

# Technical Report of Vulture Safe Zone, Madhya Pradesh 2022-23



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**MISSION:**

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through action based on research, education and  
public awareness

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# **Technical Report of Vulture Safe Zone, Madhya Pradesh 2022-23**

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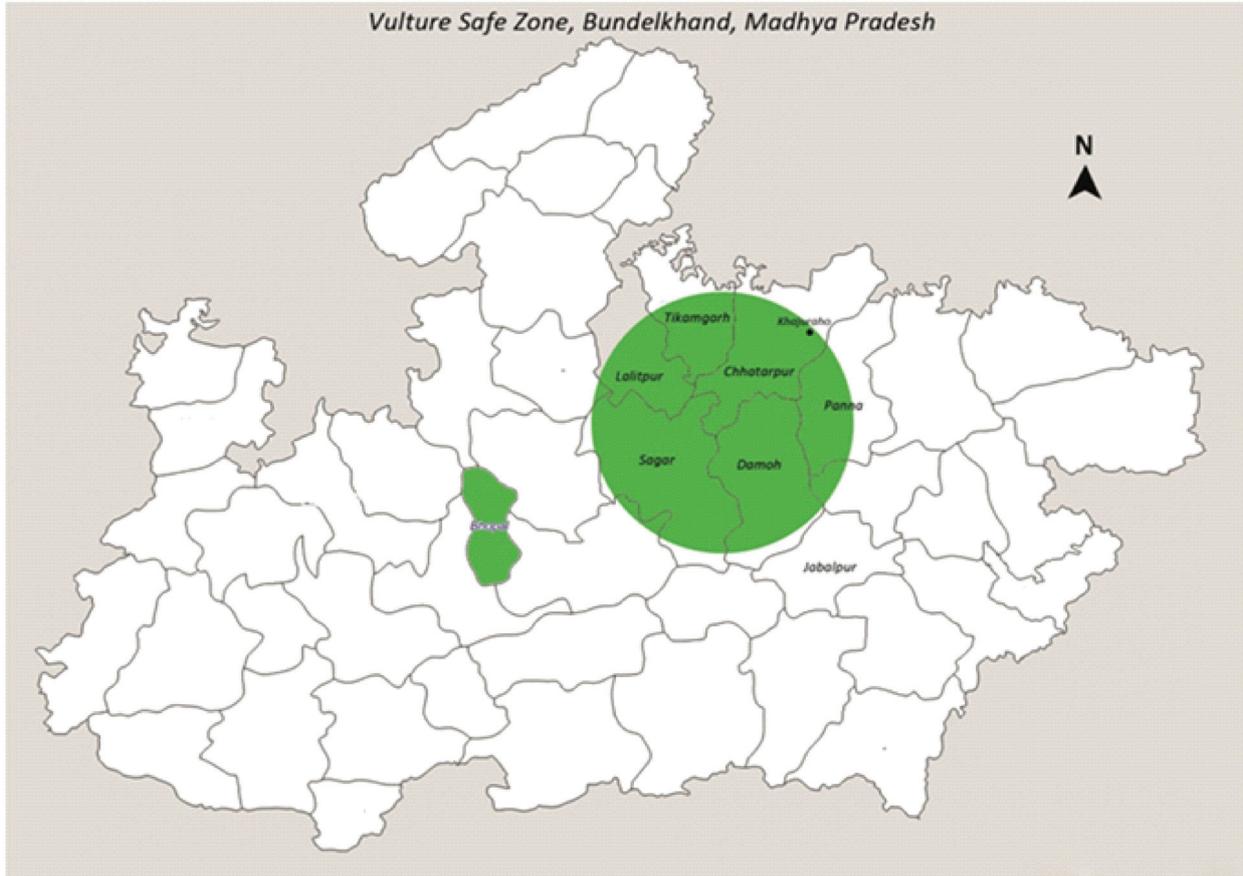
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## Location

The work for creating a Vulture Safe Zone was initiated at the study area within a radius of 100 km from an existing vulture colony at Buxwahain district Chhatrapur of Madhya Pradesh. The area fell within the normal distribution ranges of White-rumped vulture and Long-billed vulture. These two species were our target species for conservation action.



**The proposed Vulture Safe Zone (circled area) in Madhya Pradesh**

## Introduction

Vulture Safe Zones are established to make the area, where there are extant populations of resident Gyps vultures, free from the veterinary drug diclofenac and other drugs that are toxic to vultures.

### **The studies were initiated with the following objectives:**

1. To obtain ecological information on the population of vultures in the region, as well as the prevalence of diclofenac and other vulture-toxic NSAIDs,
2. To carry out targeted advocacy and awareness programmes with various stakeholders to completely remove the drug diclofenac from veterinary use, and
3. To evaluate the efficacy of the undertaken conservation actions.

