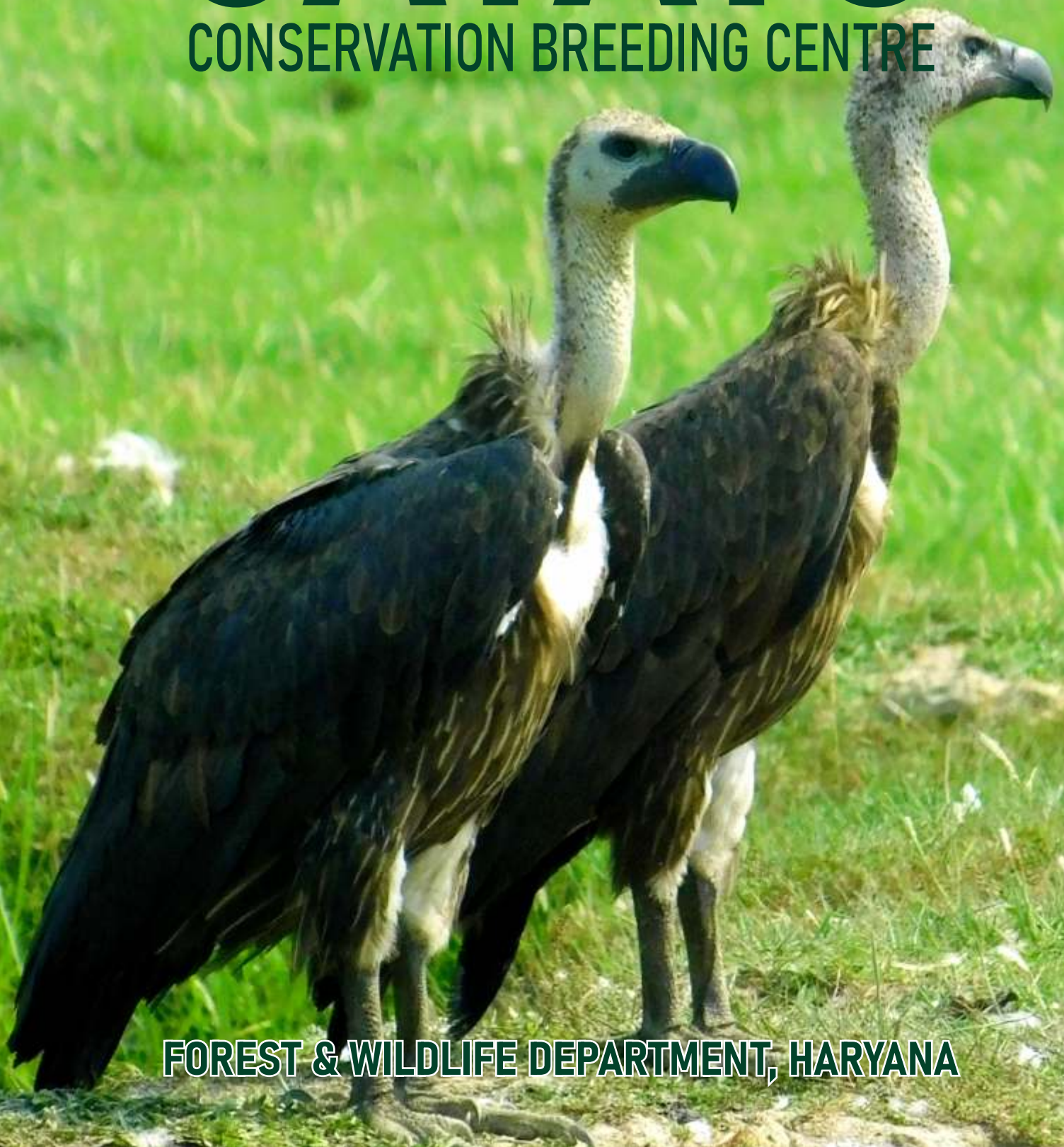




# JATAYU

## CONSERVATION BREEDING CENTRE



**FOREST & WILDLIFE DEPARTMENT, HARYANA**





## **A Booklet on “JATAYU CONSERVATION BREEDING CENTRE”**

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## PREFACE

This booklet highlights the Jatayu Conservation Breeding Centre (JCBC) in Pinjore, dedicated to conserving Gyps vultures. A collaboration between the Haryana Forest Department and the Bombay Natural History Society (BNHS), JCBC was established to save three critically endangered species: the White-rumped, Long billed and Slender billed vultures.

Founded in September 2001 as the Vulture Care Centre (VCC) with funding from the UK Government's 'Darwin Initiative for the Survival of Species' and land from the Haryana Forest Department, JCBC initially investigated the decline of India's Gyps vultures. Following the South Asia Vulture Recovery Plan, it evolved into the first Vulture Conservation Breeding Centre.

Located on five acres in Jodhpur village near Bir Shikargaha Wildlife Sanctuary at Pinjore, JCBC houses 384 vultures, including 98 White-backed, 221 Long billed and 65 Slender-billed vultures—the largest captive collection of these species globally.

Supported by national and international organizations, JCBC leads vulture conservation in Asia. As India's Coordinating Zoo for Vulture Conservation, it has successfully bred all three critically endangered Gyps species and pioneered double clutching and artificial incubation. JCBC was the first in India to reintroduce captive-bred birds into the wild, with released birds breeding successfully with wild populations.

JCBC prioritizes releasing vultures in areas where they are locally extinct, and aiming for nationwide reintroduction. It continues to breed birds to establish founder populations for new breeding centres across India.

BNHS and the Haryana Forest Department have paved the way for Jatayu's survival in India. Thank you for supporting this crucial mission to secure a future for India's vultures.

**Director  
BNHS**







**Vineet Kumar Garg, IFS**

## FOREWORD

The three critically endangered Gyps species of vultures, White-rumped *Gyps bengalensis*, Long-billed *Gyps indicus* and Slender-billed *Gyps tenuirostris* are housed at Jatayu Conservation Breeding Centre (JCBC), Pinjore-a coordinating zoo of Central Zoo Authority for vulture conservation breeding. The Centre was established in 2004 following the recommendations of the Vulture Recovery Plan of 2004, as an insurance against possible extinction of the species. The population of the three species crashed in mid-nineties because of the veterinary use of pain killer drug, diclofenac. This drug causes renal failure in vultures.

The Centre, for the first time ever, has been successful in breeding all the three species in captivity and houses over 389 vultures-the highest number held by any facility in the world. The Centre, by the use of artificial incubation, double clutching and chick swapping, has managed to increase the productivity in these slow breeding and long living species by raising over 390 nestlings. All the birds are marked with a leg ring and a microchip in the breast muscle for permanent identification. Over 60 captive bred vultures from this Centre have been shifted to other Centres for genetic management during the year 2023-24. Eight vultures have been reintroduced in the wild, so far from this Centre.

The Centre has also produced a Working Manual of best practices for housing, husbandry, veterinary care and feeding of vultures in captivity for ensuring uniform management practices in all other Centres.

It is hoped that this booklet will play important role in vulture conservation through awareness.

**PCCF (Wildlife) cum Chief Wildlife Warden**  
Forest & Wildlife Department, Haryana





# INTRODUCTION TO VULTURES

Vultures are fascinating and often misunderstood birds that play a crucial role in maintaining the balance of ecosystems. With 23 species worldwide, these birds are found on every continent except Australia and Antarctica, thriving in a variety of habitats, including suburban regions. Despite their adaptability, 14 species are currently considered threatened or endangered, highlighting the importance of ongoing conservation efforts.

