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**Mital Moradiya**M.V.M. Science College,  
Rajkot, Gujarat, India**Dr. AP Goswami**Assistant Professor,  
M.V.M. Science College,  
Rajkot, Gujarat, India

## To study nesting of white-backed vultures (*Gyps bengalensis*) in Surendranagar and Bhavnagar districts of Gujarat, India

**Mital Moradiya and Dr. AP Goswami**

### Abstract

A total of 33 nests of White backed vulture were monitored in the Surendranagar and Bhavnagar district of Gujarat from July 2018 to December 2018. Nests were constructed on 4 different tree species including one commercially important species *Cocos nucifera*. Tree species which prefer by White-backed vulture for nesting in Surendranagar and Bhavnagar, suggested that the plantation of those species near feeding sites may facilitate to more nesting. All the nesting sites showed proximity to human habitation and water bodies. Surendranagar, Bhavnagar and its surrounding region is an important breeding area for the critically endangered White-backed vultures (*Gyps bengalensis*).

**Keywords:** vulture, *Gyps bengalensis*, nest, tree species, critically endangered

### Introduction

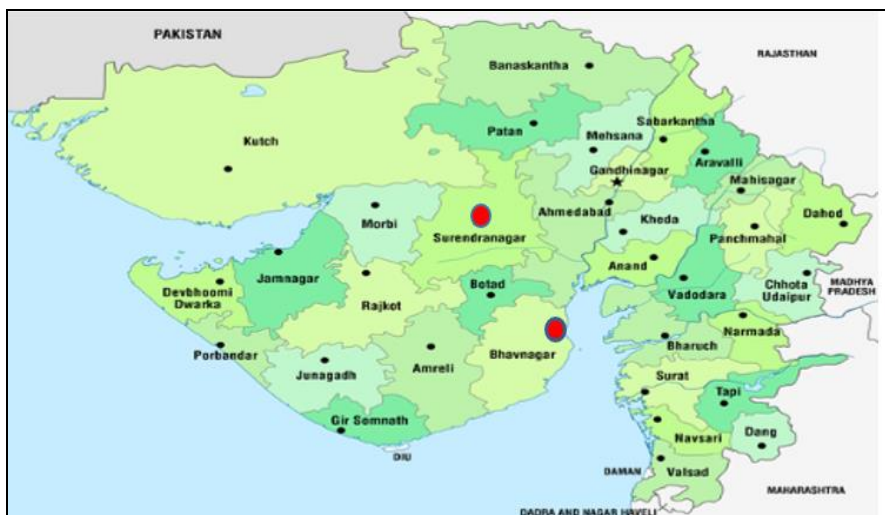
Vultures are scavengers, they feed on the dead and decaying carcass, which makes them an important component of the ecosystem. Vultures are the large birds that soar highest in the sky. They have coexisted with other species, including humans, since time immemorial. Vultures are known as efficient scavengers playing a crucial role in the recycling of nutrient in nature's food webs (Pandey and Jethva, 2007) [6]. The role of scavengers in any ecosystem is as vital as that of primary producers.

In Gujarat, mainly 7 species of vultures White-backed Vulture, Eurasian Griffon, Long-billed vulture, Egyptian vulture, King vulture, Himalayan Griffon and Cinereous vulture are found. The White backed vulture *Gyps bengalensis* was once described as the commonest species of vulture found in the Indian sub-continent (Gilbert *et al.*, 2002) [3]. White-backed vultures are old world vultures, they are tree nesters. The decline of *Gyps bengalensis* in India has slowed after a ban on veterinary drug 'diclofenac'. The Population of *Gyps bengalensis* remained at low level, but they declined had slowed and may even have reversed both in India and Nepal (Kamboj *et al.*, 2016) [5]. In Gujarat, Ahmedabad and its surrounding region is an important breeding area for the critically endangered White-backed Vultures (*Gyps bengalensis*). Hence this study was carried out to know the nesting status of White backed vulture in selected sites of Gujarat.

