

Study of Habitat Suitability Factors Favouring the Survival of Vultures in Gidh Karai, Jhalawar, Rajasthan, India

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Abstract: Before the 1980s, when their population collapsed to >95%, vultures dominated the landscape as the most common scavengers. This was due to the use of a veterinary NSAID, diclofenac, which was nephrotoxic to birds and caused renal failure and avian gout. In 2006, the governments of India, Pakistan, and Nepal banned diclofenac to protect the depleted vulture population. Gyps vulture populations have stabilized in some parts of southern Asia due to the advancement of non-toxic meloxicam as an alternative to diclofenac. In India, there are nine different species of vultures (both resident and migratory) and three of them are listed as Critically Endangered on the IUCN Red List of Threatened Species, receiving the strictest legal protection under Schedule-I of the Indian Wildlife Protection Act. However, seven species of vultures can be found in Rajasthan. During the present investigation, the factors that make the study area, i.e., GidhKarai suitable for breeding and roosting of the Indian and Egyptian vultures in the Jhalawar district of Rajasthan (India) were studied in detail.

Keywords: GidhKarai, habitat, natural, protection, vultures

1. Introduction

Vultures are a diverse group of birds that can be found in almost any habitat on the planet. These carrion eaters are classified into two families: Accipitridae (only found in the Eastern Hemisphere) and Cathartidae (only found in Western Hemisphere). Except for Australia and the Pacific Islands, Old World vultures occupy a large expanse of territory across Europe, Asia and Africa. Vultures of the New World live in a relatively unbroken stretch of land in the Americas south of Canada. Both favour hot or tropical climates, but they can also live in temperate regions.

Most vultures occupy open and convenient country spaces, often roosting in groups on cliffs, in tall trees and old buildings. Most vulture species spend the most of their lives in a constrained geographic area, but northern-based species migrate during the winter months. Vultures generally avoid human settlements; however they may occasionally try to eat road kill or trash left behind by humans near carcass dumps.

2. Review of Literature

- According to Ali and Ripley (1978), the water source is very crucial nearby the feeding sites as the vultures

regularly visit the available water sources, take baths usually, and drink water.

- Vulture nesting in high density has been recorded where there were abundant food and nesting habitats (Galushin, 1971; Newton, 1979). The selection of the nesting place in the wild is majorly dependent on food availability (Newton, 1979).
- Chhangani (2010) recorded 5735 vultures of seven different species in different geographical regions of Rajasthan from July 2004 to July 2008, during the study period. Cow carcasses were the prime food source (74%) followed by buffalos (12%), wild animal (8%) carcass and the remaining 6% are other livestock at different feeding sites.
- An article published in JhalawarPatrika (local newspaper) on 8 January 2021 says about the compact colonies of vultures roosting and breeding in GidhKarai along the Kali Sindh River.
- Sharma and Shrivastava (2019) worked on the status and assessment of the distribution of Indian vulture (*Gyps indicus*) in the National Chambal Sanctuary at Kota.

Study Site:

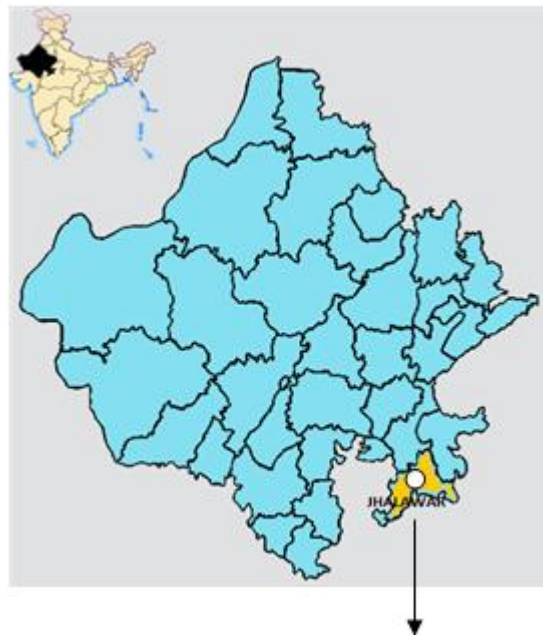


Figure 1: Map of study area



Figure 2: Study Area (From Google Earth)

