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RED-HEADED VULTURE: A SOLITARY SCAVENGER

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ABSTRACT

Obligate scavenging is very rare in the animal kingdom, due to lack of enough carrion and energy. Vultures are the only vertebrates that are obligate scavengers, as being a terrestrial flyers they can find carrion more easily. Vultures as scavenger had evolved physiological mechanism that allows them to depress their high metabolic rate by resting at their roost. Mostly vultures are found in groups or flocks around the carcasses but Red-headed Vulture (*Sarcogyps calvus*) is seen solitary or in pair around carcasses. Red-headed Vultures nests are also found solitary. Though it is a resident species of sub-continent but is highly terrestrial. Red-headed Vultures are also facing a serious threat from habitat loss and biotic pressure and this resulted in their consideration as a critically endangered species.

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INTRODUCTION

Twenty two different kinds of vultures are reported, which includes 15 types of old world vultures and 7 types of new world vultures. Nine species of vultures are reported in India i.e. Red-headed Vulture (*Sarcogyps calvus*), Cinereous Vulture (*Aegyptius monachus*), Griffon Vulture or Eurasian Griffon (*Gyps fulvus*), Himalayan Griffon (*Gyps himalayensis*), Long-billed Vulture (*Gyps indicus*), Slender-billed Vulture (*Gyps tenurostris*), White-rumped Vulture (*Gyps bengalensis*), Bearded Vulture (*Gypaetus barbatus*) and Egyptian Vulture (*Neophron percnopterus*) (Ali, 1995; Birdlife International, 2007; Gandhvi and Dodia, 2006; Parsi, 2009). Pain *et al* (2003) reported that vultures had been declined from their former ranges, owing to food shortage and habitat loss. Beginning in the mid 1990's 5 species of vultures have declined rapidly throughout South Asia (Prakash *et al.* 2003, 2007, Gilbert *et al.* 2002, 2006, Green *et al.* 2004, Cuthbert *et al.* 2006, Chaudhary *et al.* 2012).

Diclofenac an effective anti-inflammatory drug used in cattle and other animals treatment was found responsible for the vulture decline (Kushwaha *et al.*, 2009). Diclofenac present in animal carcass was found responsible for the lethal renal failure in vultures (Lawate, 2006). Apart from this, competitors (other scavengers like dog, egrets, jackal etc.), habitat loss and food scarcity are probable causes for vulture decline (Dhakal, 2011).

Vultures are highly sensitive to environmental changes and are rapidly declining in India (Houston, 1974). Pain (2003), reported that various zoonotic diseases like rabies and bubonic plague which are endemic to India for which other scavengers like dog and rats are mainly responsible as a consequence of vulture decline.

The Red-headed Vulture is a resident species throughout the Indian subcontinent and can be spotted up to an altitude of 2000 m in Himalayas. It was never abundant and always sparsely distributed (Ali and Ripley, 1987). Its habitat mainly comprises open country, cultivated and semi desert areas, deciduous forests, foothills and river valleys. They are not reported in southern China from 1960's and are nearly extinct in Thailand (Birdlife International, 2008). The Red-headed Vulture is reported in Nepal, India, Pakistan, Bangladesh, Bhutan, Myanmar, Laos, Vietnam and Cambodia and it was widespread but has undergone a population and range decline in the last half century (Birdlife, 2012). The Red-headed Vulture is a scavenger which don't feed on rotten carcass and often make the initial have specific habit of feeding on cut into a fresh carcass (Walker, S., 1992).

Red-headed Vultures were found nesting on top of large trees. Nest was constructed from sticks facing the center with leaves and dry grass. Their breeding activities were observed mainly from November to June. They lay only one egg every breeding season and is incubated by both the parents for about two

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months and hatch in March. Juveniles mostly fledge after four months of hatching (Bhusal and Paudel, 2016).

Morphology

Morphologically Red-headed Vultures are very distinct with their remarkable red head and jet black body (Raptors of the world by Ferguson Lees, Christie, Franklin, Mead and Burton, Houghton and Mifflin, 2001). They possess dark red head and legs with two broad red skin folds on neck being called lappets (Ali, S, 1993). There is no morphological difference in males and females (Naoroji, 2006) except that males have white iris while females have dark brown (Ali, S, 1993).

They are medium sized vultures but possess an impressive wingspan of over 2m and juveniles having dark eyes and more mottled dark brown plumage (Ali, S, 1993).



Photo 1 Male and Female Red-headed Vulture (Photo credit: Dr. N. Krishnendra Singh)

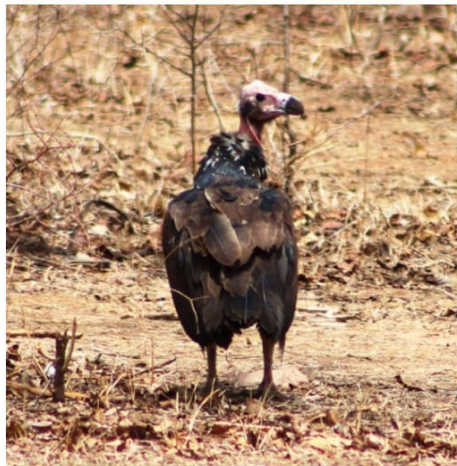


Photo 2 Juvenile Red-headed Vulture

Scavengers at a Glance

Obligate scavenging is very rare in the animal kingdom, due to lack of enough carrion and energy. Vultures are the only vertebrates that are obligate scavengers, as being a terrestrial flyers they can find carrion more easily (Kane et al., 2017). Vultures as a scavenger, had evolved physiological mechanism that allow them to depress their high metabolic rate by resting at their roost (Bahat et al. 1998, Moleon et al. 2014b)

Scavenging birds are mostly bare headed and long beak as an adaptive feature. They have weak, poorly padded toes with slightly curved talons. Toes and tarsi are also featherless. They don't kill but scavenge and had to keep their balance while feeding, which is achieved by their large feet (Kushwaha et al. 2009).