**Ecological Role:** Vultures are most efficient natural scavengers, feeding primarily on dead animals and thus keeping the environment clean by preventing the spread of diseases. Their strong stomach acids destroy harmful bacteria found in decaying carcasses, underscoring their essential ecological role in disease control.

**Adaptations:** Vultures are specially adapted to their scavenging lifestyle. Vultures have strong beak, little or no hair on their heads, which helps them stay clean while feeding on carcasses. Their keen senses of sight and smell enable them to locate food from miles away and their powerful flying abilities due to huge wing span allow them to soar on thermals, scanning vast territories for their next meal.

**Social Behavior:** Unlike many solitary raptors, vultures are social birds often seen feeding, flying, or roosting in large flocks. These groups have unique names: a "committee," "venue," or "volt" when roosting, a "kettle" in flight and a "wake" when feeding together at a carcass.





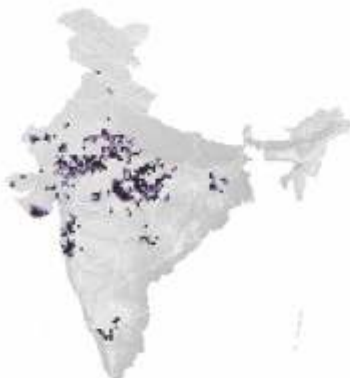
# VULTURES OF INDIA

Among the 23 vulture species worldwide, India is home to nine species, both resident and migratory, each playing a crucial role in the ecosystem. The resident species include Long-billed Vulture (*Gyps indicus*), White-rumped Vulture (*Gyps bengalensis*), Slender-billed Vulture (*Gyps tenuirostris*), Red-headed Vulture (*Sarcogyps calvus*), Bearded Vulture (*Gypaetus barbatus*) and Egyptian Vulture (*Neophron percnopterus*), which has three subspecies worldwide—one resident, one migratory and one not found in India.

Migratory species such as Himalayan Vulture (*Gyps himalayensis*) and Griffon Vulture (*Gyps fulvus*) visit India during winter, soaring over the northern regions and high-altitude areas of the Himalayas. Cinereous Vulture (*Aegypius monachus*), another winter migrant, is seen in northern India. Notably, the Jatayu Conservation and Breeding Centre is dedicated specifically to the conservation and breeding of three resident *Gyps* species.

## DISTRIBUTIONS OF RESIDENT GYPS VULTURES IN INDIA

**LONG BILLED VULTURE**  
(*Gyps indicus*)



**WHITE RUMPED VULTURE**  
(*Gyps bengalensis*)



**SLENDER BILLED VULTURE**  
(*Gyps tenuirostris*)





# VULTURE IN CULTURE

## IN INDIAN CULTURE:



**Ramayan:** In the Indian epic Ramayana, Jatayu and Sampati, sons of Aruna, the charioteer of the sun god Surya, were vulture demigods. Initially, they competed to fly higher, leading to Sampati sacrificing his wings to shield Jatayu from the sun, leaving himself wingless. Later, Jatayu encounters Ravan abducting Sita and courageously tries to rescue her. Despite being elderly, Jatayu fights valiantly but is fatally wounded. Before dying, he informs Shree Ram of Sita's abduction. Touched by Jatayu's sacrifice, Shree Ram performs his last rites. Meanwhile, Sampati aids Rama's army by guiding Hanuman and Jambavan to Lanka when they are hindered by the sea. Sampati's exceptional vision proves crucial in locating Sita. These tales from the Ramayan highlight themes of sacrifice, bravery, and divine intervention, underscoring the importance of loyalty, courage and selflessness in overcoming adversity.

**Vulture as a Vahana of Planet God Shani (Saturn):** In Indian astrology, the vulture, along with the crow, is depicted as the vehicle of Shani, the deity associated with the planet Saturn. Shani is known for his principles of justice and retribution and the vulture symbolizes vigilance and protection within Indian cultural symbolism





## IN OTHER CULTURE:



**Zoroastrianism:** In Zoroastrianism, vultures are integral to the sky burial ritual of the Parsi community. Deceased individuals are placed in Towers of Silence, where vultures consume their bodies, ensuring purity and preventing pollution of earth, fire and water. This practice reflects Zoroastrian beliefs in maintaining spiritual cleanliness.



**Egypt:** In ancient Egyptian culture, vultures symbolized protection and nurturing through their association with the goddess Nekhbet. Nekhbet, depicted as a vulture, was revered as a guardian of Upper Egypt and a symbol of motherhood. Vultures' keen eyesight and scavenging abilities reinforced their role in safeguarding the land and its inhabitants under Nekhbet's watchful gaze.





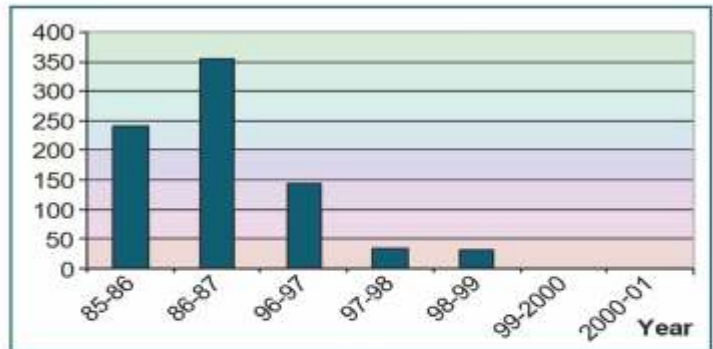
# HISTORY & STATUS OF VULTURE IN INDIA

Vultures have been recorded in Indian history since ancient times, tracing back to the era of the Ramayana. By the 1980s, the white-rumped vulture emerged as the most abundant bird of prey worldwide, with vultures thriving across diverse regions of India. At its peak around the late 1980s, India boasted a substantial population of approximately 40 million vultures.

However, starting in the 1990s, vulture populations, especially the white-rumped vulture and others, faced a precipitous decline attributed to the widespread usage of diclofenac sodium and other NSAIDs in livestock. The annual decline rate for the white-rumped vulture accelerated to 43.9%, while for the combined populations of the long-billed and slender-billed vultures, it stood at 16.1%. This decline has been devastating, resulting in a staggering 99.9% reduction in the white-rumped vulture population and a 99% decline in the combined populations of long-billed and slender-billed vultures, pushing these species perilously close to extinction.



Vultures in Timarpur, heart of Delhi city (1980)



Population of White-rumped vultures in Keoladeo NP, Rajasthan



**SC-I**  
WPA-1972

**CRITICALLY ENDANGERED**

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
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**IUCN**

Recent studies indicate that there are roughly 12,000 long-billed vultures, 6,000 white-rumped vultures and 1,000 slender-billed vultures remaining in the wild. All three vulture species are classified as critically endangered by the International Union for Conservation of Nature (IUCN) and receive legal protection under Schedule-I of the Wildlife Protection Act (1972).