The main strategy for establishing the Vulture Safe Zone was to carry out targeted advocacy and awareness programmes among various stakeholder groups, including the Forest Department, Food and Drugs Administration, Animal Husbandry Department, District Administration, Education Department, Public Relations Department, students, teachers and members of general public. Thus, the targeted advocacy and awareness programmes formed the conservation actions.

Evaluation of the effectiveness of conservation action was done by regularly monitoring the vulture populations, carrying out periodic undercover pharmacy surveys to estimate the prevalence of diclofenac and other NSAIDs in the region, and cattle carcass sampling to find out the actual use of diclofenac in cattle treatment in the region.

## Project Highlights

### Conservation actions: advocacy and awareness meetings

During the period April 2022 to March 2023, a total of 45 advocacy meetings were held with officials from various Government stakeholder departments. Of these, 32 meetings (21 state-level, 3 circle-level, and 8 district-level) were held with the Forest Department, 9 meetings (5 state-level, 2 circle-level, and 2 district-level) were held with the Animal Husbandry Department, and 4 meetings (3 state-level, 1 district-level) were held with the Food and Drugs Administration. Moreover, 4 meetings were held with the President/ Secretary/ Members of the Chemists and Druggists Associations and 11 meetings were held with senior management of cattle shelters throughout the pVSZ. The officers were apprised about the vulture conservation efforts in the area and sensitized regarding the ongoing vulture situation. They received the meetings well and assured co-operation when required.

Over 2,500 people from various stakeholder groups, including Forest Department staff (150 people), staff of Animal Husbandry Department including Veterinarians (200 people), untrained veterinarians (80 people) cattle owners (600 people), school students (300 people), and community (over 1200 people) were directly sensitized through one-to-one and group meetings during the study period from April 2022 to March 2023.

On International Vulture Awareness Day 2022, BNHS organised an awareness programme with the collaboration of the MP forest department in two range offices, i.e., Bijawar and Buxwaha Ranges. The objective of this programme was to train and educate field staff of the Forest Department about vulture identification and sensitize them about the pVSZ



**Figure 1: Awareness program with approx. 70 field staff of the Forest Department of forest ranges Buxwaha and Bijawar during International Vulture Awareness Day 2022.**



**Disseminating awareness on vulture conservation among various stakeholder group using vulture plaque**



**Sensitization among school students regarding vulture conservation**

Bundelkhand project. Approx 70 forest officials (including SDO, Range Officer, Forester, and Forest Guard) of both ranges attended the program (Fig. 1). The programme met its objective, and the staff received field knowledge that can be used during vulture census. The staff was cooperative, and their eagerness to learn more about this charismatic species aided the program's smooth operation.

A National-level Conference on Vulture Conservation and Reintroduction in Madhya Pradesh was co-organized by the M.P. Forest Department, Van Vihar National Park-Zoo, Bhopal, and Bombay Natural History Society on the 20th and 21st March 2023 at Bhopal. The august two-day conference was attended by representatives from the Madhya Pradesh Forest Department, Animal Husbandry Department, Food and Drugs Administration, Archaeological Survey of India, Indian Veterinary Research Institute, Wildlife Institute of India, and civil society organizations such as the Bombay Natural History Society, Royal Society for the Protection of Birds, World Wide Fund for Nature-India (WWF-India), and Arulagam. A total of 72 participants attended the conference, many of which were high-level officials (Fig. 2).

The highlight of this conference was a brainstorming session convened by Smt. Padmapriya Balakrishnan, IFS, Field Director, Van Vihar National Park-Zoo, which led to the passing of a Resolution on “Establishment of Vulture-Safe Districts Within Vulture Hotspots of M.P.” under the chairmanship of the Chief Wildlife Warden of M.P. Another notable achievement of this conference was that the Animal Husbandry Department took cognizance of its vital role in vulture conservation and pledged to ensure that all veterinarians of the state would not use vulture-toxic veterinary drugs, including diclofenac, aceclofenac, ketoprofen, and nimesulide, for the treatment of animals, and would promote the use of the vulture-safe drugs meloxicam and tolfenamic acid. All state-level stakeholders agreed to meet annually on the International Vulture Awareness Day to review the progress of conservation action identified for each stakeholder and agree upon the best way forward.

