Indian Forester, 141 (10) : 1005-1010, 2015
http://www.indianforester.co.in

ISSN No. 0019-4816 (Print)
ISSN No. 2321-094X (Online)

VULTURE CONSERVATION IN INDIA: SOME ISSUES THAT NEED MASS SUPPORT

JAGDISH CHANDER

Research Circle, Haryana State Forest Department, Haryana, Pinjore
E-mail: jchander845@gmail.com

ABSTRACT

World's first vulture conservation breeding centre named Jatayu Conservation Breeding Centre (JCBC), Pinjore in Panchkula district of Haryana, India, is all set to release vultures bred in captivity in 2016. This is the outcome of hard work of about one and half decade of Bombay Natural History Society (BNHS) and Haryana Forest Department. Many mysteries of the life of the vultures which were secrets till now, have been revealed in JCBC, as vultures had never been studied in captivity before. However, there are a number of issues that need public support for saving vultures from extinction. The main issue is the superstition that the vultures are opportunists, blood thirsty and wait for somebody to die. Other issues include: creating mass awareness about role of vultures in maintaining cleaniness, imposing self social ban on using diclofenac as non steroidal anti inflammatory drug (NSAID) for veterinary use, giving second thought to use of aceclofenac as veterinary and human drug, protecting vultures from painkiller drugs like nimesulides, ketoprofen and ibubrofen, use of meloxicam as safe pain killer drug for veterinary purpose, ensuring safe vulture zones, habitat improvement and focusing vulture conservation breeding of all species of vultures rather than on *Gyps* species only.

Key words : JCBC, Pinjore, BNHS, NSAID, Diclofenac, *Meloxicam, Aceclofenac, Gyps*.

Vulture and its meaning

The word *'vulture'* comes from Latin word, *'vellere'* which means 'to tear'. The other explanations of word vulture are: 1. The name given to scavenging birds, 2. The bird with dark plumage and a featherless head and neck and generally feeding on carrion. However, dictionary meaning of vulture is 'waiting for somebody to die' or a person or thing that preys, especially greedily or unscrupulously. Unfortunately, due to these meanings and/explanations, the vultures are treated as blood thirsty and opportunist. It is this impression about vultures which is coming in their way of conservation.

Vultures in culture

Starting with their ecological and cultural importance, vultures are nature's most efficient scavengers that help in maintaining a healthy environment by disposing off carcasses of animals. So, they are nature's ambassadors for ensuring ecological security as they act as quick disposal squad. Besides their ecological importance, vultures have deep roots in Indian culture. Jatayu having great respect among Hindus, is supposed to be a vulture that lived during Ramayana period. It is believed that Jatayu had helped Lord Rama and Lakshmana during their exile when mother Sita was abducted by Ravana. Not only in Hinduism, vultures have deep roots in Parsi culture as well. The Vulture- Parsi connections are inseparable. Parsies as their culture is; leave their deads on Tower of Silence to be disposed of by the vultures. So, the vultures are part and parcel of healthy ecosystem and our culture.

The vulture crisis

But this nature's hygiene army is in danger. This army is dwindling. Vulture crisis is one of the critical ecological issues the world is facing today. From forty millions in nineteen eighties to just about one lakh in 2014. Yes, that is the estimated population of vultures left in nature. Once very common, vultures are today on the verge of extinction. This is the biggest population crash and ecological disaster ever recorded globally in the history after the extinction of passenger pigeon (*Ectopristis migratorius)*. About two and half decades ago, the vultures were seen in plenty near cities, towns, villages, open areas, scrubby jungles and scattered tall trees. For the first time in nineties, the gradual decline in vulture population was observed by the vulture biologists, which assumed alarming proportion in late nineties. Today, these scavenging birds are hardly seen at the places where they were seen in large numbers once upon a time. World over the scientists have focused their attention to protect and preserve these hygiene winged creatures which play a vital role in maintaining environment in proper health.

The decline in vulture population started in early nineties and by late nineties, this decline had assumed alarming proportions. In place of vultures, now the stray dogs are seen on the carcass. However, like vultures, the dogs have no mechanism to fight infections and the diseases like rabies are on rise.

Vulture crisis is one of the critical ecological issue, the world is facing today because they are the most endangered group of bird globally.

