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Avian Diversity of Jhalawar, Rajasthan

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ABSTRACT: Nest has been defined as a structure which is required for the egg laying, their protection and survival of young ones. Choice of nest site is influenced by various factors like food supply, risk of predation and nest ectoparasites which can affect survival of young ones. In birds, habitat selection for breeding may be affected by type and structure of vegetation, availability of food and nest site and chances of predation. Choice of trees on which the nest has been made also depends on the bird species making the nests. They choose plants based on the degree of threats to their nests. Sometimes birds choose trees with large canopies so that the predators can't reach their nests easily. Sometimes birds choose trees with thorny branches of so that these branches will help their young ones to be safe from predators. Sometimes they choose dense shrubs foe nesting so that their will not be discovered easily by predators not only they choose trees on this basis but they also Plants were also chosen for their appealing growth habit; their berry or fruit production, also noted, is an added bonus for birds. Dense clusters of stems are best for many birds to nest within, but some species need a more open branch structure to build their nests upon. Shrubs plants in clusters create a dense cover which birds desire for nest protection. But human disturbance affected the nesting behavior of birds by their habitat loss, changing housing structures and by introduction of exotic species replacing local endemics. Predation, desertion and human disturbance were the reasons for nest failure .Vegetation was the important factor to get shelter and to make nests. Bird nests were influenced by urbanization in many ways. The study on birds nesting on specific host plants is required to conserve both Flora and Fauna of Jhalawar.

KEYWORDS: avian, diversity, Jhalawar, flora, fauna, nesting, birds

I. INTRODUCTION

The present study was carried out to explore the seasonal diversity and status of avifaunain Jhalawar Forest Division of Rajasthan, India, during March, 2014 to February, 2015. Line transect method was followed to survey, i.e. forest, farmlands and wetlands areas etc. A total of 181 bird species belongs to 22 orders and 65 families were recorded during the study period. The order Passeriformes most dominant with 72 species and 28 families with highest relative diversity index 43.08. The anatidae family was most dominant with 14 species and relative diversity index of 7.73. [1,2,3]Further analysis of data for residential status indicates that 133 bird species were resident, 48 bird species were migrant(41 winter + 3 summer + 4 passage visitor). The maximum numbers of species (63 species) were omnivorous followed by insectivores (54 species), carnivores(42 species), granivores (14 species), frugivores (7species) and a nectarivorous. Among bird species International Union for the Conservation of Nature categorized as least concern category, three species critically endangered, one endangered, two species vulnerable, seven near threatened and two species were not evaluated by IUCN. The avian diversity was lower during summer (155 bird species) and higher in winter (170 bird species).These results indicate that Jhalawar forest division attracts more number of bird species diversity. The Jhalawar forest division needs to have better management plan in future for to conserving the landscape in order to support various floral and faunal diversity.

A total of 833 birds belonging to 53 species,49 genera,33 families and 13 orders were recorded during the study period of the total birds 48 (90.6%) were Resident(R) and 5(9.4%) species were migratory(M) 1 species was Endangered,50 species were least concerned and 2 species were Near threatened The bird species were also categorised as Common(C)17, Uncommon (UC)16 Very common (VC)12 and rare(R)8. the feeding guilds of bird species showed that Insectivores 12(22.6%) were dominating the bird community followed by Omnivore 20(37.7%),Carnivore 16(30.2),Frugivore 1(1.9%),Granivore 3(5.7%) and Nectarivore 1(1.9%)respectively

II. DISCUSSION

Birds often constitute the most diverse and attractive fauna of any region. They have very specific habitat and behavior making them the most suitable indicator of habitat condition in an area. Hadoti in Jhalawar, Rajasthan has a rich population of both resident and migrant avian species. A total of 62 species were sighted during the survey. Out of these 54 were resident species and 8 were migratory birds. Birds sightings were more in areas which had ample water,

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trees and greenery. Great Indian [4,5,6]Bustard(state bird of Rajasthan) and Vulture could not be spotted in this survey. Serious efforts for conservation of these birds are required.