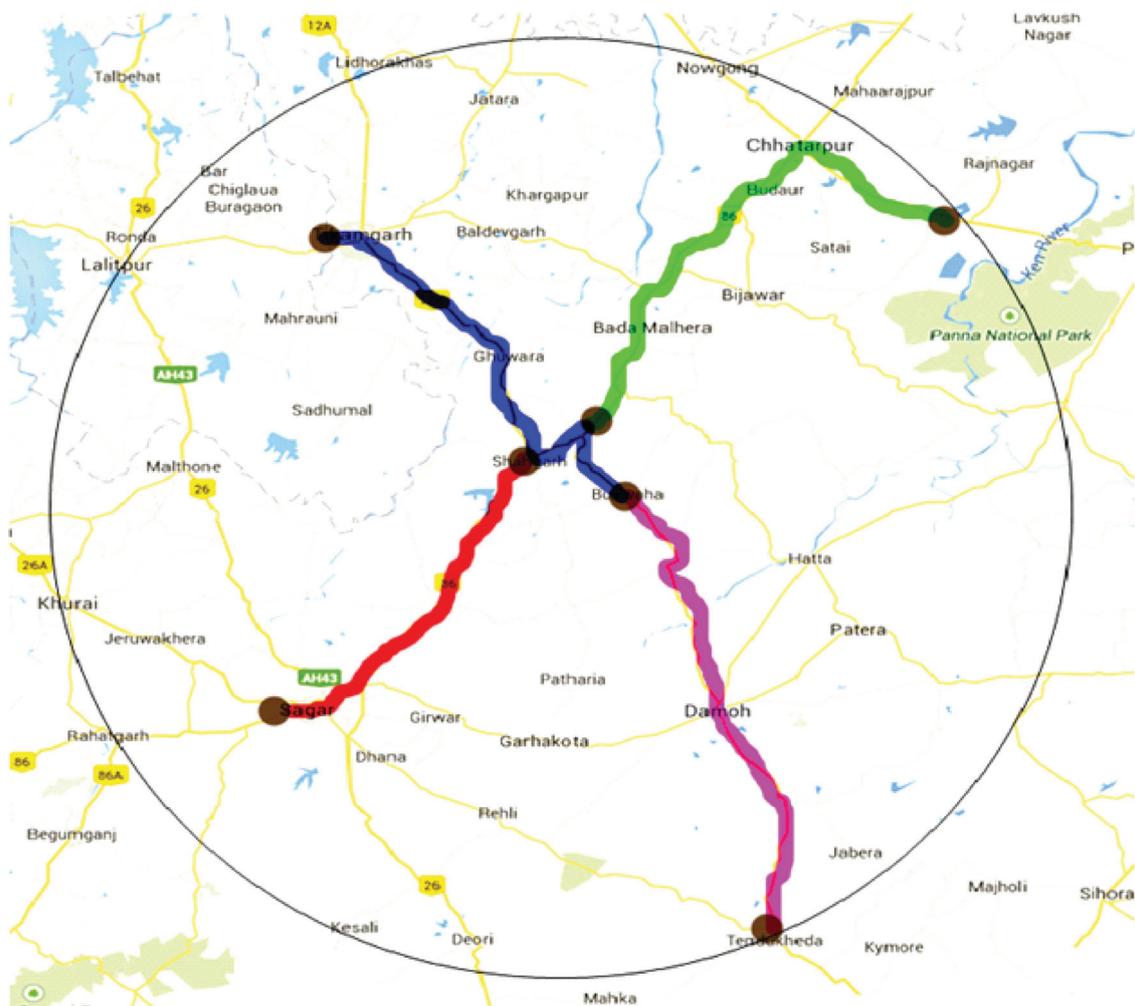


Figure 2: Participants of the vulture conference at Bhopal on 20-21 March 2023

### Assessment of the effectiveness of conservation actions

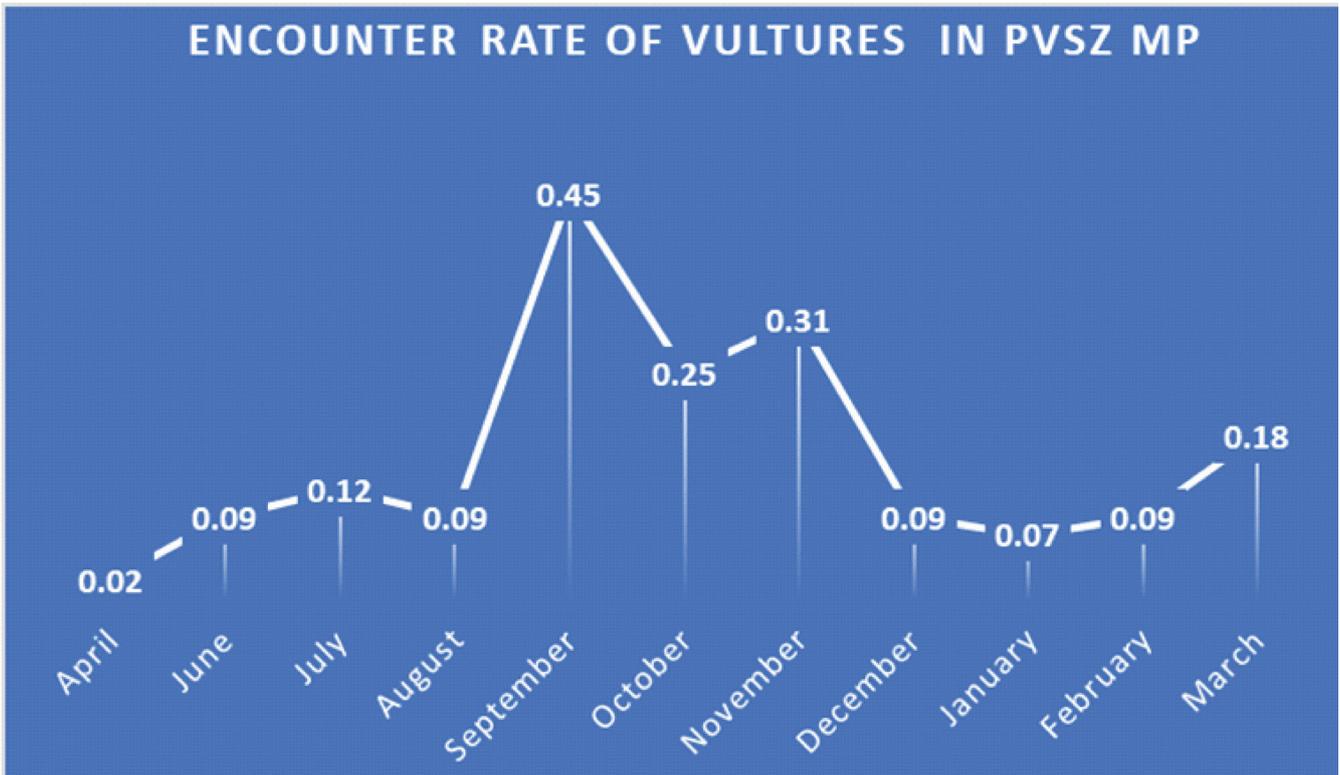
Monitoring the vulture populations in the Vulture Safe Zone: The most important indicator of the effectiveness of vulture conservation actions is the trend in population of vultures in the region. A stable or increasing population indicates that the conservation actions are effective, whereas a decreasing population indicates that an improvement or modification of the conservation strategy is required. The vulture populations were monitored using three methods, road transect method, total count method at vulture foraging sites, and nest count method at nesting colonies.

Road transect method: This was conducted by two researchers seated on either side of a vehicle driven along a pre-determined route at slow speeds of < 40 km/h. Perched and low-flying vultures sighted up to a distance of 500 m from the vehicle were recorded. This gave an idea of the minimum resident population of vultures in the region. Road transects along four pre-determined routes were covered every month from April 2022 (Fig. 3). A maximum of 105 Long-billed vulture, 32 White-rumped