

Original Paper

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## **A record of White-rumpedvulture (*Gyps bengalensis*) nesting in Ahmedabad and Surendranagar districts of Gujarat.**

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### **Abstract**

Vultures are scavengers and flesh-eating raptors which soar at very high altitude as well as clean carcass dumping site efficiently. But unfortunately, vulture population have been declined globally as well as regionally due to the use of 'diclofenac' drug in veterinary. In India, after 'diclofenac' ban in year 2006 the declined of vulture population had slow down. On the other hand, to improve the breeding success and restore the damage that already been done to this K-selected population, it is very important to identify causes behind the breeding and nesting failure. In effort to identify reasons behind it we conducted this study and identify probable reasons of nesting failure. Moreover, tree preferences for nesting by White-rumped Vultures in Ahmedabad and Surendranagar were also evaluated and suggested that plantation of those trees near feeding sites may provide more nesting sites to these species. In this study we observed 58.69% nest failure at different stages and among these the nestling largely covered with white feathers/downs (Stage 3) was most vulnerable. Furthermore, during our repeated observations, it is inferred that the environmental and anthropogenic pressure have also induced nest failure during their growth so, consideration should also be given to it.

Keyword: Vulture; *Gyps bengalensis*; Nesting success.

### **Introduction**

Vultures are one of the larger raptors that soar highest in the sky. They have coexisted with

other species, including humans, since time immemorial. Congregating in large number over their feeding places, usually a dead carcass, vultures are known as efficient scavengers playing a crucial role in the recycling of nutrient in nature's food webs (Pandey and Jethva, 2007). The White-rumped Vulture (WRV) *Gyps bengalensis* was once described as the commonest species of vulture found in the Indian sub-continent (Gilbert et al., 2006). The populations of vultures have been declined globally as well as regionally rapidly during the mid-1990s due to the contamination of ungulate carcasses with a veterinary drug 'diclofenac'. But the decline of *Gyps bengalensis* in India has slowed after ban on veterinary use of drug 'diclofenac'. Populations of *Gyps bengalensis* remained at a low level, but the decline had slowed and may even have reversed both in India and Nepal (Kamboj et al., 2016). However, estimates of the most recent population trends are imprecise, so it is possible that declines may be continuing, though at a significantly slower rate (Prakash et al., 2012; Kamboj et al., 2016). Hence, this study was carried out to know the nesting status of *Gyps bengalensis* in Ahmedabad and Surendranagar districts of Gujarat State.

### Methodology and Study Area

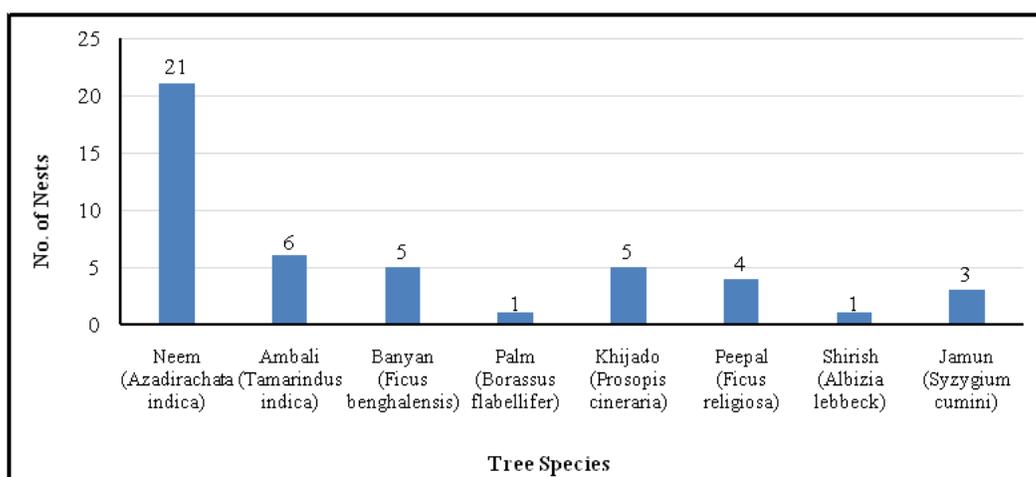
The observation of nesting of White-rumped Vulture was confined to Ahmedabad and Surendranagar districts of Gujarat State. The observations were made mainly during breeding season of the species. The nests of the species were surveyed extensively during October, 2014 to May, 2015. The colonies of WRV were located and identified. The coordinates of the location of each nest were recorded through GPS (Model: GARMIN eTrex Venture HC). Various parameters such as height of nests, tree girth and tree species were recorded using Bushnell (SIMMONS) Range Finder. Temperature and relative humidity were measured by using Extech 45170 Hygro-Thermo-Anemometer-Light meter. Tree species used as substratum to build nest were also noted down. The observations were repeated at intervals of 12-15 days. To simplify the analysis of collected data, the nest was classified into 6 stages in this study. Stages of nests were coded as mentioned in Table 1 and this coding was used to identify the stages at which nest failed. If a nestling died between any of the mentioned stages or if the nest was destroyed, then it is considered as a nesting failure stage (NFS).