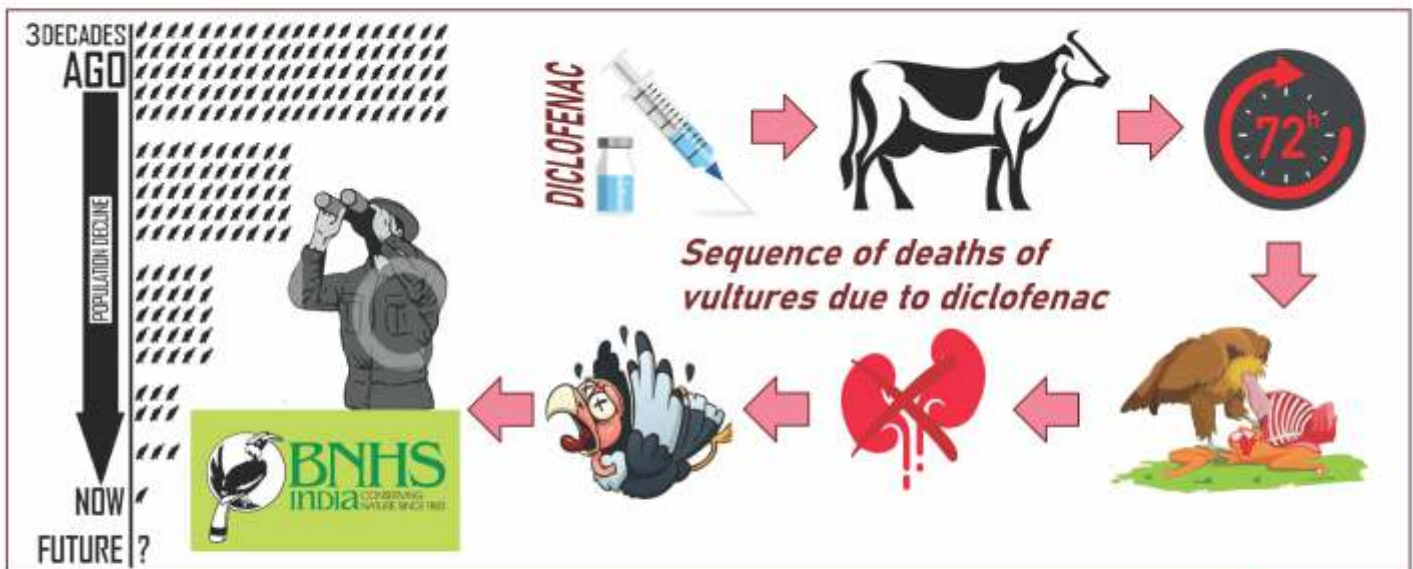
This comprehensive overview/booklet highlights the historical significance of vultures in India and underscores the severe conservation crisis they currently face, underscoring the urgent need for concerted conservation efforts to safeguard these iconic birds from extinction.





# CAUSE OF VULTURE DECLINE

The decline in vulture populations in India is primarily attributed to the widespread use of diclofenac sodium since the 1990s, ketoprofen, aceclofenac. These drugs are administered to livestock for pain relief and anti-inflammatory purposes. When treated cattle die within 72 hours of receiving the drug, diclofenac remains in their carcasses. If vultures consume these carcasses, they ingest diclofenac, which leads to renal or kidney failure, this results in dehydration and visceral gout of uric acid crystals, which is fatal to vultures. Research indicates that even a small percentage (as low as 0.8%) of these carcasses containing diclofenac can cause significant declines in vulture populations. Studies by Oaks et al. (2004) and Green et al. (2004) have documented these declines, underscoring diclofenac poisoning as a critical factor contributing to the conservation crisis faced by vultures in India.



## DICLOFENAC SODIUM



Formulations of Diclofenac Sodium



Neck drooping and ruffled feathers the typical symptom of diclofenac poisoning in vultures



Visceral gout-typical post mortem finding in diclofenac poisoned vultures





# SOCIO-ECOLOGICAL CONSEQUENCES

The decline in vulture populations in India has resulted in significant socio-ecological impacts:

**1. Ecological Imbalance:** Vultures play a vital role in ecosystem health by efficiently cleaning carcasses, preventing soil contamination and aiding in nutrient cycling. Their decline disrupts these processes, leading to environmental imbalance.



**2. Threat of Disease Spread:** Reduced vulture numbers have led to an increase in carcasses, posing a risk of disease outbreaks such as anthrax and botulism, affecting both human and livestock health.



**3. Rise in Stray Dog Population:** With fewer vultures scavenging carcasses, stray dog populations feeding on remains have increased, contributing to higher instances of rabies, endangering public health.



**4. Economic and Cultural Impact:** Communities reliant on vultures for bone cleaning, such as artisans and traditional bone collectors, face economic and cultural challenges due to reduced access to vulture-cleaned bones.



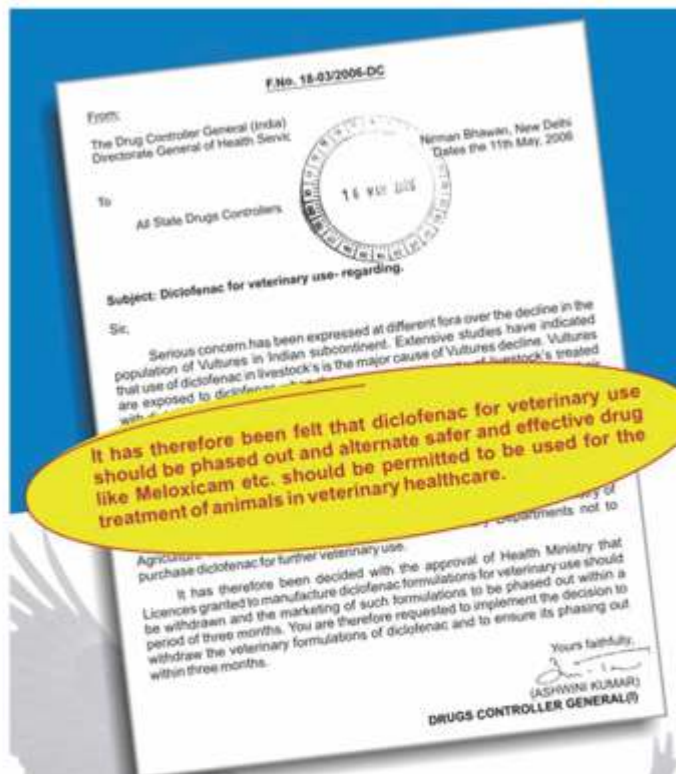
**5. Emotional Impact on Parsi Community:** The decline disrupts traditional sky burial practices of the Parsi community, causing emotional distress and ethical dilemmas regarding the disposal of human remains according to religious beliefs.





# CONSERVATION ACTIONS/INTERVENTION

- In May 2006, the Drug Controller General of India directed all state drug controllers to revoke licenses for manufacturing diclofenac formulations intended for veterinary use. Subsequently, in August 2008, a final gazette notification mandated the complete prohibition of diclofenac.
- Despite these measures, the persistence of diclofenac in veterinary settings continued through the use of human formulations. To mitigate this, in July 2015, the Drug Controller General of India imposed restrictions on the packaging of human diclofenac formulations, limiting them to a maximum volume of 3 ml ampoules, as outlined in a gazette notification.
- Safety assessments conducted on vultures in various zoological institutions globally have demonstrated that among the NSAIDs available, only Meloxicam and Tolfenamic acid are safe for vultures. Conversely, other NSAIDs including diclofenac, aceclofenac, nimesulide, flunixin, ketoprofen and carprofen have been found to be toxic to vultures.
- Most recently, in a notification dated July 31, 2023, the Union Ministry of Health and Family Welfare banned the manufacture, sale and distribution of ketoprofen and aceclofenac, along with their formulations for animal use under section 26A of the Drugs and Cosmetics Act, 1940 (23 of 1940).