vulture, 45 Egyptian vulture, 5 Red-headed vulture, 20 Eurasian Griffon, and 3 Himalayan vultures were sighted during the transects. However, these maximum counts for each species were recorded in different months. Nevertheless, the surveys indicated that the frequency of sighting vultures had increased (maximum encounter rate = 0.45 vultures/km) (Fig. 4) compared to the previous year (maximum encounter rate = 0.17 vultures/km). This finding suggested that the population of vultures may be increasing.



**Figure 3: Road transects along four predetermined routes: Hirasgarh to Sagar, Hirasgarh to Bamitha, Buxwaha to Kundeswar, and Buxwaha to Tendukheda, were conducted every month.**

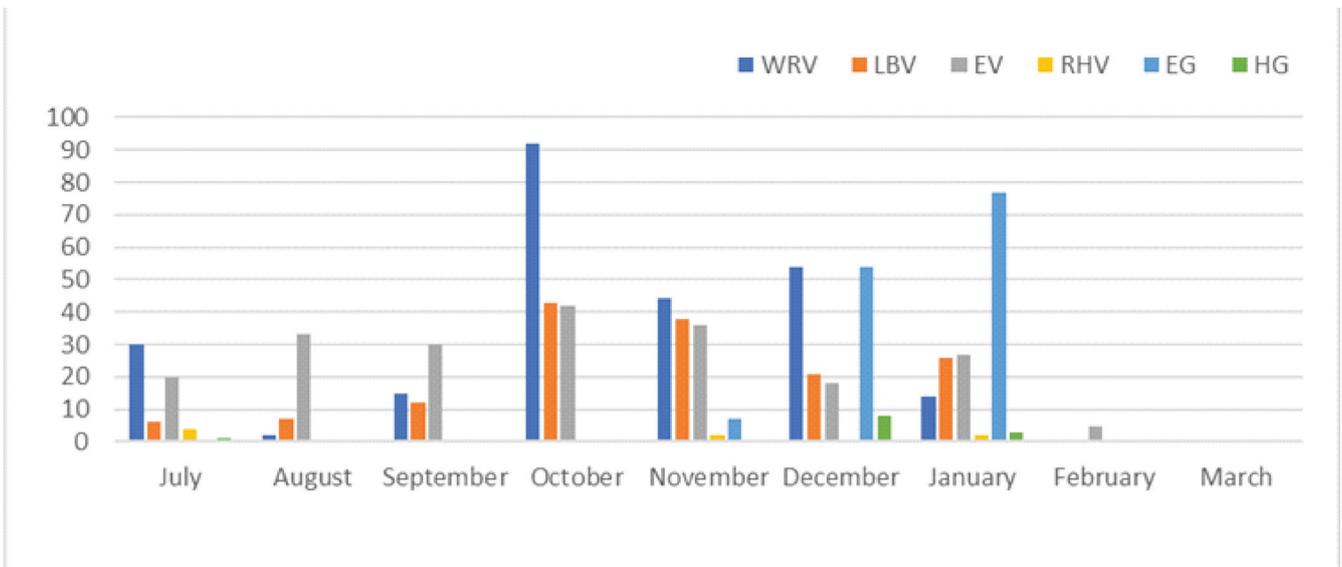
**Total count method:** This was done by visiting the carcass dumps or food concentration sites for vultures between 9:00 am to 4:00 pm (the time when most of the vultures forage) and quickly counting all the vultures feeding on the carcasses, perched on trees nearby, or in low-flight just above the dump. The foraging vulture population was also monitored every month at four carcass dumps in the proposed Vulture Safe Zone, M.P. from June 2022 to March 2023. Gyps vultures were recorded only at the carcass dump in Banda, Sagar district (Figs. 5, 6).