**Table 1: Proposed stages of nest in White-rumped Vulture.**

Stage No.	Proposed Stage Name	Stage Code
1.	Nest building stage	NBS
2.	Incubation stage	INS
3.	Nestling largely covered with white feathers/downs	NWF
4.	Nestling with dark wings but many white feathers visible on the back and tail	NDW
5.	Full grown nestling	FGN
6.	Nestling flew out from the nest	NFO

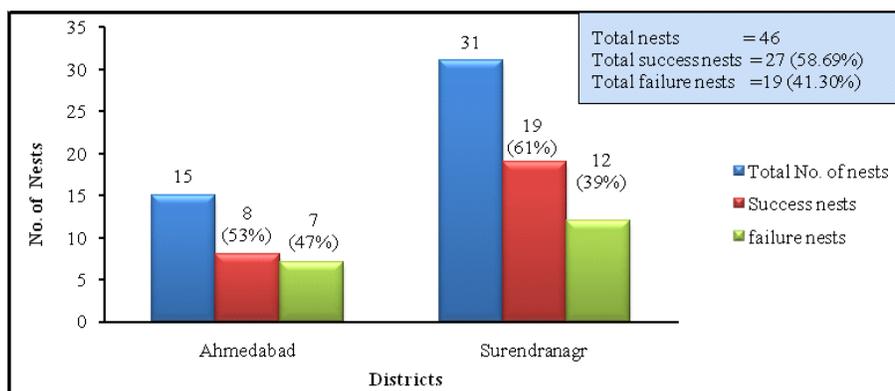
## Results

A total of 46 nests of White-rumped Vulture were recorded from the study area. Among them, 15 were in Ahmedabad district and 31 were in Surendranagar district. The nest building period was observed to be during October and November. The most used tree species as substratum for nest was Neem (*Azadirachata indica*) (21 nests), followed by Ambali (*Tamarindus indica*), Banyan (*Ficus benghalensis*), Khijado (*Prosopis cineraria*), Peepal (*Ficus religiosa*), Jamun (*Syzygium cumini*), Palm (*Borassus flabellifer*) and Shirish (*Albizia lebbek*) (Fig. 1). Most of the nest build up on the edge of the tree and at top of the tree but very few were in the middle of the tree.