Diclofenace- the culprit

The cause of vulture population crash was attributed to diclofenac- a pain killer drug (Rhys *et al*, 2004). Diclofenac finds entry into vultures when the carcass of the animal to whom diclofenac had been administered, is consumed by them within four days of its administering into animal body. Thanks to the joint effort of Bombay Natural History Society and Haryana Forest Department that diclofenac was banned for veterinary use in 2006. Positive development is that the NSAID meloxicam has been found safe to vultures. But inspite of this, the vulture crisis seems to be far from over.

Species of vultures

There are nine species of vultures in India inhabiting different geographical and ecological conditions. These are: white backed vulture (*Gyps bengalensis),* slender billed vulture (*Gyps tenuirostris),* long billed vulture (*Gyps indicus),* red headed vulture or king vulture or Pondicherry vulture (*Sarcogyps calvus),* Indian griffon vulture or Eurasian vulture (*Gyps fulvus),* Himalayan griffon (*Gyps himalayensis),* cinereous vulture or monk vulture (*Aegypius monachus),* bearded vulture or lammergier vulture (*Gypaetus barbatus)* and Egyptian vulture (*Neophron percnopterus).*

The king vulture has wide distribution and is found throughout India except cold mountains. As regards *Gyps* species, *G. tenuirostris* is distributed mostly in north eastern region. *G. benghalensis* has fairly wide distribution and is found along the Gangetic plains and till Kerala down in South and Assam in the east. *G. indicus* is distributed south of Gangetic plains till Tamilnadu. While Himalayan griffon and Lammergier restrict their distribution in cool Himalayas, the monk vulture or cinereous vulture too lives in Himalayas and beyond but descends to sub Himalayan region during winters. It prefers open areas rather than the thick forest. Eurasian vulture is a winter visitor to India and is seen in Gujarat, Rajasthan and in drier parts of Haryana and Punjab adjoining Rajasthan.

Correctly assessing the alarming situation arising out of the vulture population crash and realizing the urgent need to save vultures from extinction, BNHS and Haryana Forest Department jointly took up the initiative to study vultures in captivity and attempt their captive breeding. This led to the birth of world's first Vulture Conservation Breeding Centre (now called Jatayu Conservation Breeding Centre) at Pinjore in Haryana in 2002. So, vulture conservation breeding programme has been going on in the country for more than a decade and BNHS has done its best by revealing many secrets of vultures which were not known before. BNHS has succeeded in captive breeding of all Gyps species. But BNHS's efforts need to be strengthened and supported.

The mechanism of quick disposal

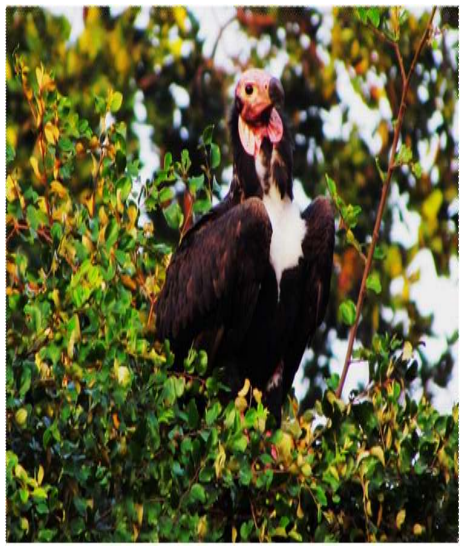
Accordingly, there are a number of issues that need immediate attention and every body's support for saving these nature's most efficient scavengers from extinction. The first and foremost issue is to understand nature's quick disposal mechanism of the carcass and need to take up conservation breeding of all vulture species. Nature's Quick Disposal Squad comprises of all these vulture species. It is incomplete without any one of these species. All species of vultures have different role in disposing a carcass. So, when a carcass is spotted by the vultures, depending upon the site, it is the king or the cinereous vulture which reaches first at the carcass. Cinereous vulture restricts itself to Himalayan or sub Himalayan region and generally will not overlap its range with king vulture. However, if at all it happens in sub Himalayan region, the king vulture will prefer the thick jungle and cinereous- the open areas. So, both of them are rarely seen together at a carcass. Nature has assigned to them the same role of opening the thick hide and creating favourable condition for other vulture species. If at all they are seen together at a carcass, they will not fight with each other.

