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Anjaneri reserved forest: A potential vulture habitat

Vinaykamal D Dethe

ABSTRACT

Vultures are important scavengers in ecosystem, and their decline can have severe ecological and cultural implications. In this study, we surveyed the habitat and population of vultures in the Anjaneri Reserve Forest, Maharashtra, India. The study was carried out from January 2019 to May 2020, and the survey was conduct once a week each month. We used binoculars and a DSLR camera to observe and photograph vultures and searched for vulture nesting based on white excreta and prior information from forest guards and locals. Our results indicate the presence of three vulture species in the reserve forest, with at least 32 Gyps vultures present at one time. All the nests of *Gyps bengalensis* were found on mature trees, while *Gyps indicus* nesting found on cliffs. Our study highlights the importance of monitoring vulture populations and their habitats to promote conservation efforts and protect these critical species.

Keywords: *Gyps*, Anjeneri, Habitat.

1. INTRODUCTION

The stable ecosystem is depending upon the equal presence of all the organism in their ecological niches the change in the population of these organism can disrupt the food web (Sutherland and Green, 2004). Vultures are crucial to maintain the balance of terrestrial food web (Prakash, 1999). Their scavenging ability has significant implications in various fields, including religion, sociology, epidemics, and the environment. Currently, 12 of 23 vulture species are "Near Threatened" or "Endangered". Over the past decade, there has been a significant decline in the vulture population in the Indian subcontinent.

The Oriental white-backed vulture (*Gyps bengalensis*), Long-billed Vulture (*Gyps indicus*), and Slender-billed Vulture (*Gyps tenuirostris*) are all classify as "Critically Endangered" (BirdLife International, 2000; BirdLife International, 2001; Green et al., 2004). Factors such as food scarcity, persecution, environmental toxins, and diseases may contribute to the high mortality rate and poor reproductive success of Gyps vultures in southern Asia (Pain et al., 2003). The Anjaneri reserved forest is habitat for Indian or Long-billed Vulture, White-rumped Vulture and Endangered Egyptian Vulture. Vertical cliffs in this forest, classified as Mixed Dry Deciduous, provide perfect habitat for the Long-billed vulture population. The forest, characterized by vertical cliffs and Mixed Dry Deciduous type vegetation, provides an ideal habitat for the Long-billed vulture population.

DISCOVERY SCIENTIFIC SOCIETY

The forest's diverse flora, including species such as *Ficus racemosa*, *Mangifera indica*, *Lannea coromandelica*, *Kydia calycina*, *Heterophragma quadriloculare*, *Erythrina stricta*, *Terminalia arjuna*, *Terminalia bellirica*, *Mallotus philippensis*, *Careya arborea, Lagerstroemia microcarpa, Pterocarpus marsupium, Olea dioica, Butea monosperma, and Bombax ceiba*, supports a wide range of fauna, including 98 bird species (Dethe and Medhe, 2020). Notably, the Peregrine Falcon and Montagu's Harrier, listed in schedule I of the Wildlife (Protection) Act of 1972, are also part of the forest's avifauna. The study's objective is to monitor the vulture habitats and population within the Anjaneri reserved forest and provide protection to these endangered species. It also aims to collect the information regarding the status and distribution of vultures within the reserve.

2. MATERIAL AND METHODS

Study Area

The research conducted in the Anjaneri reserved forest, which spans 923.68 hectares, of which 569 hectares are designated as a conservation reserve by the forest department as of 2017. The study area situated between 19° 55′ 12″ N and 73° 34′ 12″ E and encompasses diverse habitat types, including semi-evergreen forest patches, meadows, riparian patches, agricultural land, rocky lateritic plateaus, and human settlements. The region is divided into three expansive plateaus situated at elevations of 800 m, 1100 m, and 1200 m above mean sea level.

The study was conducted from January 2019 to May 2020, during which surveys carried out one week per month from 6:30 am to 4:00 pm. The vultures observed and photographed opportunistically using binoculars (Olympus 10X) and a Nikon 5600 DSLR camera. The researchers also searched for vulture nesting sites based on white excreta and information from forest guards and locals. Additionally, the researchers interacted with locals to understand of their views about vultures.