**Figure 4: Encounter rates of all species of vultures during the four transects conducted monthly throughout the year. Although variations were observed across months, vultures were sighted along all transects regularly. The maximum number of sightings (observed in September 2022) was compared with the maximum number of sightings in 2021-22 (also observed in September) to determine the trend in vulture population.**



**Figure 5: Gyps vultures were commonly sighted at the carcass dump in Banda, Sagar district**



**Figure 6: Number of sightings of different species of vultures at the carcass dump in Banda, Sagar district. The maximum number of vultures was recorded in October 2022. The number of sightings of vultures dropped significantly after February 2023 as the method of carcass disposal changed to burial.**

The carcass dump at Banda was the large dump in the area. In all 154 cattle carcasses were recorded at the dump but only 13% carcasses were attended to by the vultures and 45% carcasses attended to by dogs; 42% carcasses were left unattended. This shows that the area could support large population of vultures but only a small population actually forages in this area.

**Nest count method:** This was done by regularly visiting the identified nesting sites/colonies of vultures and counting the number of active nests, as well as the number of nesting and non-nesting vultures. During the visit to the nesting sites, the nesting status can also be monitored, which indicates the breeding success at the colony. A total of three nesting colonies (2 of White-rumped vulture and 1 of Long-billed vulture) were monitored every month from June 2022 to March 2023.



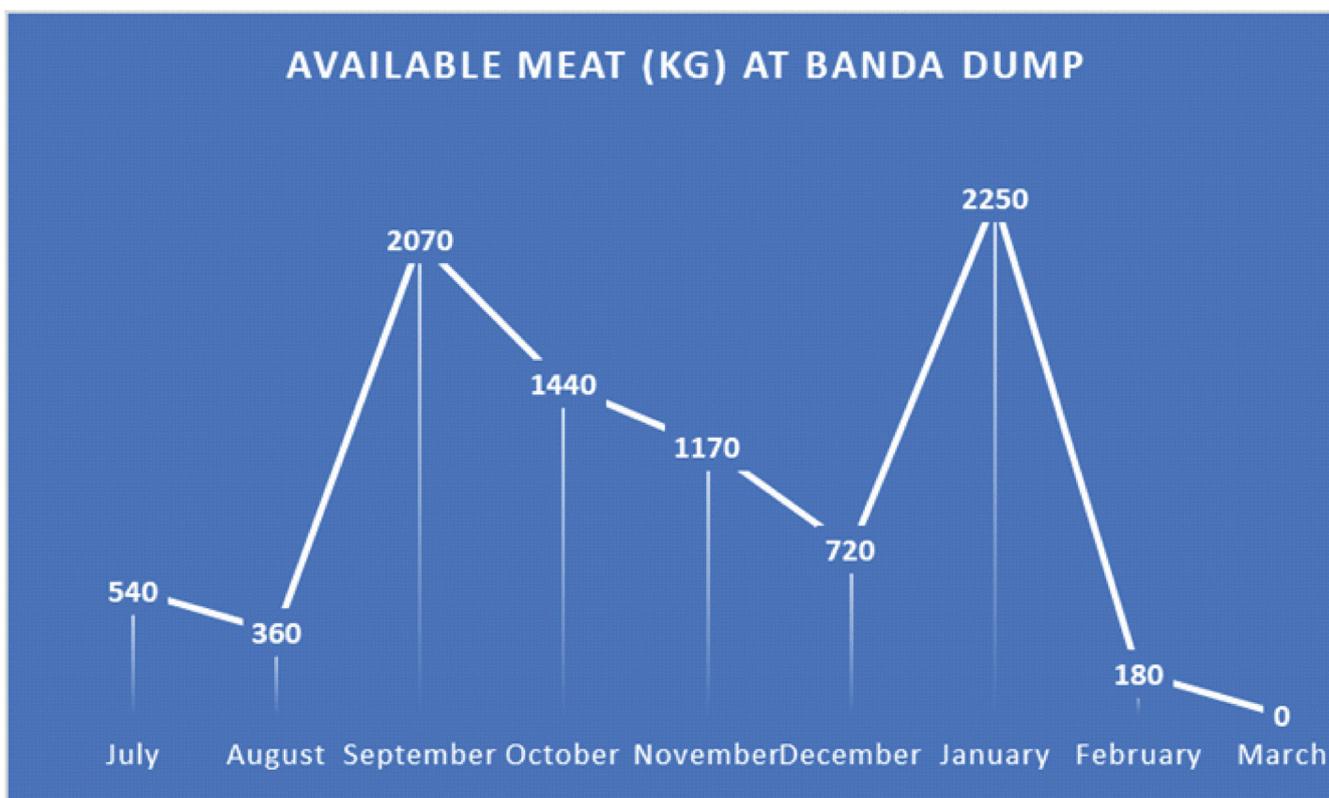
**Figure 7: Long-billed vulture nesting colony at Singaugarh.**