Vultures, now on the verge of extinction, ultimately pose a sincere concern for their conservation. According to Ogada et al. (2012), currently fourteen vulture species (61%) are threatened with extinction worldwide, and the most rapidly declining curves occur in the vulture-rich regions of Asian and African countries. Of the nine species of vultures recorded in the Indian subcontinent, five belong to the genus Gyps (Ali and Ripley, 1995; Prakash, 1999; Gadhvi and Dodia, 2006). Of the total recorded species of Gyps vultures in India, three species, namely Gyps bengalensis (Whiterumped Vulture), Gyps indicus (Indian Vulture/Long-billed Vulture) and Gyps tenuirostris (Slenderbilled Vulture), are resident species, while the other two, i.e., Gyps himalayensis (Himalayan Vulture) and Gyps fulvus (Griffon Vulture), are migratory or winter visitors (Prakash et al., 2003). Gyps indicus (Sibley and Monroe, 1990; 1993) is divided into two species: G. indicus and G. tenuirostris (Rasmussen and Parry, 2001).

Vultures, being birds of prey, have highly specialised musculature in their feet, though this has now degenerated to some extent due to changing scavenging patterns or ways of life. The Old World vultures had a comfortable population status until a couple of decades ago, but it changed radically and by the year 2015, eight out of 16 species were considered Critically Endangered (revealing the possibility of their extinction within 10 years), three were endangered, four were Near threatened and only one was of Least Concern. There was a likely and feasible chance that several of these species could become extinct in the near future unless effective conservation measures were implemented in their distribution range. The major reason for the rapid decline in the population of vultures is mainly due to the poisoning of their food, both intentional and unintentional. Due to sincere and optimistic conservation efforts in Europe, the populations of some species like the Egyptian Vulture, Bearded Vulture and Cinereous Vulture have shown observable recovery (Margalida and Oliva-Vidal, 2017). Concerns including habitat[7,8,9] loss or degradation (Carette et al., 2007), food availability, collisions, and electrocution by electrical power lines (Anderson and Kruger, 1995; Boshoff et al., 2011) that work differently in different parts of the world are some other risks to vultures. Rajasthan has one of the largest surviving populations of vultures in India. Of the nine species of vultures found in different habitats in India, seven occur in the Indian state of Rajasthan (Naoroji 2007; Ali & Ripley 2007). Thus, it makes the existential vulture breeding colonies worthy of virtuous protection.

III. RESULTS

• Shultz et. al (2004) showed that the observed high proportions of dead Gyps bengalensis and Gyps indicus carcasses with visceral gout or diclofenac residues were broadly identified in India and Nepal, as indicated in the associated post-mortem findings. • Prakash et. al (2007) surveyed on identified tracks in 2007 to repeat surveys done previously in 1992, 2000, 2002 and 2003 to determine the population trend in three species of vultures and also to get the surviving population trend of vultures in 2007. The results revealed that the vulture population of the three species decreases continually at an alarming rate. The numbers of Oriental white-backed vultures decreased by 99.9% between 1992 and 2007. The analogous decline in the integrated total of Gyps indicus and G. tenuirostris was 96.8%. The Oriental white-backed vultures' average population declined by 43.9% annually between 2000-2007, whereas the G.indicus and G. tenuirostris combined average populations declined by over 16% annually. A complete ban on the use of diclofenac in livestock treatment and the establishment of conservation breeding centres were suggested to prevent the extinction of these three species of vultures. • Chhangani (2007) studied 5,000 vultures of seven species in the Rajasthan and Gujarat states of India. He concluded that besides the NSAID diclofenac, other reasonable causes are leading to vulture decline, such[10,11,12] as habitat loss due to huge mining, quarrying, blasting and logging operations in Rajasthan and Gujarat. Other reasons include the unavailability of food and water, predation or attacks by wild dogs and collisions or accidents. Changes in agriculture and livestock rearing landuse practises have also affected the vulture's breeding ecology. He also imbibes the importance of studying the genetic diversity of all Gyps vultures in India and conducting extensive surveys to ascertain the decline and other issues related to their biology. • Jha (2015) studied three seasons to evaluate the abundance and diversity of vultures in Uttar Pradesh during 2010–11. Of the nine species found in India, six reside in UP. The counts and qualitative evaluations showed that the vulture population had decreased during the previous 10 to 15 years, with the primary causes being the use of diclofenac, a lack of food, and habitat destruction. • Dead carcasses were eliminated on the village outskirts, where crows, egrets and dogs competed with vultures. He suggested effective conservation by securing safe and sufficient food, recovery from accidents and rehabilitation, and a protected environment for the vultures in UP. • Rao (April 2020) found that the vulture population rose by 103% in Bundelkhand in the past decade. However, he also discussed the factors that led to the population decrease, mainly the destruction of forests and disruption of nesting sites. The stray cattle also raise a subsequent concern of invincible