3. RESULT AND DISCUSSION

The study revealed that three vulture species inhabit the Anjaneri Reserve Forest, namely *Gyps indicus* (Figure 1), *Gyps bengalensis* (Figure 2), and one migratory species, *Neophron percnopterus*. The nesting behavior of *Gyps bengalensis* was observed on mature trees of *Terminalia arjuna*, *Bombax ceiba*, *Ficus religiosa*, and *Mangifera indica*, while *Gyps indicus* nests found on cliffs. The data collected from the highest counts at one time indicated that at least 32 Gyps vultures resided in the Anjaneri reserve forest, with *Gyps indicus* having a count of 22 and *Gyps bengalensis* having a count of 10. *Neophron percnopterus*, the Egyptian vulture, was sighted only once during the study.

Vulture species reported in the study area

Long-billed vulture (Gyps indicus), Scopoli 1786

The Long-billed Vulture, scientifically known as *Gyps indicus*, is a large species characterized by its light-brown plumage and a dark head and neck adorned with whitish feathers. Its pale beak and collar are particularly noticeable from the rear. Observational studies have recorded 22 individuals of this species on cliffs and trees during a specific period, while a previous study reported 30 vultures (Raha et al., 2015). *Gyps indicus* is observed near to human settlements, particularly towns and villages near agricultural areas.

However, the early 2000s marked a significant decline in the population of *Gyps indicus* across the Indian subcontinent, with numerous instances of these vultures found dead or dying. Most of these vultures were diagnosed with visceral gout, a condition induced by renal failure, which traced back to diclofenac, a medication frequently administered to domestic animals (Cuthbert et al. 2006). Consequently, the International Union for Conservation of Nature (IUCN) classified *Gyps indicus* as Critically Endangered in 2000.

White-backed vulture (Gyps bengalensis) Gmelin 1788

The *Gyps bengalensis*, also known as the White-rumped Vulture, is an Old-World vulture and native to South and Southeast Asia. The IUCN Red list classified it as Critically Endangered in 2000 due to a drastic decline in their population. The population estimated at less than 6,000 mature individuals as of 2021. These vultures are often found in open areas with scattered trees and they are known for roosting on various tree species, including *Terminalia arjuna*, *Terminalia bellirica*, *Bombax ceiba*, and *Mangifera indica* trees in the reserve. The White-rumped Vulture has a distinctive white collar and white rump, making it easily recognizable.

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Figure 1 *Gyps indicus* on roosting on tree at Anjaneri Reserved Forest

Egyptian vulture (Neophron percnopterus), Linnaeus 1758

The Anjaneri Forest Reserve recorded a solitary sighting of the Egyptian Vulture. Long and pointed wings, a small and pointed head, and a wedge-shaped tail characterize this species. Adults exhibit a dirty white coloration with a yellowish face and black flight feathers. The distribution of the Egyptian Vulture extends across southern Europe, Asia, and northern Africa (Dzhamirzoev and Bukreev, 2009). However, the Indian subcontinent experienced a sharp decline in the Egyptian Vulture population by approximately 90% between the mid-1990s and mid-2000s (Galligan et al., 2014). As a result, the IUCN Red List classifies the Egyptian Vulture as Endangered. Several factors, including habitat loss, diclofenac use, infectious diseases, environmental contamination, and food scarcity primarily cause the rapid reduction of vulture populations (Workshop on the Recovery of South Asian Vultures, 2004).

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Figure 2 *Gyps bengalensis* on roosting on tree at Anjaneri Reserved Forest

Additionally, using pesticides to kill wild predators on carcasses is another anthropogenic threat to vultures (Venkitachalam and Senthilnathan, 2016). For survival of vultures, it is essential to establish artificial feeding stations and conserve their nesting areas (Piper et al., 1999). The Anjaneri Reserve Forest, with its hills, cliffs (Figure 3), and dry deciduous woodland, provides an ideal habitat for vultures. Preserving this natural breeding and roosting habitat is crucial for the survival of these birds. Long-term research, frequent population monitoring, and the establishing of a secure feeding site are necessary for effective vulture management and conservation. The results of this study can be used as baseline for the conservation of vultures.