# JATAYU CONSERVATION BREEDING CENTRE

Due to the critical role of vultures in the ecosystem and the drastic population decline, conservation efforts became imperative. Responding swiftly, BNHS and the Haryana Forest and Wildlife Department launched the first conservation drive. This initiative focused on both in-situ and ex-situ conservation programs, establishing the Jatayu Conservation Breeding Center as a key component of the vulture conservation strategy.



THE FIRST VULTURE CONSERVATION BREEDING CENTRE IN INDIA,  
A MILESTONE MADE IN PINJORE, HARYANA





# THE VULTURE CONSERVATION BREEDING PROGRAMME

## 1. Introduction

Asia's first Vulture Conservation Breeding Centre (VCBC) was established in 2004 at Jodhpur village, outside Bir Shikargah Wildlife Sanctuary near Pinjore in the Panchkula district of Haryana for three critically endangered Gyps species of vultures - White-rumped (*Gyps bengalensis*), Long-billed (*Gyps indicus*) and Slender-billed (*Gyps tenuirostris*).

The Centre was established following the release of Vulture Recovery Plan 2004, as an insurance against the possible extinction of the three critically endangered Gyps species of vultures. It was thought that unless a conservation breeding programme was established, the three critically endangered species of vulture may go extinct.

## 2.. The need for Conservation breeding of vultures

The Conservation Breeding Programme was established to provide insurance against the possible extinction of the three species of vultures, after a 90% decline in the populations of these slow-breeding and long-living birds. It was known that in such birds, if the rate of annual adult mortality becomes more than 5% then extinction becomes a possibility. In the case of WRV, the annual rate of adult mortality had gone up to more than 40% and in the case of Long-billed vulture and Slender-billed it was over 16%. With such high adult mortality rates, it was feared that the three species could go extinct in the near future and it was important to have a conservation breeding programme as a safety net against losing these species.

## 3. The Objective and Plan for the Conservation Breeding Programme

Upon the establishment of the conservation breeding programme, it was empirically estimated that releasing 600 pairs of each of the three species in the wild would enable the formation of a self-sustaining and genetically viable population. To produce 600 pairs of each of the three species, it was decided to have six different Centres and produce a population of 100 pairs of each of the three species from every Centre - using 25 founder pairs of each of the three species at every Centre.





### 3. Jatayu Conservation Breeding Centre (JCBC), Pinjore

#### a) Location

Conservation breeding programmes need to be established in the natural distribution range of the target species so that they get used to the area's climatic conditions and are exposed to the area's natural pathogens. The JCBC, Pinjore is located within the normal distribution range of all three target species of vultures, as it lies at the edge of the Bir Shikargah Wildlife Sanctuary in Morni Hills of the Shivalik ranges of the Himalayan foothills and is close to Pinjore city. The breeding centre has been set on five acres of land provided by the Haryana Forest Department.



#### b) Infrastructure for housing birds at JCBC

To house at least 60 birds of each of the three vulture species, both founder populations and captive-bred birds, JCBC constructed housing in phases over 4-5 years within budget constraints. Several aviaries were built over 6-7 years to accommodate birds of different age classes and health conditions. The Centre includes in-house laboratories, a clinical and critical care room, a food processing room and an administrative room. Aviaries have similar designs with mud and sand floors, specialized perches to minimize foot injuries, double doors, and water troughs.





A separate quarantine facility, located at least 5 km from the Centre, includes three quarantine aviaries. Birds are kept here for 45 days for health monitoring before being moved to the main Centre. The aviaries are made of iron poles and netlon and a strict all-in and all-out policy is followed for quarantine.

There are eight Nursery Aviaries, six Colony Aviaries, eight Holding Aviaries, two Display Aviaries, four Hospital Aviaries, 8 Breeding Aviaries and one Green Aviary.

The Colony Aviaries are the largest and the most important aviaries of the Centre. There are six Colony Aviaries (100x40x20') to house sub-adult and adult birds. These aviaries are large enough for the birds to do wing exercise by flying from one end to another and feed socially on carcasses, exactly as they do in the wild. These aviaries can accommodate 30-35 adult vultures easily.

A very important aspect of aviary design is the position of perches. Most of the perches are above human height and have uneven surfaces. Coconut rope is wound around the perches to give them a rough surface.

Juveniles and sub-adult birds up to the age of 2 years are housed in 9 Holding Aviaries, with the capacity to hold 10 pairs in one big aviary and 2 pairs each in the other smaller ones. The birds that get injured or fall sick are shifted to Hospital Aviaries for treatment and care.

The Centre is an off-display facility but 2 Display Aviaries are constructed for curious visitors, where birds which are not releasable in the wild are kept for display.



*Colony aviary, 100x40x20'*







*Quarantine aviary, 20X20X16'*



*Nursery Aviary, 10X8X12'*



*Holding Aviary, 20X20X16'*



*Display aviary, 25x17x14'*



*Breeding aviary, 10X16X20'*



*Hospital aviary, 10X8X12'*





Apart from housing structures, the conservation breeding Centre has other facilities like a small molecular biology laboratory, a laboratory to study gut microbiology, a hematology laboratory and a clinical room equipped with a gas anesthesia machine and basic surgical instruments and medicines.



***Hematology Lab***



***Biochemistry Lab***



***Molecular Sexing Lab***



***Microbiology Lab***

### **c) Collection of Founder Population of vultures at JCBC**

The founder stock of vultures was collected from different parts of the country (primarily Haryana, Rajasthan, Madhya Pradesh, Maharashtra and Gujarat) to ensure good genetic diversity. A few WRVs that were injured by kite strings were rescued by animal charities in Gujarat and were subsequently brought to the centre. LBVs were collected largely from Madhya Pradesh, Rajasthan, Maharashtra, Haryana and Gujarat. The SBVs could be collected only from Assam. Most of the founder stock was collected till 2007.





#### d) Transport of Vultures from collection sites to JCBC

The birds were transported in top open rectangular wooden boxes either via air or in air-conditioned vehicles. The vultures are big but are very nervous and their body temperature is known to increase by 5°C when captured and could collapse suddenly so the transport needs to be done quickly. The box has small holes all over except for the lid and the bottom for air circulation. The birds are not fed or offered water during transport.

#### e) Introduction of Birds in JCBC

When birds arrive at any JCBC, they are first taken to a quarantine facility. At the end of 45 days of quarantine, the birds are given a final health check, post which they are moved to the JCBC. All birds introduced in the JCBC are ringed and micro-chipped for identification.



*Leg band*



*Micro-chip*

#### f) Provisioning of Food to Vultures

The vultures are offered freshly slaughtered goats that have been in the care of the Centre for at least ten days, to ensure they are free of toxic NSAIDs. The entire goat carcass is given after removing the skin as these 3 species do not feed on skin. As vultures are scavengers, they feed only when they come across a dead animal and not every day. So, we try to mimic the wild conditions by offering meat only on Mondays and Fridays. One vulture is fed 4 kilos of meat in a week which is equivalent to 5% of its body weight per day.

All aviaries have water troughs that can be filled and emptied from outside, without entering the aviary.