In all, 37 nests of White-rumped vulture were monitored. A total of 26 eggs hatched and the nestlings were raised by the parents. The hatching success recorded was 70.3%. The nests were monitored in two colonies.

The colony of Long-billed vulture at Satai had 9 active nests. As of March 2023, there were 6 nestlings in the colony. All the nestlings recorded in March were almost fully grown and appeared ready to fledge. The hatching success was 66.67%.

It appears that there is good population of vultures in the area and the captive-bred vultures could be released here.

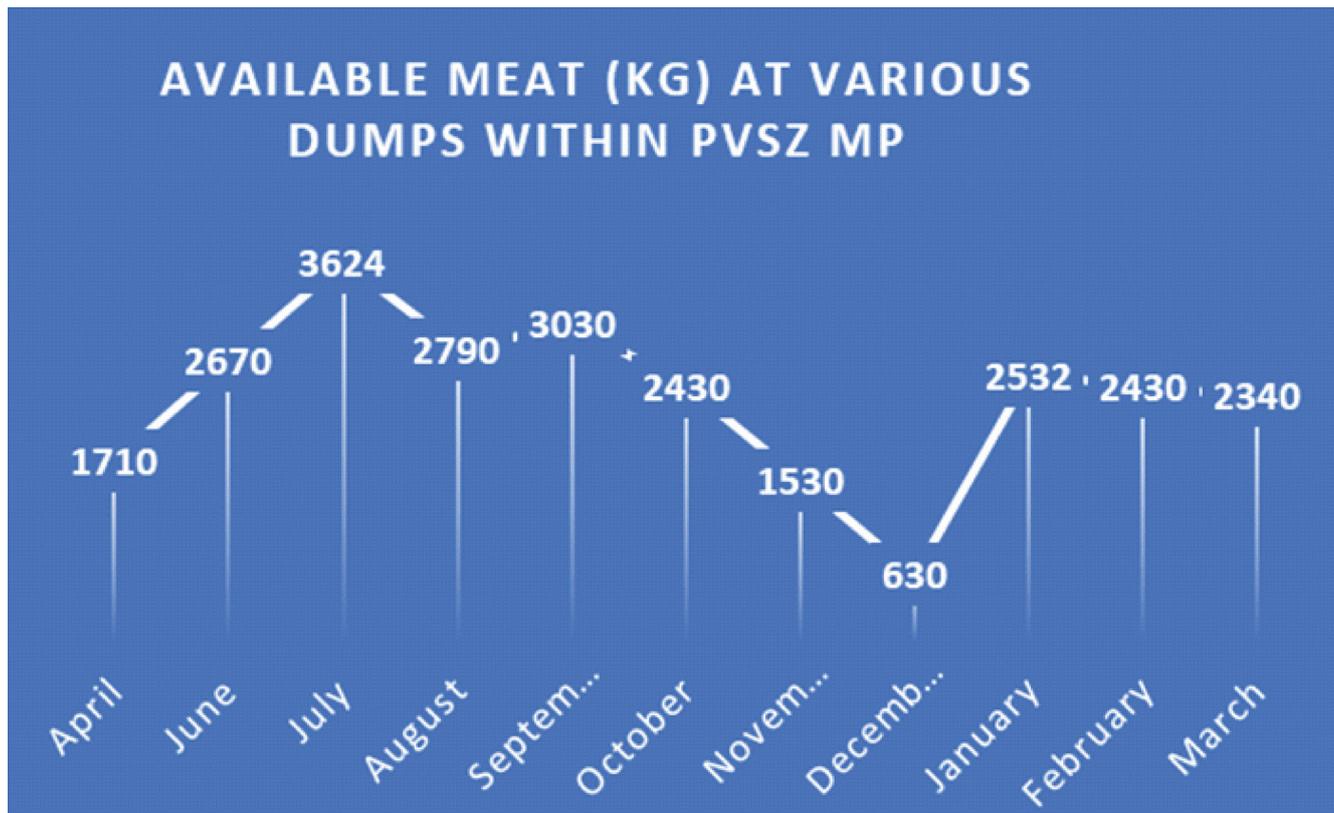
**Monitoring the availability of food for vultures:** Regular food supply for vultures was recorded at Banda dump throughout the year (Fig. 8). The highest quantity of 2,250 kg meat was recorded after subtraction of 40% weight of hide and bones in the month of January. However, since February 2023, the Gaushala management started burying the cattle carcasses, because of which the food availability for vultures decreased.