### Methodology and study area

Identified/located colonies of White-backed vultures regions of Surendranagar and Bhavnagar district from July to December, 2018 by direct observation. A vehicle was driven at 20 km h<sup>-1</sup> and all flying and perching vultures seen, recorded, and identified to species. Observations were carried out between 07:00 and 17:00 local times. Followed the flying vulture to find the new colonies/nests. Where roads were absent (mainly remote villages and open land) transects was walked at 3 km/h. In addition to running transects, also visit municipal, town, and village dumpyards, looking for carcasses and vultures. Habitat parameters like tree height, choice of tree species, GPS location and surrounding habitat were collected for each nests. (Caughley, 1977; Virani *et al.* 2012; Xirouchakis *et al.* 2005; Poirazidis *et al.* 2004) [7]. Each nest was recorded on GPS. (Model: GARMIN eTrex Venture HC) Height of nests, tree girth and tree species were recorded. Height of nests and tree were recorded using Bushnell (SIMMONS) Range Finder. During this study, identified known colonies with the help of local nature lover that have been monitoring the colonies randomly. A questionnaire survey was conducted about vulture ecology like habitat use, availability of trophic resources, other competitors for carrion, conservation issues etc. with the help of villagers.

**Corresponding Author:****Mital Moradiya**M.V.M. Science College,  
Rajkot, Gujarat, India



**Fig 1:** Study area – nesting sites of White-backed vulture

**Results**

A total of 33 White-backed vultures nests were located from study area from July to December, 2018 in Surendranagar and Bhavnagar district. From 33 nests throughout the study period, 21 nests were observed in Bhavnagar while 12 nests in

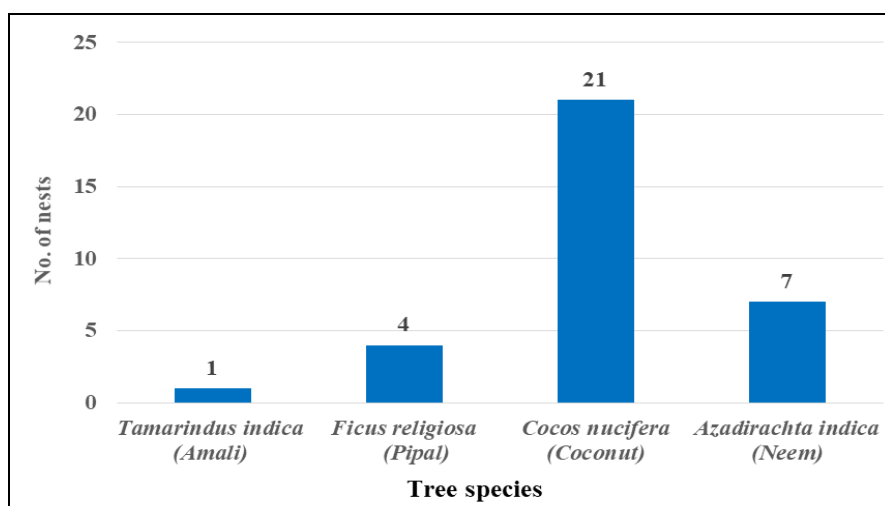
Surendranagar. The nest-building period was observed to be during October and November. Most of nests made up of dry sticks, twigs, and dry leaves. (Fig.2) Most of the nests build up on the edge of the tree and at top of the tree but very few were in the middle of the tree.