*A flock of vultures feeding inside the aviary on goat carcasses*



*Water troughs provided for the vultures in the aviary*





## **g) Nesting and Breeding Behaviour of vultures**

### **(i) Courtship and pair formation**

The Gyps vultures start pairing up when they are 3-4 years old. Usually, the male offers a twig to the female and if she accepts it, they become a pair for life. They select a nesting cot and are usually seen together. They may make a nest during the breeding season and lay eggs. However, fertile eggs are laid only when they are over 5 years old.

The WRV was the first to start breeding at the Centre in 2005. The first successful breeding however happened in 2008. The first successful breeding of SBV happened in 2009, while that of LBV happened in 2011.

### **(ii) Commencement of Breeding Season and nest building**

The breeding season commences every year from October for the three species. They start defending the nest cot and may start nest building. Both sexes take an equal part in all the nesting activities. Some pairs make huge nests but some only with a few sticks. The WRV are first to start nesting in October, the LBV commence nesting in November and Slender-billed in December. Both parents take part in nest building. The nesting material, sticks and green branches from the major tree species around the Centre are provided in bulk every week after September. The birds themselves pick the nest material and make nests on the nest cots. It could take up to two months.



*Bathing*



*Sunnig*



*Wing Exercise*



*Pairing*



*Courtship*



*Nest Building*





### (iii) Incubation and Nestling Periods of Vultures

Vultures lay one egg per year, usually in December. Both parents share incubation duties, ensuring the egg is never left alone with 2-3 changeovers daily, each shift lasting 6-7 hours. Occasionally, vultures stretch during their shifts. Eggs become vocal around 50 days old (internal pip), start cracking at 53 days (external pip), and hatch by 55 days, typically by the end of January. From day one, nestlings are fed regurgitated meat from the parents, picking food from the nest or directly from the parent's beak.

### (iv) Artificial Incubation and Chick Swapping

Sometimes vultures do not incubate their eggs or lay them on the ground. Such eggs are rescued and incubated in a thermo-controlled room (12x10x10') with incubators set at 36.3 to 36.9°C. The Centre increases productivity by removing and incubating the first clutch of eggs to encourage a second laying (double clutching). Eggs usually hatch in about 55 days, with internal pip at 50 days and external pip at 52 days. After external pip, eggs are moved to hatcher in a thermo-controlled brooder room (12x10x10') equipped with wooden brooder boxes (1.5x1.5x2.0') and heat lamps.

Nestlings are hand-reared in groups to prevent imprinting on humans and exposed to sunlight from day three for vitamin D3. After 10 days, chicks are returned to their parents and the second clutch egg is removed for artificial incubation. This process, called chick swapping and double clutching, ensures at least one chick per pair annually. Vultures do not recognize their nestlings by smell, allowing for fostering by other pairs.



Vulture nestlings kept together to prevent imprinting.



Vultures trying to hatch out of the eggs kept in hatcher.



Incubator room with forced air table-top incubators.



A vulture chick hatched by artificial incubation with very sparse coat of down feathers.





#### (v) The Status of Conservation Breeding Programme

The Conservation Breeding Programme has been very successful. The highest number of all three species are housed at JCBC, Pinjore.

Sr.No.	Species	Total
1.	White-rumped Vulture	98
2.	Long-billed Vulture	221
3.	Slender-billed Vulture	65
Total		384

Table 1. Inventory of vultures at JCBC, Pinjore in 2024

Sr.No	Species	Total
1.	White-rumped Vulture	136
2.	Long-billed Vulture	209
3.	Slender-billed Vulture	52
Total		397

Table 2. Total Number of Nestlings fledged at JCBC till March 2024

***Successfully bred 3 critically endangered Gyps species of vultures First Time Ever***

*Long-billed vulture*



*White-rumped vulture*



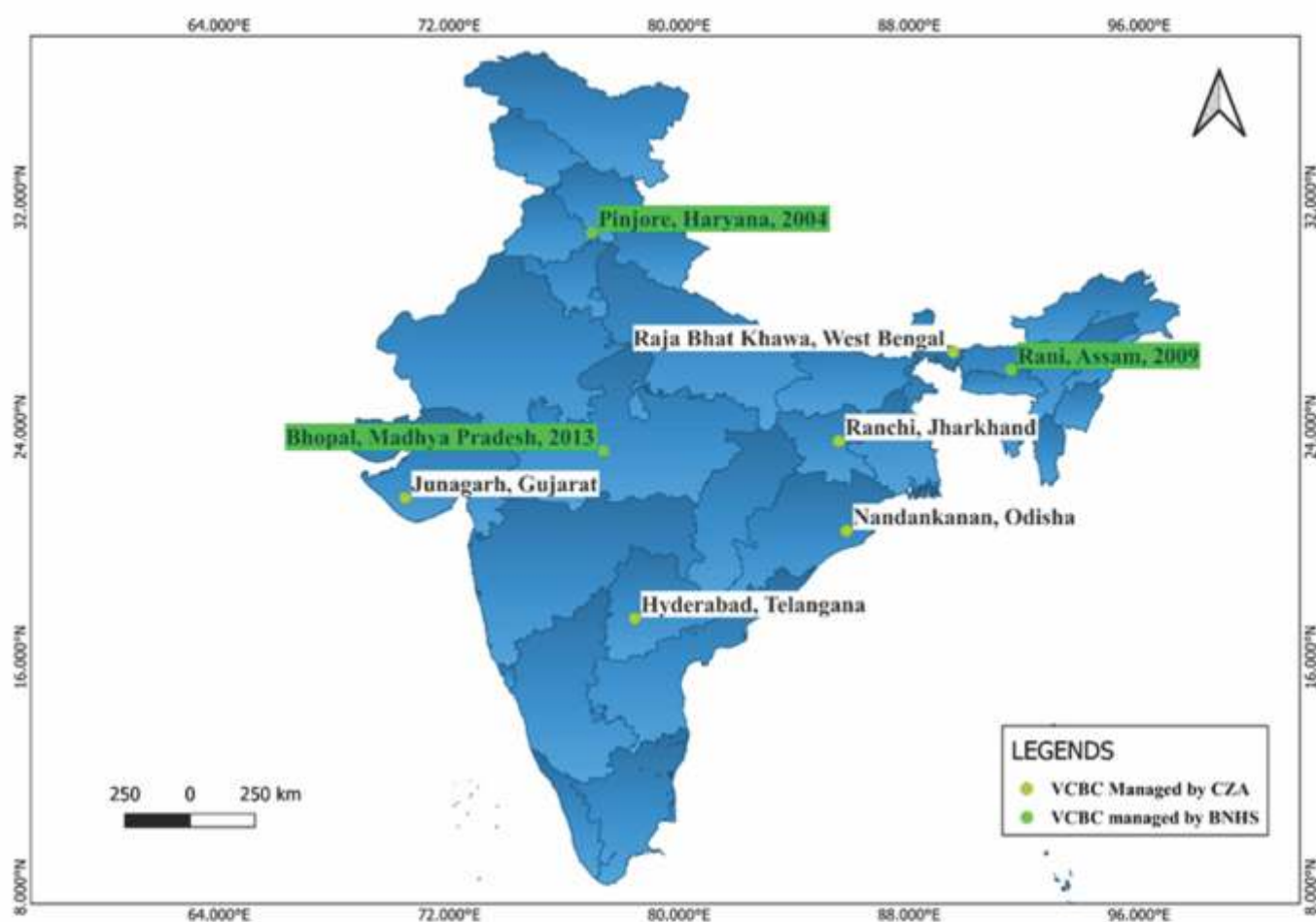
*Slender-billed vulture*





## (vi) The Conservation Breeding Centres in the Country

The Central Zoo Authority (CZA) designated JCBC, Pinjore as a Coordinating Zoo for its Vulture Conservation Breeding Programme. The CZA decided to set up five more VCBCs in different Zoos with technical support from JCBC, Pinjore. The VCBCs at Van Vihar Zoo, Bhopal; Nandankanan Zoo, Odisha, Nehru Zoological Park, Telangana and Sakkarbaugh Zoo, Junagarh were sanctioned in 2007 whereas the VCBC at Muta, Jharkhand was sanctioned in 2009. CZA with the help of JCBC, Pinjore published a Working Manual for the Vulture Conservation Breeding Programme in 2012, which provides the guidelines and protocols for establishing and running the Vulture Conservation Breeding Programme.