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effects on food and habitat for vultures. He also highlights the threats to[13,14,15] vulture species and the reviving of existential vulture restaurants

The chosen site is situated in the Jhalawar Forest Division's Khanpur Range, nearby Hichar Village. Mukundara Hills Tiger Reserve (MHTR) is located in close proximity to Gidh Karai. The vulture colonies are situated at Latitude 24.656049 and Longitude 76.1821 on the Gidh Karai cliffs beside the Kali-Sindh River. On the Kali-Sindh river bank, vulture colonies can be seen on each side of the cliffs.

India is home to the world's greatest number of cattle. And since vultures are scavengers, they like to eat dead and decaying bodies. Their long, bare necks and lack of feathers allow them to plunge deep into the carrion in search of the inner, softer components. Their efficiency is well-marked, as they can finish a deer or a herd of cattle in less than 20 minutes. However, their natural scavenging behaviour has now become a concern for their survival. To prevent the spread of disease, it is now preferred to adapt the carcass disposal technique by dumping them later. As a result, the vulture population is threatened by a subsequent decline in food availability. The effect of administering diclofenac, a veterinary non-steroidal anti-inflammatory drug, to cattle to treat fever, inflammation, and pain-related illnesses or infections is harmful. It was found to be fatal even in minor dosages, causing renal failure and uric acid accumulation in the blood, as well as crystallisation around internal organs, a disease known as visceral gout. Vultures are the most vulnerable to human meddling or activity. Illegal hunting, power line collisions and electrocution, cliff mining or quarrying, forest degradation through logging or tree felling, livestock grazing, and disturbance by langurs owing to interruptions in their regular routines are all factors that are displacing vultures. In areas of their natural environment, they are threatened by habitat loss. They are slow breeders, laying a single egg during one breeding season, and if their nests are disturbed, they are unlikely to build nests in the same location. When a farmer or livestock owner poisons the bodies of deceased domestic animals to eliminate a rogue predator, the vultures become victims[16,17,18] of retaliatory or inadvertent poisoning. This event occurs occasionally and is not responsible for the population crash. However, the vulture population is so low, that even such operations could result in local extinctions and should be avoided. Insecticides and pesticides that damage the environment and accumulate in water bodies serve as a possible contamination source, resulting in significant losses of these birds due to bio-magnification. Infectious pathogens are another danger to vultures. A post-mortem examination of 28 Indian vulture and White-rumped vulture carcasses collected across India reveals signs of infectious disease (Cunningham et al., 2003).