**Figure 8: Estimated quantity of meat available for vultures at the carcass dump in Banda, Sagar district. The quantity was estimated from the number, species, age, and consumption status of carcasses at the time of observation. Approx. 40% weight representing hide, bones, and wastage was subtracted and only the remaining 60% weight was considered for analysis.**

A few dumps were monitored opportunistically to estimate food availability for vultures within pVSZ. Carcasses were also recorded during the road transects. The results indicated that food was available throughout the year for vultures. A maximum of 3,624 kg meat was recorded in July 2022, and the minimum was recorded in December 2022 (630 kg) (Fig. 9). The mean monthly quantity of meat was 2,338 kg. The quantity of meat available for vultures was not only sufficient to feed the existing population of vulture but also could support several additional vultures. Thus, food does not appear to be a limiting

factor for the population of vultures. The number of skeletons recorded during survey shows that food supply is regular in dumps. It should be noted that the estimated food availability is based on sample surveys and the actual availability could be much higher.



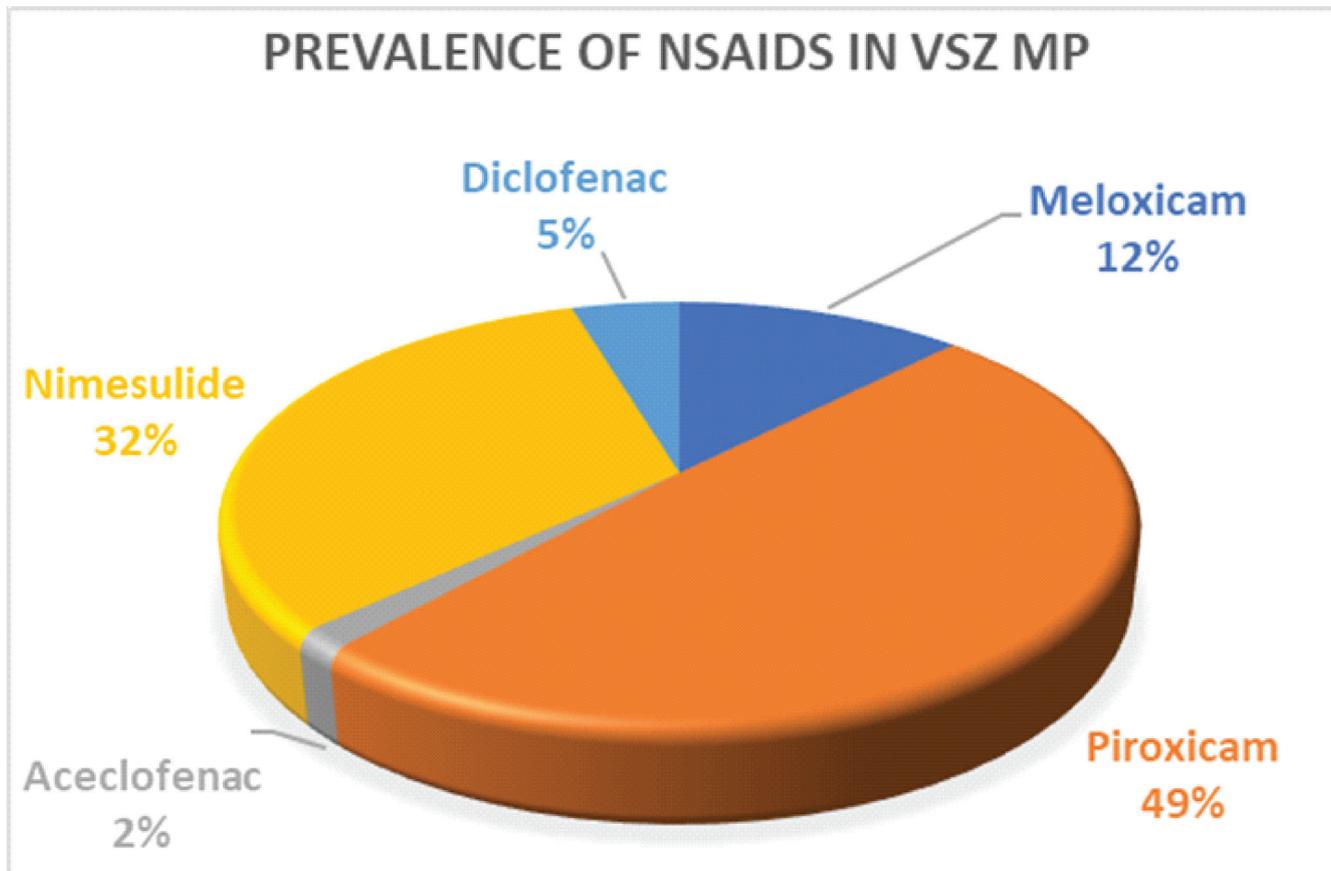
**Figure 9: Estimated quantity of meat available for vultures at various carcass dumps and roadside dumps throughout the pVSZ MP. The quantity was estimated from the number, species, age, and consumption status of carcasses at the time of observation. Approx. 40% weight representing hide, bones, and wastage was subtracted and only the remaining 60% weight was considered for analysis.**

