al., 2003). The Oriental white-backed vulture (OWBV; *Gyps bengalensis*) was once one of the most common raptors in the Indian subcontinent. A population decline of >95%, starting in the 1990s, was first noted at Keoladeo National Park, India. Since then, catastrophic declines, also involving *Gyps indicus* and *Gyps tenuirostris*, have continued to be reported across the subcontinent. Consequently these vultures are now listed as critically endangered by Bird Life International. In 2000, the Peregrine Fund initiated its Asian Vulture Crisis Project with the Ornithological Society of Pakistan, establishing study sites at 16 OWBV colonies in the Kasur, Khanewal and Muzaffargarh–Layyah Districts of Pakistan to measure mortality at over 2,400 active nest sites (Oaks et al., 2004). During the 1990s, populations of two species of griffon vulture, the Indian white-backed *Gyps bengalensis* and the long-billed *Gyps indicus*, declined by more than 90% throughout India (Prakash, 1999). These declines are continuing and are due to abnormally high rates of both nesting failure and adult, juvenile and nestling mortality. Affected birds exhibit signs of illness (neck drooping syndrome) for approximately 30 days prior to death. Epidemiological observations are most consistent with an infectious cause of this morbidity and mortality. To investigate the cause of these declines, 28 vulture carcasses, including adults and juveniles of both species, were examined in detail. Significant post-mortem findings included visceral gout, enteritis, vasculitis and gliosis. Although we have not yet been able to identify the causative agent of the declines, the results of our pathological studies are most consistent with those for an infectious, probably viral, aetiology. We examine hypotheses for the cause of the declines and, based on our epidemiological and pathological findings, we show infectious disease to be the most tenable of these (Cunningham et al., 2006).
Threat to the vulture population is due to spread of agriculture, destruction of its habitat by over grazing by livestock, and indiscriminate shooting.

**Population threat due to diclofenac sodium toxicity**

Diclofenac-Na has been responsible for the devastation of three species of Gyps vulture on the Indian subcontinent, and it is now regarded as one of the worst environmental contaminants in the recent past. While measures have been taken to control the manufacture of veterinary diclofenac in South Asia, the promotion of diclofenac on the Indian continent poses a risk to vultures in this region. The species of greatest conservation concern is the Cape Griffon Vulture (*Gyps coprotheres*), as only 2,900 breeding pairs remain in the wild. In a single dose toxicity study, two adult Cape Griffon Vultures with severe injuries which are considered to have a very poor prognostic outcome were dosed intravenously with diclofenac @ 0.8 mg/kg. The changes in the clinical pathology were compared to the normal reference range established for 24 healthy Cape Griffon Vultures. Both birds died within 48 h of dosing. The clinical signs, clinical pathology, gross pathology and histopathological findings were typical for diclofenac toxicity. It would appear that the sensitivity of the Cape Griffon is similar to that of their Asian counterparts and the African White-backed Vulture (*Gyps africanus*). Diclofenac is almost certainly toxic to all Gyps vulture species and strong efforts must be taken to ensure that veterinary diclofenac products are not licensed or introduced to the African continent (Mishra et al., 2002, Naidoo et al., 2008).

Acute necrosis of proximal convoluted tubules in these diclofenac affected vultures is a severe lesion. Glomeruli, distal convoluted tubules and collecting tubules show relatively spared in the vultures that had early lesions. In most vultures, however, lesions become extensive with large urate aggregates obscuring renal architecture. Inflammation is minimal. Extensive urate precipitation on the surface and within organ parenchyma (visceral gout) is consistently found in vultures with renal failure. If diclofenac removes a modulating effect of prostaglandins on the renal portal valves, indiscriminant activation of these valves redirect the primary nutrient blood supply away from the renal cortex resulting to ischemic necrosis of the cortical proximal convoluted tubules in infected birds (Mishra et al., 2002; Meteyer et al., 2005).

**References**