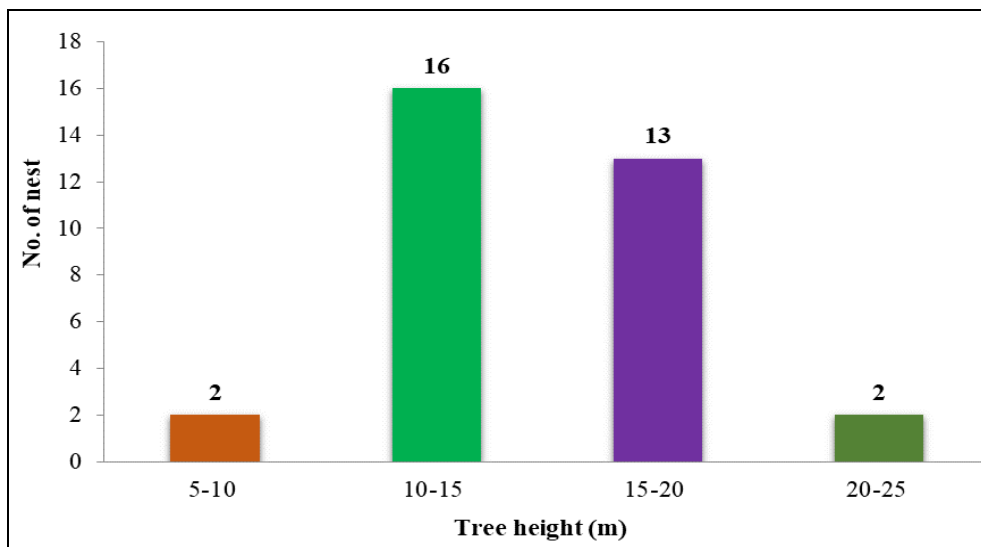
**Fig 2:** Nests of White-backed vulture

In this study, most of the nest or breeding sites of White-backed vulture were near to the pond or water sources around the villages. (Fig.5) White-backed vultures used Neem (*Azadirachta indica*), Ambali (*Tamarindus indica*), Pipal (*Ficus religiosa*), and Coconut (*Cocos nucifera*) trees as the substratum for the nest building. The maximum number of nests of White-backed vulture was noted on *Cocos nucifera* (coconut) in Bhavnagar. While in Surendranagar maximum

number of nests were built on *Azadirachta indica* (Neem). From a total 33 nests, 21 nests were recorded on *Cocos nucifera* (coconut), while 7 nests were recorded on *Azadirachta indica* (Neem) (fig.3) White-backed vulture selected trees which having average height for nest building was ranged from 10 m to 20 m recorded in the present study. (Fig.4).



**Fig 3:** Tree species used for nest building as substratum by White-backed vulture in the study area



**Fig 4:** Tree height selected by White-backed vulture for nesting



**Fig 5:** Nesting of White-backed vulture near water source of Surendranagar village.

### Discussion

Ali and Ripley (1983) reported the role of water bodies in selection of nest sites and it is also observed in the present study. In this study, most of the nest or breeding sites of White-backed vulture were near to the pond or water sources around the villages. Trees selected by African White-backed Vultures for nesting are at least 11 m tall (Houston, 1976., Virani, 2010) [4, 8]. Overall average tree height for the nest building was ranged from 10 m to 20 m in the present study. The use of taller trees for nesting and roosting has been reported for White-backed Vulture (Thakur and Narang, 2012) [7] and White-backed vulture *Gyps africanus* (Chomba and M'Simuko, 2013) [2]. Such trees helpful in providing safety from predators, a better view of surroundings and an easy take off (Yamac, 2007) [9]. Similar result was observed in the present study i.e. White-backed vulture selected more trees a having height of 10 to 15 m (16 nests – i.e. 48%) and 15 to 20 m (13 nests – i.e. 39%) in the study.

### Conclusion

Based on this study it can be concluded that average tree height ranged from 10 to 20 m heighted tree should be taken

care near carcass dumping site and it is very important as a White backed-vulture conservation point of view. Nest sites are clustered near the feeding sites or carcass dumpsite and if the carcass dumpsite altered then it may affect White-backed vulture nesting also. Panjarapoles plays a significant role in vulture conservation. Water bodies are also important. In summer, should recharge the water bodies near nesting and feeding sites of White-backed vulture. It can also be concluded that Surendranagar is the most sensitive spot and also a favorable site for White-backed Vulture survival. If we want to increase the no. of White-backed vulture. For vulture conservation, we must have to sensitize and bring awareness in the local people, villagers and, village students.

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