### Assessment of the prevalence of various NSAIDs for cattle treatment in the VSZ

To assess the availability of various NSAIDs for treatment of cattle, with emphasis on the vulture-toxic NSAIDs, undercover pharmacy surveys were carried out at randomly selected pharmacies in 75 villages/towns/tehsils in the Bundelkhand region of Madhya Pradesh. The undercover pharmacy surveys were conducted by a local field assistant posing as a cattle owner and asking the pharmacist for a drug to treat his cow/buffalo suffering from pain and inflammation. The first offered drug was purchased and the Biologist would record all relevant details from a distance. A total 73 pharmacies were surveyed of which 68 in Madhya Pradesh and 5 in Uttar Pradesh.

In 2023, a total of 73 pharmacies from different tehsils of the six districts were surveyed. Among them a total of 65 pharmacies offered NSAIDs, while other 1 pharmacy sold antibiotics for veterinary use and 8 pharmacies refused to sell any drug without prescription of a veterinary doctor. Among the pharmacies that sold NSAIDs, 4.6% (n=3) pharmacies sold the human formulation of diclofenac, one of which was a 30 ml vial and remaining two were 3 ml ampoules. Eight pharmacies (12.3%) sold meloxicam for treating cattle either in pure form (n=3) or in combination with paracetamol (n=5). Both bolus (n=1) and injectable (n=7) formulations of the drug were provided. The injectable samples were in vials of 100ml and 30ml, whereas the bolus variant of the drug was (100mg meloxicam+2000mg paracetamol). The drug piroxicam was the most popular drug, which was available as a combination drug with

paracetamol. A total of 32 pharmacies (49.2%) sold the drug. Twenty-seven bolus formulations and five injectable formulations of the drug were recovered. The prevalence of various NSAIDs at pharmacies throughout the pVSZ MP is presented in Figure 10.



**Figure 10: Prevalence of various NSAIDs at pharmacies in the pVSZ MP in January 2023. The results are based on undercover pharmacy survey at 73 pharmacies at different tehsils in six districts. Piroxicam is slowly becoming the new market favourite NSAID for cattle treatment**

**Challenges Faced**

- Change in carcass disposal method at the major carcass dump in Banda, Sagar district**  
 In February 2023, the management of the cattle shelter at Banda, Sagar district, decided to start using burial as the carcass disposal method. This led to a significant reduction in the number of sightings of vultures at the dump, which used to be vital information available throughout the year. This challenge will be mitigated by advocating with the cattle shelter management and district administration to consider continuing with open disposal of untreated cattle carcasses. Also, new carcass dumps will be actively searched for/ indicated by the tagged wild vultures and monitored regularly.
- Insufficient staff**  
 Currently, only one Research Biologist is present at the pVSZ MP, which is insufficient to effectively carry out all the proposed activities. This will be partly mitigated by shifting a Conservation Biologist from the pVSZ U.P. project.

## Way Ahead

The project will continue to collect information of the vulture populations, prevalence of various veterinary NSAIDs, food availability to vultures and if there is any other problem to the survival of vultures. We will strive to sensitize the public, decision makers and other stakeholders about the role of the killer drug, diclofenac and other toxic NSAIDS like aceclofenac, ketoprofen, nimesulide, in the vulture population declines and the availability of alternative safe drug meloxicam for treating cattle. Satellite tagging of wild vultures (20 White-rumped and 20 Long-billed vulture) has been proposed to assess the survival rate of vultures in the wild and determine the safety of the environment to vultures, to prepare for the eventual release of captive vultures.