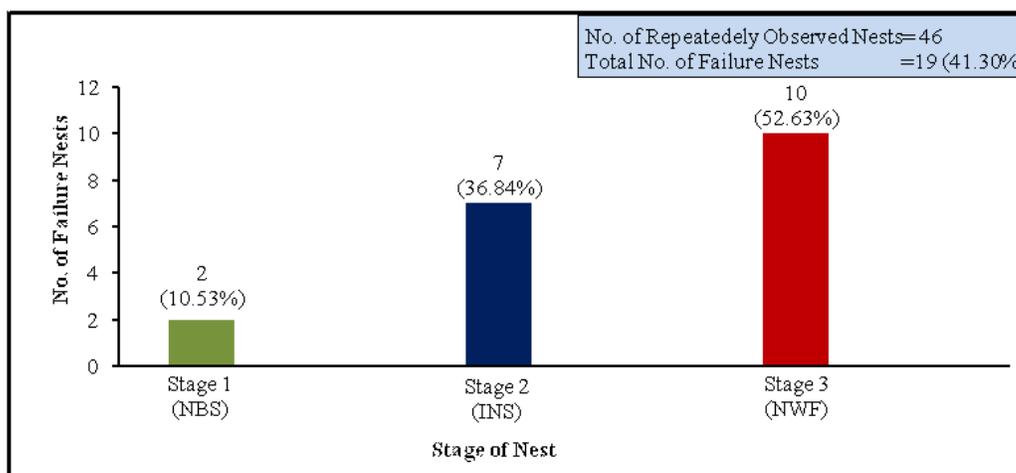


**Figure 1: Tree species preferred for nest building by White-rumped Vulture in study area.**

Out of the total 46 recorded nests, 27 nests were successful i.e. completed all six stages mentioned in Table 1, whereas remaining 19 nests were failed. In Ahmedabad, out of the total 15 nests only 8 nests showed successfully completion of all stages, whereas, 7 nests were failed. Likewise, in Surendranagar out of the total 31 nests, 19 nests were successful. It revealed that nesting success rate was 53% and 61% in Ahmedabad and Surendranagar respectively (Fig. 2). Beside nest failure and success record it was also noted that at which stage of nest the failure occurred. It was observed that the failure of nest was between stage 1 and stage 3 (i.e. NBS, INS and NWF). Among these three stages the maximum rate of failure (52.63%) was observed in stage 3 as compared to stage 1 (10.53%) and stage 2 (36.84%). On the contrary, none of the nest fail in stage 4 (NDW), 5 (FGN) and 6 (NFO) (Fig. 3).



**Figure 2: Nesting success ratio in Ahmedabad and Surendranagar.**



**Figure 3: Number of failure nest at particular stage (NBS = Nest building stage; INS = Incubation stage; NWF = Nestling largely covered with white feathers/downs).**

### Discussion

It is well-known that population of *Gyps* vultures in South Asia have been significantly decreased since the introduction of veterinary use of Diclofenac sodium in the 1990s (Prakash et al., 2003; Green et al., 2004; Prakash et al., 2007; Prakash et al., 2012). This is the single most important reason for the decline of vultures in India, Nepal and Pakistan. So, it is very important to know the current status and probable ways to increase the number of vultures. The data related to breeding and nest building in nature is also helpful to manage and improve the number of vultures. Among different vulture species, the nesting of *Gyps bengalensis* was evaluated during this study.

Present study divided the process of nestling development into six major stages to know the most fragile period during development.

The present study recorded 46 nests of White-rumped Vulture built on 8 different tree species in Ahmedabad and Surendranagar districts of Gujarat. In these regions some dominating and tall trees are Neem, Ambali, Khiado, Banyan and Peepal on which White-rumped Vulture built nest. Generally, lofty and sparsely branched trees in the forest area were used by vultures for nesting and roosting. Such trees provide a better view of surroundings (Yamac, 2007). In our study most of the nests made up of dry twigs, sticks and leaves. White-rumped Vulture build nest during months of October and November on the edge or at the top of the tall trees like Neem, Ambali, Khiado, Banyan, Peepal, Jamun etc., because of their easy takeoff and landing flights. Hence, it is recommended that these tall trees should not be disturbed during months of October and November surrounding the feeding and traditional nesting sites. Moreover, trees of these species planted near feeding sites may provide habitat preference to the species which result into increase the number of White-rumped Vulture.

By the observations of nesting success and failure, it was inferred that the maximum number of nests failed in the stage 3 (NWF) when nestling largely covered with white feathers/downs. It may be due to vigorous food consumption during this stage for their growth and less food availability in nearby area. So, parents were unable to fulfill the requirements of rapid growth of nestling during this stage leads to weakness and prone to infections of pathogens.

As compared to previous records of Pandey and Jethva (2007) the number of nests decreased in Ahmedabad may be due to rapid urbanization and more human vulture conflict. On the other hand, number of nests increased in Surendranagar due to more food availability along with good vegetation of tall trees near feeding sites and less human vulture conflict.

It was also possible that the fledging of White-rumped Vulture facing dehydration problem during summer (March to May) in the study area. Fledging which affected form dehydration they were weak and unable to fly easily and some had injuries as they fall down from their nests. Another important recommendation to prevent dehydration is to create a shallow artificial water bodies near vulture feeding and nesting sites.

## **Conclusion**

Though the population of White-rumped Vulture is still declining since 1990s, the rate of decline is reduced. However, as the species is K-selected species, breeding success is also important for the recovery of the species in nature. The present study reveals that the nesting success was average about 57% collectively in Ahmedabad and Surendranagar districts, which means that it required species attention for the conservation of this scavenger. Among various stages the most important stage to take care was stage-3 i.e. Nestling largely covered with white feather/downs (NWF) due to high mortality was recorded in this stage.

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