## **(vii) In-situ Linkage of the Vulture Conservation Breeding Programme: Preparation for Reintroduction**

The Vulture Conservation Breeding Programme aims to reintroduce captive-bred vultures to the wild to support existing populations and guard against extinction. Successful breeding and reduced diclofenac use in cattle carcasses are key achievements. Steps for reintroduction are as follows:

### **a) Ban and Restriction on Vulture-Toxic NSAIDs:**

The Centre advocated for the ban on veterinary diclofenac in 2006, with a 2008 notification. In 2015, the government limited human formulations to 3 ml to prevent cattle misuse. Meloxicam was identified as safe in 2006 and tolafenamic acid was recently confirmed safe. However, aceclofenac, nimesulide and ketoprofen were found toxic. Pharmacy surveys show a decline in diclofenac and a rise in meloxicam use. Aceclofenac and ketoprofen were banned for veterinary use in July 2023.

### **b) Testing Environmental Safety:**

Test releases were conducted at Pinjore and Rajabhatkhawa Centres. Eight vultures were released from Pinjore in October 2020, with no NSAID poisoning deaths, though three died from other causes. Ten birds were released from Rajabhatkhawa in February 2021 and July 2022, all doing well within a 100 km radius. In 2024, 25 birds with tracking devices will be released from Pinjore, and monitoring of vulture-toxic drugs in a 100 km area will continue.

### **Conclusion:**

Significant progress in vulture conservation has been made since 2004. Achievements include the ban on diclofenac and other toxic drugs and successful breeding of three vulture species in captivity. However, the journey is ongoing. The next phase involves the release of captive vultures, with challenges such as new NSAID threats. Until the environment is safe, a combination of vulture releases and conservation breeding will continue, as recommended by the Action Plan for Vulture Conservation 2020-2025.





# TRANSLOCATION OF VULTURES FROM JCBC PINJORE TO DIFFERENT CENTRES

Year of Transfer	Number of Birds	Site of Transfer
<i>April, 2014</i>	8 Long Billed Vultures 7 White Rumped Vultures	Vulture Conservation Breeding Centre, Bhopal
<i>October, 2016</i>	10 Long Billed Vultures 5 White Rumped Vultures	Vulture Conservation Breeding Centre, Bhopal
<i>June, 2016</i>	6 Long Billed Vultures 4 White Rumped Vultures	Vulture Conservation Breeding Centre, Bhopal
<i>June, 2023</i>	20 White Rumped Vultures	Vulture Conservation Breeding Centre, Bhopal ( <i>Fig.:1</i> )
<i>January, 2024</i>	10 White Rumped Vultures	Tadoba-Andhari Tiger Reserve
<i>January, 2024</i>	10 Long Billed Vultures	Pench Tiger Reserve ( <i>Fig.:2</i> )
<i>March, 2024</i>	20 White Rumped Vultures	Greens Zoological Rescue and Rehabilitation Centre, Jamnagar( <i>Fig.:3</i> )



*Fig.:1*



*Fig.:2*



*Fig.:3*





# VULTURE REINTRODUCTION PROGRAMME, PINJORE

Vulture reintroduction in the wild involves releasing captive-bred vultures into their natural habitats to bolster existing populations and ensure the species' survival. This process includes careful breeding, monitoring and adaptation to ensure the birds can thrive in the wild. Reintroducing vultures is crucial for species recovery, helping to restore populations that have become critically endangered due to various threats, particularly poisoning from veterinary drugs like diclofenac. Vultures play a vital role in maintaining ecological balance by consuming carcasses, which prevents the spread of diseases and maintains environmental health. Protecting vultures also enhances overall biodiversity, supporting the health and stability of ecosystems. Additionally, vultures hold cultural significance in many regions and contribute to tourism, offering economic benefits. As indicator species, vultures signal environmental health, with their presence or absence highlighting changes in the ecosystem. This allows conservationists to monitor and address broader ecological issues. By focusing on reintroduction efforts, conservation programs aim to create sustainable vulture populations and ensure these essential birds continue to fulfill their critical ecological roles.

## **Vulture Safe Zones (VSZs)**

To ensure the recovery of wild vulture populations and create a safe environment for the release of captive-bred vultures, eliminating the veterinary use of diclofenac and other toxic NSAIDs is crucial. This is essential to prevent their extinction. VSZs focus efforts on removing these harmful drugs from areas with existing vulture populations. Initially, these areas are identified as provisional VSZs. Once the threat of toxic NSAIDs is confirmed to be removed, they are declared true VSZs.

A Vulture Safe Zone encompasses a 100 km radius (30,000 sq. km) around existing vulture populations. Through targeted advocacy and awareness, the use of diclofenac is completely stopped and other NSAIDs are used judiciously to ensure a safe food source for vultures. The 100 km radius is based on satellite telemetry of White-backed vultures in Nepal, which showed they could travel up to 100 km daily in search of food.





# PROCESS OF ESTABLISHING A VULTURE SAFE ZONE

## Site Selection for Vulture Safe Zones

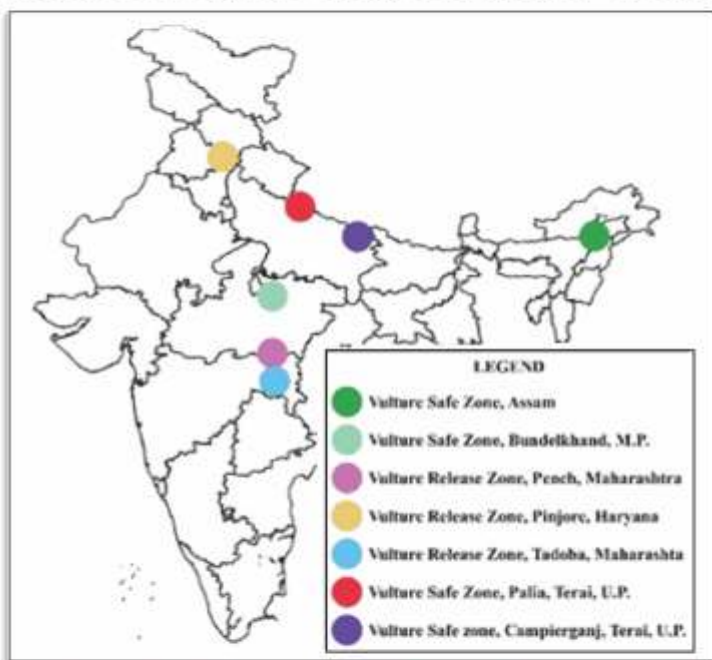
Establishing a Vulture Safe Zone begins with selecting an appropriate site based on several critical criteria. The site should fall within the natural distribution range of target vulture species such as Gyps species, Long-billed vultures, White-backed vultures and Slender-billed vultures. It must offer suitable habitat and sufficient food sources for vultures, including nearby protected areas and local partners to facilitate grassroots efforts. Importantly, the area should not pose additional major threats to vultures apart from diclofenac and local communities should harbor a positive attitude towards vultures.