Geography

Jhalawar (24.6°N 76.15°E) is located at an average elevation of 1023 feet (312 metres). It is situated at the edge of Malwa plateau in the south- eastern part of Hadoti region, Rajasthan and has a vast fertile stretch on the east and a slight undulation on the west (Prakash& Singh 2001). The south of Jhalawar is an area with rounded bare hills scattered by a plain that consists of characteristic features of the Malwa plateau. The Jhalawar plain extends in a wide stretch bounded by the Mukundara hills from the northern, eastern and southern parts.

Geology/Terrain

Jhalawar district consists of rocks of Vindhyan hill ranges and Deccan trap flows (covers 60% of the district).

Study Area

Gagron Fort (24°37' 41.5" N, 76°10'52.6" E) is a fortress located 10km approximately the north-eastern part of Jhalawar, at the convergence of the Ahu River and the Kali Sindh River. It covers the entire expanse of a plateau on a steep slope of the Vindhyan Hill Range, which measures 23 hectares and is surrounded by a buffer zone of 722 hectares.

Gagron Fort represents the sort of a hill water fort. In addition to its hill location, it is further defended by the river, which isolates it from the encompassing terrain on three of its sides.

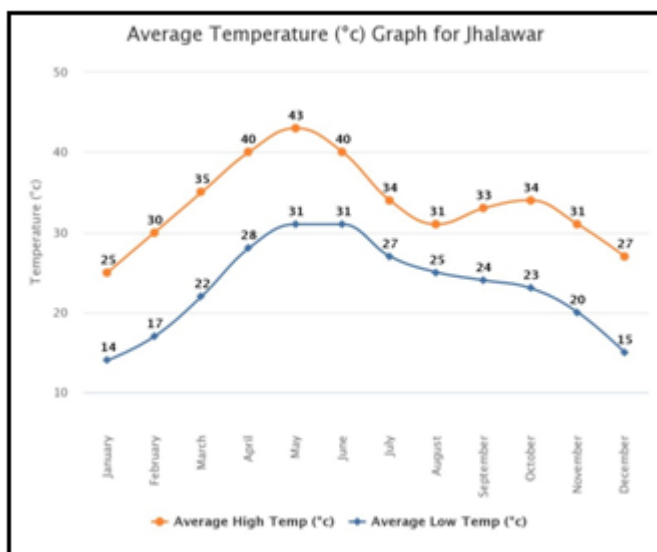
The hilltop is guarded by the steep and high vertical cliff called GidhKarai (vulture's cliff) at 93.6 m in height along the riverside. It makes the fort inaccessible and was also used as a place for executions during old times to punish the culprits or prisoners by throwing them from the cliff.

Climate

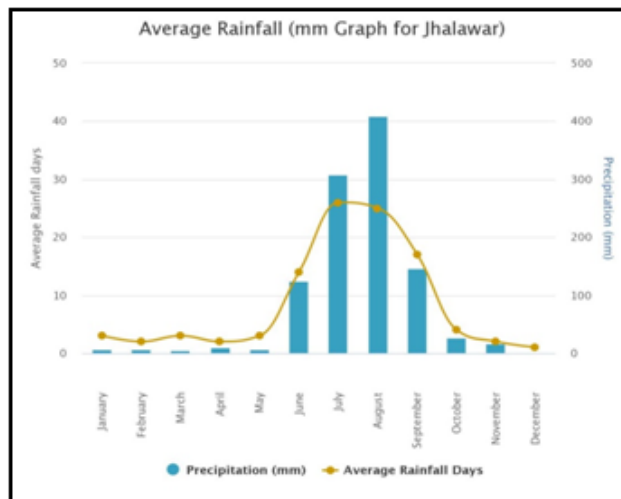
The climate of the area is similar to that of the Indo-Gangetic plain. In summer, the temperature is generally around 40 °C (104 °F) and can exceed a maximum of 45 °C (113 °F). In winter, the temperature can reach about 1 °C (34 °F). In Rajasthan, Jhalawar receives the highest amount of rainfall (95 cm).