Any pathogen (virus or bacteria) present in food is destroyed by their stomachs acid and quickly breakdown the meat. The pH of their stomach is between 1 and 2 (Houston and Cooper, 1975). They often use their stomach acid as a defense mechanism by vomiting on enemies and it is so strong that on close encounter it can also burn the enemies (Cristen, 2009). Scavenging birds generally urinate on their legs for cooling themselves, which is known as Urohydrolysis. Vultures also urinate on their legs for thermoregulation and keep heat away from their bodies (Kushwaha et al. 2009).

Vultures lay single egg each year. They take bath after every meal to clean the blood from their body and bask on their tails with wings spread and mouth hanging open in sun after each meal (Kushwaha et al. 2009).

Solitary Behavior

Mostly vultures are found in groups or flocks around the carcasses. Various *Gyps* vultures can be seen around carcasses but Red-headed Vulture (*Sarcogyps calvus*) is seen solitary or in pair around carcasses.

On comparing to other vulture species at feeding sites, Red-headed Vultures are relatively timid and solitary bird and often found in breeding pairs (Chhangani, 2007). Red-headed Vultures nests are also found solitary. Though it is a resident species of sub-continent but is highly terrestrial (Naoroji, 2006). Since the last few years its range has been reduced drastically (Chhangani 2004, 2005, 2007; Chhangani and Mohnot, 2004) suggesting that it is gravely threatened.

Threats

Red-headed Vultures are also facing a serious threat from habitat loss and biotic pressure (Chhangani and Mohnot, 2009). Their population in India was declining at a rate of 41% per year in 1999 and 44% per year between 2000 and 2003 (Cuthbert et al. 2006). This resulted in their consideration as a critically endangered species (Birdlife International, 2007).

Red-headed Vultures are also facing serious threats like habitat loss, predation, hunting, disturbance, scarcity of food and water, changes in land use and agricultural practices, poisoning and mortality in road accidents while feeding (Chhangani, 2002, 2003, and 2005).

A variety of problems like change in natural and agricultural systems (Liberatori and Penteriani, 2001, Clements et al. 2013) and electrocution by poorly designed power lines (Angelov et al. 2013). Shortage of food and urbanization are also possible reasons to force Red-headed Vultures in exploring new areas (Podoces, 2007). Protected Areas are proven to be more suitable and adapted by vultures as most of the Red-headed Vultures nests were observed in and around the protected areas that may be facing biotic and abiotic threats (Chhangani, 2007). Threats to vultures include human disturbance of nesting habitat (especially of nesting trees) (Subedi and DeCandido, 2014). Aceclofenac (Sharma, P.,

2012) and ketoprofen (Naidoo *et al.* 2009) are known toxic chemicals for vultures while strong suggestive evidences are also there that nimesulide is also toxic to vultures. Diclofenac is also considered toxic but might be toxic to Red-headed Vultures, as there is no confirming evidence (Bhusal and Paudel, 2016).

Conservation

The availability of nesting sites determines the population and nesting success (Newton, 1979). Conservation attitudes are influenced by socio-economic variables such as gender, ethnicity, education, occupation, household affluence and participation in conservation (Infield 1988, Fiallo and Jacobson 1995, Mehta and Kellert 1998, Gillingham and Lee 1999, Sah and Hienen 2001). When livestock die of disease, local people are more likely to bury them, but this is done to prevent the potential spread of disease to other livestock and not for preventing vulture deaths. Providing economic incentives to local people to bury all contaminated carcasses and environmental education about threats posed by veterinary Diclofenac to stakeholders may help to secure uncontaminated food for vultures. People are aware of dwindling vulture population and were in favor of habitat conservation but still their actions are detrimental to vultures (N. Baral and R. Gautam, 2007).

According to Tende (2007) the situation is very catastrophic and therefore demands immediate conservational efforts to conserve areas that still harbor these species so that we can save the few that are still remaining. Banning of Diclofenac and conducting of surveys and research work is not sufficient to ensure the self-sustainability of these populations. As per Chhangani (2009), about 100 threatened vultures can be saved per year by various rescue programs and captive breeding. The urgent need is to educate, inform and involve the localities and children in the plight of rare and critically endangered species. The involvement of future generation will surely show positive results.

There are several conservation measures propose by Kanaujia and Kushwaha (2009):

- Collect baseline data on vulture populations at selected sites throughout India, including neighboring countries.
- All vulture mortalities should be documented, post-mortem examinations conducted (to identify birds with gout and other clinical signs). Epidemiological data should be collected.
- The behavior of vultures should be recorded, especially abnormal behavior and “head-drooping” (this should be related to environmental conditions), and documented.
- Public awareness and Public support programs should be implemented in India.
- Study the overall number and distribution of wild animals, potential food source for vultures, the present condition of live-stock breeding in India, the number and distribution of domestic animals, historical trends and their use in food industry.

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