## Collection of Baseline Information

Once a site is chosen, the next step involves gathering baseline data on various factors. This includes assessing the population and distribution of vultures through methods like road transects, nest counts and absolute counts at carcass dumps. Estimating food availability involves counting cattle carcasses and observing vultures feeding, while habitat assessment focuses on identifying suitable nesting and roosting sites. Identifying threats involves pharmacy surveys to detect toxic NSAIDs, sampling cattle carcasses for drug residues and assessing local perceptions of vultures through community surveys. Awareness programs are crucial, targeting stakeholders along the drug distribution chain to prevent diclofenac use.

## Conclusion

Effective conservation requires ongoing monitoring of vulture populations, nesting success, prevalence of vulture-toxic NSAIDs, food availability and other threats. Long-term monitoring ensures the sustainability of Vulture Safe Zones, safeguarding vultures and their habitats for future generations.



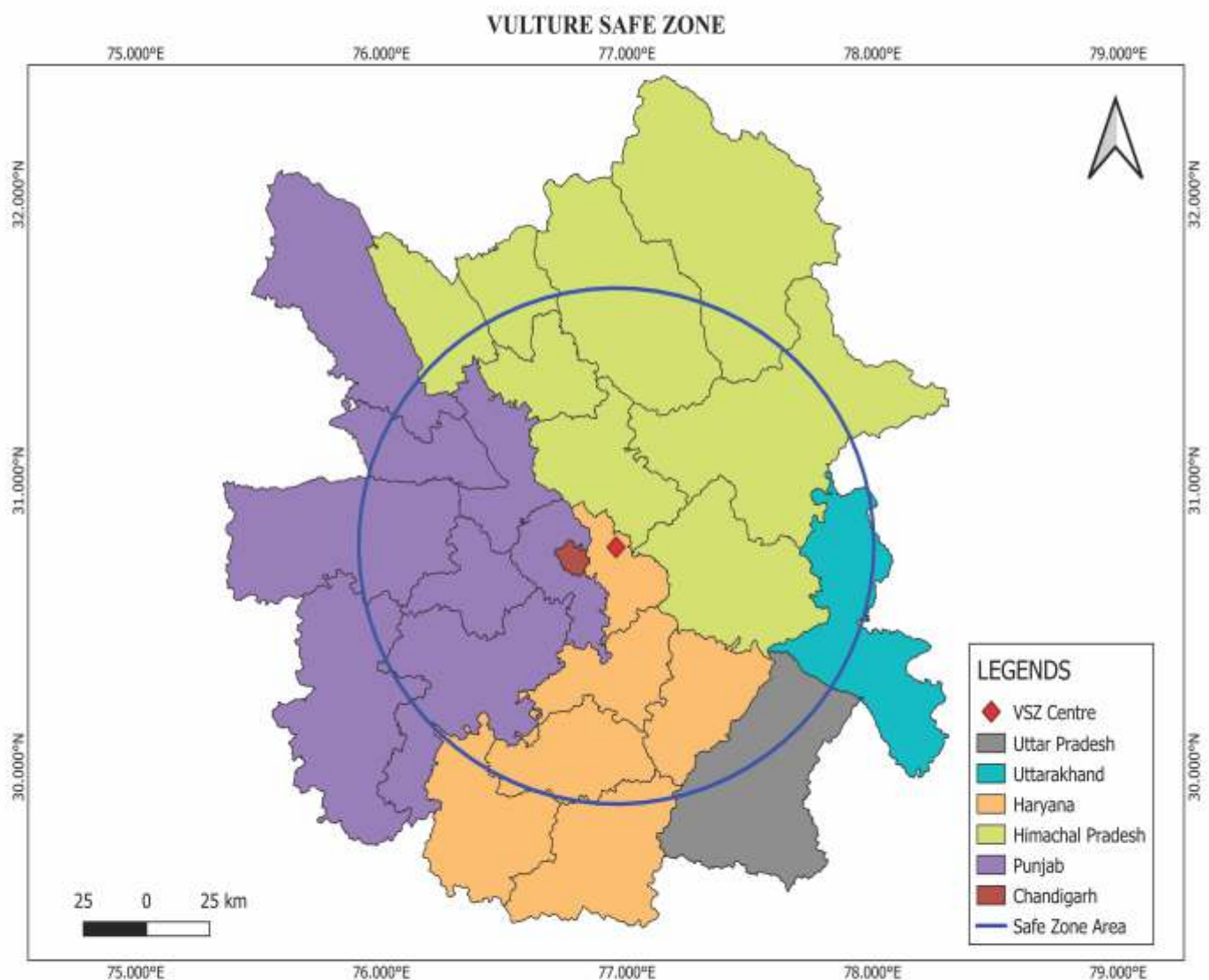
*Vulture Safe Zones & Release Zones in India.*





# VULTURE SAFE ZONE, PINJORE

The vulture safe zone in Pinjore, Haryana covers a 100 sq km radius. The release zone falls in the following states; Haryana, Punjab, Himachal Pradesh, Uttarakhand and Uttar Pradesh. In Haryana, the release zone covers Panchkula, Yamuna Nagar, Ambala and Kurukshetra districts. In Punjab, the release zone falls in Shaheed Bhagat Singh Nagar, Rupnagar, Fatehpur Sahib, Ludhiana, Patiala and Mohali districts. In Himachal Pradesh, the release zone falls in Shimla, Solan, Una, Hamirpur, Bilaspur, Mandi and Sirmaur districts. In Uttar Pradesh and Uttarakhand, the release zone falls in Saharanpur and Dehradun districts respectively.





## **ACTIVITIES CARRIED OUT IN THE VULTURE SAFE ZONE PINJORE**

### **A. Population and Distribution Assessment of Vultures**

To determine the population and distribution of vultures in the Vulture Safe Zone (VSZ) Pinjore, road transect surveys are regularly conducted. These surveys involve monitoring six designated transects to estimate the vulture population within the safe zone.

### **B. Estimation of Food and Habitat Availability**

Food availability for vultures is assessed through dump surveys conducted at selected areas within the provisional vulture release zone. Absolute counts are used during these surveys to estimate the vulture population at carcass dumpsites, ensuring adequate food availability assessment.

### **C. Monitoring of Vulture-Toxic NSAIDs**

To monitor the prevalence of vulture-toxic NSAIDs like diclofenac, aceclofenac, nimesulide and ketoprofen, undercover pharmacy surveys are conducted across all states within the VSZ Pinjore. These surveys involve regularly visiting one pharmacy per tehsil undercover. Additionally, tissue samples from cattle carcasses, a primary food source for vultures, are collected and analyzed to determine the presence of NSAIDs.

### **D. Advocacy Meetings and Awareness Programs**

Regular advocacy meetings are held with key departments including the State Drug Controller of Food and Drugs Administration, Director of Animal Husbandry Department and Chief Wildlife Warden. These meetings facilitate discussions on vulture conservation strategies and enforcement of regulatory measures against vulture-toxic NSAIDs.