Flora & Fauna

Tropical dry deciduous forest on the hills in the west and tropical thorn scrub forest in the plains (towards the Kali Sindh River) are the predominant vegetation types found here (Champion & Seth 1968). There is an expanse of fertile plains with rich black cotton soil. The entire stretch of MHTR has very good quality vegetation of Kala Dhok (*Anogeissuspendula*), Khair (*Acacia catechu*), Ber (*Zizyphusmauraticana*), Palas (*Buteamonosperma*), Gurjan (*Lanneacoramendlica*) and Kadaya (*Sterculiaurens*). The flat landscape with low soil depth results in sparse scrubby vegetation. Kala Dhok and Palas dominate the small patches of moderately dense dry deciduous forest in the undulating parts of the area. Wild fauna is mainly represented by Nilgai (*Boselaphustragocamelus*), Sambar (*Rusa unicolor*), Chinkara (*Gazellabennettii*), Wild Pig (*Susscrofa*), Golden Jackal (*Canisaureus*), Striped Hyena (*Hyaenahaena*), Hanuman langur (*Semnopithecus entellus*) and Bengal Monitor (*Varanusbengalensis*).



Graph 1: Average Temperature



Graph 2: Average Rainfall

3. Materials & Methods

Field Survey:

The Indian Vulture and Egyptian Vulture colonies were discovered at a place named GidhKarai, where the field survey was carried out. The survey included a 3-kilometer walk from the Gagron fort and Belinda Ghat to the spot on the banks of the Kali Sindh River. From the other side, it is close to Hichar Village (Jhalawar), Harish Chandra SagarPariyojana. The colony is situated on the cliffs that edge the Kali Sindh River on both sides, providing the vultures with the essential natural protection for roosting, nesting and breeding.

4. Observation & Results

Factors behind Habitat Suitability: The vulture population is high in the study area due to the remoteness of the location from the city and it is subjected to less human disturbance. The high and steep cliff on the banks of the Kali Sindh River ensures natural protection for the vultures from external disturbances. The area is surrounded by the Jhalawar Forest Division on one side and Mukundara Hills Tiger Reserve on the other side of the Kali-Sindh River. This ensures the legal backup for the area to a certain degree and restricts the movement of people in this area. The area is composed of open landscapes and water bodies. Mukundara Hills Tiger Reserve has huge natural forests and dense vegetation with a good number of nilgai, sambar and many other wild animals. This also ensures the food availability for the vultures in this area. The vulture's food is available in large quantities in the area because it is surrounded by villages, where a majority of them belong to the "Gurjar Community", known for agro-pastoral activities. This ensures that a large cattle population is available in the area. Once these cattle are dead, they are dumped at the nearby dump yards, where vultures do their scavenging activity. The area has a moderately dense natural forest, suitable temperature and climatic conditions, which make the site safe for vulture roosting, breeding, nesting and the protective survival of the critically endangered Indian vulture and endangered Egyptian vulture populations.



Plate 1: Indian vulture soaring near the cliff



Plate 2: Indian Vultures Roosting on the Cliffs



Plate 4

Vulture Habitat



Plate 3



Plate 5



Plate 6

5. Summary & Conclusion

The area is well protected from all sides with the help of naturally built high vertical steep cliffs (which makes it a safe & suitable site for vultures' breeding and roosting purpose), surrounding forest area and a river to fulfill food & other requirements as well. Thus, it encourages the presence, richness and diversity of various vulture species in GidhKarai, Jhalawar in different climatic conditions recognizing it as a place that needs to be protected from external human disturbances and exploitation.

Acknowledgement

I would like to express my sincere gratitude towards the Jhalawar Forest Department, especially Mr. Arunkumar Devaraju (IFS), my supervisor (Dr. Surabhi Shrivastava) and my family for their constant motivation and help to complete the research work. I would extend my special thanks to Dr. VikramThak and Mr. Deepak Jadav who helped me in collecting this information.

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