Depending upon the site conditions (jungle or open areas), there are two to three king/ cinereous vultures on a carcass. *Gyps* species constitute the bulk of the scavenging activity but in a different role. So, there are hundreds of *Gyps* species on a carcass and a few Egyptian vultures. The nature has designed this composition so well that each and every activity is carried out very efficiently. The king and the cinereous vulture target the tough skin which is not in abundance. So, there are not more than five of them at the carcass. *Gyps* species target visceral organs and soft tissues which are in abundance. So, the number of *Gyps* species at the carcass is in hundreds. The Egyptian vulture being the smallest of all is specialized to remove the tendons sticking to the bones, which the *Gyps* species are not able to remove easily.

So, there are not more than thirty five Egyptian vultures at the carcass. When an animal dies, depending upon the area, it is the king or the cinereous vulture which reaches first. While king vulture will restrict itself to the thick forest areas, the cinereous vulture flies to the open areas. A group of other species of vultures also reaches there, but they wait for their role to come.

To start with, the hide has to be opened and all vulture species are not specialized for this. The king and cinereous vultures have very strong beak specially

Long Billed Vulture *Gyps indicus* in Bandhavgarh National National park



King or Red Headed Vulture *Sarcogyps calvus* in Bandhavgarh National Park

Eurasian Griffon *Gyps fulvus* in a grassland near Jodhpur, Rajasthan

Egyptian vultures *Neophron percnopterus* waiting for feeding on carrion as stray dogs keep them away

Rabies cases are on rise as dogs have no mechanism to kill germs.

The vultures at Jatayu Conservation Breeding Centre at Pinjore. This is world's first vulture conservation breeding center for resident *Gyps* species of South Asia

designed by nature for tearing the hide apart. Further, their head has small feathers and the beak is small as they are not required to enter their beak deep into the carcass. So, to open the hide, the king or the cinereous vulture starts tearing the hide through natural openings like mouth, eyes and anus, and thereafter proceeds ahead. Once the tough skin is removed, they finish their role and create conditions favourable for other vulture

species to come and play their role. They fly away for dip in water and having sun bath to get rid of pathogens. Once the visceral organs have been exposed, the *Gyps* species step in. *Gyps* species are required to go deep into the visceral organs, and therefore, they have long neck characterized by the absence of feathers. Unlike king and cinereous vultures, if they had feathers , their activity would have been hindered. They would have felt pain while inserting their neck deep into the carcass. The meat would stick exposing them to infection. Within *Gyps* species also, each plays a different role. The white backed vulture having shot neck prefers muscles just near the skin. The long billed and slender billed vultures get their food from the deeper internal organs. The slender billed vulture with narrow neck is specialized to penetrate very deep into the carcass. So, at the carcass each *Gyps* species positions differently to allow access of each and every individual to the muscles. And once this all has been done, and the *Gyps* vultures have left for water dip and sun bath, the Egyptian vulture steps in to finally clean the carcass. And it is nature's wonder to keep the environment clean that Egyptian vulture's first preference is not to eat the tendons sticking to the bones but to clean the droppings of the scavenging mammalian species near the carcasses. And this all happens in less and an hour. The matter does not end there. After Egyptian vulture has completed its job, the mighty lammergier vulture steps in. Although it restricts itself to high altitudes, yet in its range where it inhabits high rocks, it comes, picks up bone, and throws it on the rock from the height. The bone breaks open exposing the bone marrow. The Lammergier has its feast. However, it is also in a position to eat flesh alongwith bone marrow.

What a perfect mechanism of nature to dispose of a carcass! It is very clear that all vulture species have clear cut role in the disposal of the carcass and therefore, all species of them need conservation attention. Except Egyptian vulture, all resident species of vultures in India are critically endangered. Egyptian vulture is also starving as dogs do not leave the carcass till they have completely eaten it. There is no information available on the population status of Himalayan griffon.

Of gypsiphils and vulturiphils

Vulture conservation breeding programme in India is focusing on three *Gyps* species viz. *G. indicus, G. benghalensis* and *G. tenuirostris*. No doubt these are critically endangered but other species of vultures are also equally endangered. The conservation breeding programme needs to be started for other vulture species as well. We need to be vulturiphils rather than gypsiphils.