We may conclude from field observations that there is a significant amount of the immature population in this location. This emphasizes the necessity of preserving the area so that critically endangered Indian vultures and endangered Egyptian vultures can continue to thrive in their native habitat. Nesting takes place during the winter months, from November to February. Therefore, limiting people's movement and eliminating external disruptions in this location will help the vultures overcome their psychological dread. There is a good record of Indian Gyps vultures and Egyptian vultures at the site. Crocodiles in the Kali Sindh River and Hanuman langurs are also seen. Conserving them offers significant benefits for the Jhalawar region's environment, including: Carrion acts as a breeding environment for potentially harmful bacteria, perhaps leading to direct or indirect infections, and is a source of diseases such as anthrax. Therefore, an increase in uneaten carcasses in adjacent settlements offers a direct hazard to human health. Vultures clean the environment and safeguard humans, livestock, and wildlife from diseases and sickness by quickly and efficiently eliminating carcasses. Wider environmental consequences could include pollution from rotting carcasses and the spread of illnesses such as rabies as the feral dog population expands. 6. Recommendations Measures for the conservation of vultures Based on the field observations, the following measures can be taken: 1. Eliminating the principal causal agent, diclofenac, from the environment by preventing diclofenac from entering the veterinary sector through human formulations. 2. Designating the region as a Conservation reserve will provide legal protection for the vulture site while also restricting human mobility in the area. 3. Submitting the location to the State Forest Department for inclusion in Vulture Safe Zones (VSZ), which have been recommended to be established in various sections of the country to protect the country's remaining vulture population. 4. Collecting dead vultures to determine the reasons for their deaths in order to monitor vulture conservation and recovery. 5. Establishing and expanding a vulture breeding and care centre 6. Preventing more deaths by keeping a careful eye on unlawful mining in these areas. 7. Raising awareness, particularly among veterinary formulation users, to decrease the impact on vultures. 8. Monitoring the implementation of the "Vulture Conservation Action Plan[19,20] 2020-2025." 9. DECLARATION OF THIS AREA AS A VULTURE SAFE ZONE: After two years of searching, a VSZ could be established, ensuring that: 1. No Diclofenac or visceral gout was identified in deceased vultures in the area, and 2. Vulture numbers within the VSZ are either steady or expanding. 3. Vultures can also be found in Mukundara Hill Tiger Reserve's surrounding locations. In the future, appropriate research can be conducted in that location, and the site can be preserved for the Vultures. 7. Future Action Plan at the State Level • The Role of State Forest Departments All PCCFs (Wildlife) and CWLWs will

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be responsible for executing the APVC 2020–2025, according to the Action Plan for Vulture Conservation (APVC). • Setting Up State Committees The MoEFCC will instruct state forest ministries to form state vulture conservation committees to carry out the NC's recommendations and instructions. The State Committee will be composed of the Forest Secretaries of all state governments, with the Chairman being the PCCF and CWLW, and the members being the Director General/Director, Animal Husbandry, and Drug Controller. The BNHS will be a nonofficial member, and the Member Secretary will be CCF (Wildlife) HQ. The committee will oversee the state's implementation of APVC 2020–2025. The responsible agency will be in charge of carrying out the NC's decision.

Other Efforts: o National: • The Vulture Conservation Breeding Programme was established by CZA and BNHS in collaboration. For the breeding and conservation of Indian vulture species, a Jatayu Conservation Breeding Centre (Asia's first vulture breeding facility) has been established at Pinjore. In 2001, the Vulture Care Centre (VCC) was founded to investigate the causes of vulture fatalities. • MoEFCC is in charge of implementing the Action Plan for Vulture Conservation 2020–2025 (APVC), which includes the combined efforts and active cooperation of MoH&FW and MoAHDF for vulture conservation in India. To some extent, the Ministries of Power, Renewable Energy, Chemicals, and Fertilizer will also need to be incorporated. As a result, it would necessitate crossministerial cooperation, making the conservation of vultures far more difficult than that of any other wild species. o International: SAVE (Saving Asia's Vultures from Extinction) The consortium of 24 organisations that establish virtuosity in vulture conservation was established in 2011 that coordinates conservation, fund-raising and campaigning to help save vultures. Its objective is to promote worthy action to prevent the extinction of Gyps vultures in South Asia. International Action Plan The APVC benefits from international programmes such as the Vulture MsAP (Multi-Species Action Plan to Conserve African-Eurasian Vultures), produced by the Conservation of Migratory Species (CMS) Raptors MoU, SAVE & National Action Plan, and the Vulture Conservation Action Plan for Nepal 2015–19. CMS Parties adopted it at COP12, which took place in Manila, Philippines, from October 23 to October 28, 2017. All nine species of vultures found in India are included in the action plan

IV. CONCLUSION

The present study which recorded 53 species of birds reflects a moderately healthy overall biodiversity for the study location. But it must be mentioned that the study locations under present investigation are facing anthropogenic disturbances in the forms of urbanization, mining activities, livelihood dependence. Therefore, there is an urgent need to take conservation measures that would aim in the better animal habitat management programs in that area. To conclude it may be noted that the area was studied for a short time span, a more intensive study would surely result in identifying more birds[20]