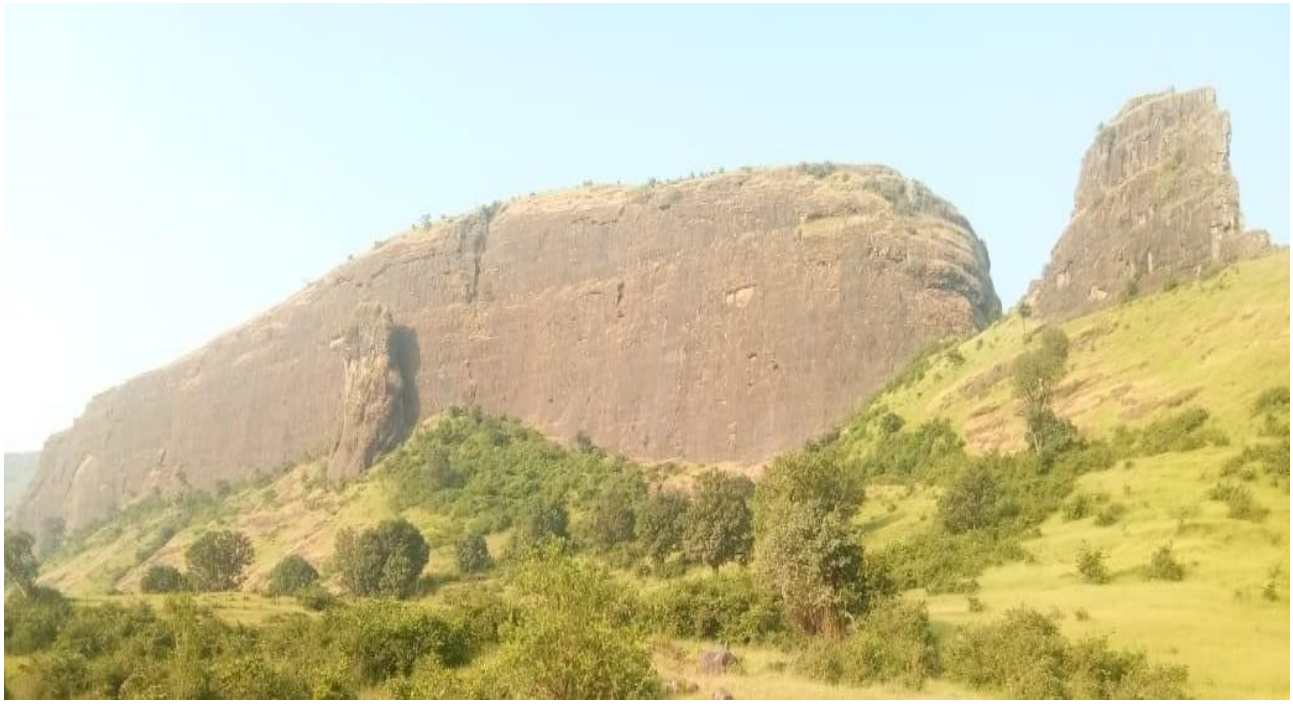

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Figure 3 Nesting cliffs of *Gyps indicus* at Anjaneri Reserved Forest

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Author Contributions

Mr. VD was responsible for writing the manuscript, collecting data, and conducting fieldwork.

Informed consent

Not applicable.

Conflicts of interests:

The authors declare that there are no conflicts of interests.

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Ethical approval & declaration

In this article, as per the animal regulations followed in Department of Zoology, MVP'S Arts, Science and Commerce College Ozar (MIG), Nashik, India, the authors surveyed the habitat and population of vultures in the Anjaneri Reserve Forest, Maharashtra, India. The Animal ethical guidelines are followed in the study for species observation, identification & experimentation.

Data and materials availability

All data associated with this study are present in the paper.

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