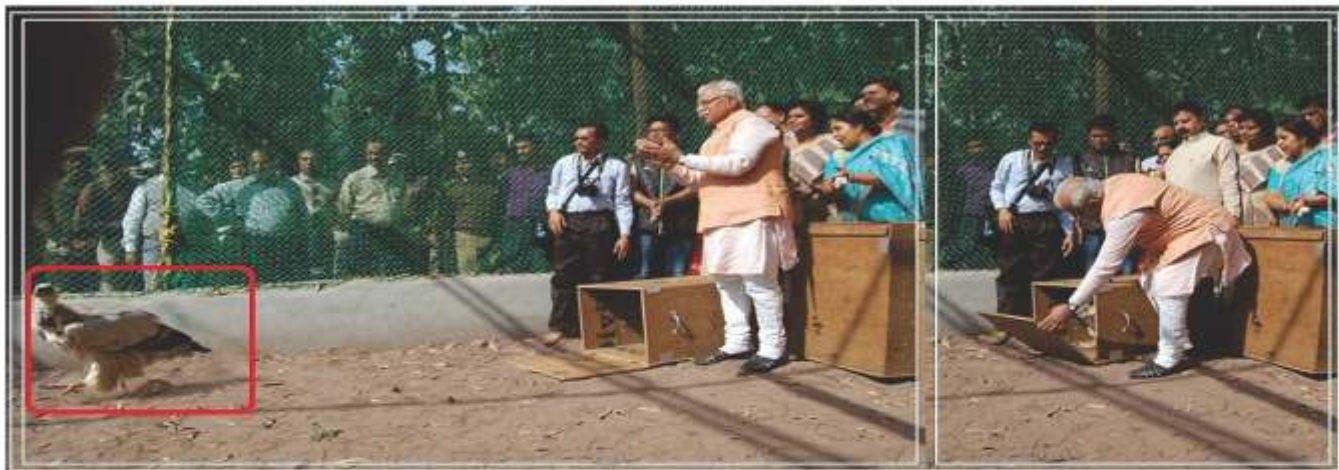
Awareness programs are conducted in collaboration with the Forest Department, Animal Husbandry Department and Food and Drugs Administration. These programs engage stakeholders ranging from frontline forest officers to pharmacists and include training sessions for students at schools and colleges, ensuring widespread awareness and support for vulture conservation efforts.

These systematic activities in the VSZ Pinjore aim to safeguard vulture populations by addressing threats, ensuring sufficient food availability, and fostering community support through effective advocacy and awareness initiatives.





**Honorable Chief Minister releasing a vulture in pre-release aviary at Jatayu Conservation Breeding centre on 13th November 2015**



**The first vulture released in the wild on 3 June 2016, by Honourable CM of Haryana and Union Minister of MoEFCC, Sh. Prakash Javadekar**



**Sh. Kanwar Pal Gujjar, Honourable Minister of Forests and Wildlife, Haryana released six captive bred and two wild caught White-rumped Vultures in the wild in October 2020**





**Honorable Union Minister of Environment, Forest and Climate Change,  
Mr. Bhupender Yadav visited the JCBC-Pinjore in February-2023**



**Sh. Anand Mohan Sharan-IAS, ACS, Environment, Forest & Wildlife Department,  
Haryana visited the JCBC on 26th May, 2024**





## Visit of Various Forest Schools from various parts of the country

Forest Department is the custodian of wildlife and is responsible for the Implementation of Wildlife Protection Act, 1972. A visit to the centre is part of the curriculum of Forest Academies of the country. As a result, the centre imparts extensive information on vulture conservation breeding to various Forest Academies of the country.

*Training has been provided to various institutions from Jan.-2023 to Jul.-2024*

Sr. No.	Institution	Batches	Trainees
1	Indira Gandhi National Forest Academy, Dehradun	2	170
2	TSFA Hyderabad	1	44
3	Haryana Forest Training Institute, Pinjore	4	134
4	Haryana Forest Training Institute, Sohana	2	74
5	Uttarakhand Forest Training Academy, Haldwani	10	378
6	Maharashtra Forest Department, Chandrapur	4	150
7	Central Academy for State Forest Service, Tamilnadu	1	59
8	Odisha Forest Department	1	27
9	Rajasthan Forest Department	1	44
10	HPFA, Sunder Nagar, Himachal Pradesh	3	146
11	Wildlife Institute of India (WII), Dehradun	3	40
12	Indian Airforce, Chandigarh	1	39
13	Other Edu. Institutes	2	57
Total		34	1362





# IMPORTANT MILESTONES OF JCBC, PINJORE

**September 2001:** Haryana Govt. gave permission to set up the Vulture Care Centre (VCC) near Bir Shikargaha Wildlife Sanctuary, Pinjore.

**November 2004:** The World Conservation Congress of IUCN held at Bangkok appreciated the conservation efforts initiated at the JCBC.

**May 2008:** First White-rumped vulture nestling fledged successfully for the first time ever in captivity.

**February 2014:** A first-ever successful chick-swapping experiment of vultures was carried out between 19 to 21 February when 11 chicks of the first clutch were returned to the parents and their second clutch eggs were removed for artificial incubation.

**February 2004:** Based on the release of the Vulture Recovery Plan, the VCC was rapidly expanded into the Jatayu Conservation Breeding Centre

**November 2006:** Recognition to JCBC was granted by the Central Zoo Authority as a Rescue centre for vultures under section 38 H of the Wildlife Protection Act, 1972.

**November 2009:** The experiment of double clutching and artificial incubation to augment productivity was initiated.

**April 2014:** Fifteen vultures were successfully sent from the centre to the new Vulture Conservation Breeding Centre, Bhopal, Madhya Pradesh.

CONTINUE



**November 2015:** Honorable Chief Minister of Haryana, Mr. Manohar Lal, visited the centre along with the Honorable Forest Minister of Haryana, Rao Narbir Singh. They kickstarted the 'Vulture Reintroduction Programme' by releasing 10 vultures into the pre-release aviary.

**July 2019:** Four satellite transmitters (PTT: Platform Terminal Transmitter) for deploying on the vultures before they were to be released in the wild had been received.

**October 2020:** Honorable Forest Minister of Haryana, Mr. Kanwar Pal released 8 White-rumped vultures in the wild from the centre, four with Satellite tags and four with GSM tags.

***Flying forward to  
achieve a lot more***

**September 2024:** Proposed Release of 25 White Rumped Vultures.

**June 2016:** Honorable Chief Minister of Haryana, Mr. Manohar Lal and Honorable Union Minister of Environment, Forest and Climate Change, Mr. Prakash Javadekar, released two Himalayan Griffons in the wild from the centre, launching the Asia First 'Gyps Vulture Reintroduction Programme'.

**July 2020:** Honorable Forest Minister of Haryana, Mr. Kanwar Pal visited JCBC Pinjore on 15th July 2020, appreciated the conservation efforts, and talked about the vulture release programme.

**February 2023:** Honorable Union Minister of Environment, Forest and Climate Change, Mr. Bhupender Yadav visited the center along with the senior officials of MoEFCC and Haryana. He named a newly hatched Slender-billed Vulture nestling as "Jeevan". He said that the centre has done excellent work on the conservation of vultures.











### FOR MORE INFORMATION CONTACT:

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