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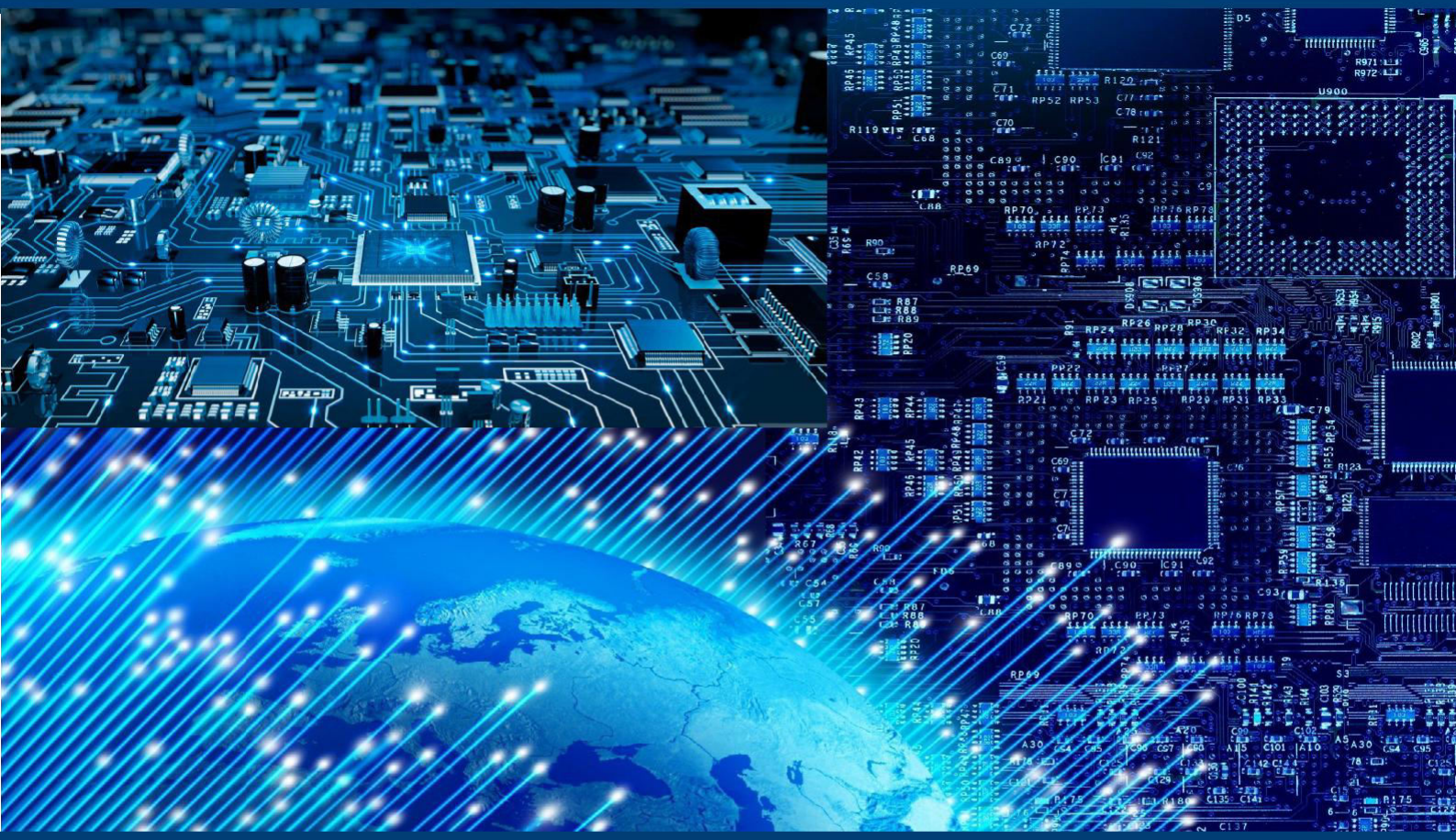

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