The superstition that vultures are blood thirsty

There is very bad impression about vultures. Whether it is India or any other country in the world, vultures are not respected anywhere. In fact they are hated traditionally. In India they are treated as bad omen. Some literature describes vultures as opportunists 'waiting for somebody to die'. Most of the times, the celebrities, public figures and even print media refer to vultures in bad sense. This impression about them is a big hurdle in the success of restoration of their population getting mass support. There is an urgent need to generate awareness among all sections of the society regarding the role vultures play in nature and need to contribute in this direction. BNHS is doing its best by distributing the awareness material. Similar efforts are required to be done by all to owning the vulture conservation programme.

Social ban on diclofenac

The scientists have proved beyond doubt that diclofenac- a non steroidal anti inflammatory drug (NSAID) is the main reason for vulture population crash. As a result of this finding, the use of diclofenac has been banned for veterinary use since 2006. However, it is freely available for human consumption. The single dose of diclofeanc for humans is just 3 mL but it is available in 30 mL multidose vials presentation. The typical dose for an adult cow is 10-15 mL depending on the body weight. So, people who treat cattle find using the multi-dose vials of human formulation very handy. The survey conducted by vulture conservation breeding centre Pinjore has revealed that medical shops make diclofenac easily available for veterinary use. There is a need to impose strict ban on the use of diclofenac for veterinary purpose.

Aceclofenac is equally or more dangerous

Recently, aceclofenac- a NSAID has been introduced for veterinary and human use and it is becoming very popular. However, when it goes into the system, it is metabolised into diclofenac. Detailed biochemical studies need to be conducted on this drug as it may prove equally fatal or even more to vultures than diclofenac.

Testing diclofenac toxicity to non *Gyps* vultures

That diclofenac is fatal to *Gyps* species is well known. However, what is the fate of diclofenac and aceclofenac in non *Gyps* vulture species is not known. Tests conducted on eagle have revealed that diclofenac is toxic to eagles as well. There is every possibility that non *Gyps* vulture population is declining due to diclofenac and aceclofenac toxicity.

Meloxicam is safe but there are problems

The discovery of meloxicam as safe drug to

vultures is a good news. But with this finding whether the toxicity problem is over? This is a big question. All is not well with meloxicam at present. The patented product has strength of 20 mg/ml. In India it is available in 5 mg/ml strength. So, it has weak effect. The pH of the meloxicam available in India is very high and it causes pain to the animal when administered. So, meloxicam is not becoming popular with veterinarians.

Vulture safe zones

This is very important issue as it relates to vulture release plans. World's first vulture breeding centre named Jatayu Conservation Breeding Centre at Pinjore which has succeeded in conservation breeding of all three *Gyps* species for the first time, plans to release vultures back into the wild in 2016. However, primary requirement for their release is to have diclofenac free zone of atleast one hundred square kilometres. This seems to be a very difficult task at present. This needs strong will and cooperation of all.

Will captive bred vultures survive in wild?

JCBC at Pinjore is working very hard to keep vultures in near natural condition in captivity. So, they have been kept in big aviaries so that they can fly around. Their regular flying in the avaires is good for the strengthening of flight muscles. Two Himalayan griffon *(Gyps himalayensis)* vultures which will be used as guide birds for the vultures to be released, are also being looked after in the centre. However, suspicion still prevails whether the birds which have been trained within the aviaries will be able to fly high in the sky and locate their food which they have never done before in their life. However, hope still exists as Californian Condor *(Gymnogyps califolniae)* whose population had come down to just 21, has been successfully reintroduced into the wild.

Where to release captive bred vultures?

It is a very question. After a decade of hard work, JCBC has succeeded in captive breeding of vultures. BNHS and other vulture experts need to be given final say in deciding the release plans as the vultures species need to be reintroduced in their natural habitats. The decision needs to be supported by all.

Feasibility of vulture restaurants

Opening of vulture restaurants is becoming a fashion. However, the vulture experts raise big question on the feasibility of establishing vulture restaurants. In this case, the meat is provided to vultures at some designated place. The name vulture restaurant looks very catchy but the big question is- What is the guarantee that the meet served to the vultures in vulture restaurant is free from diclofenac residues?

Whether diclofenac is the sole reason for vulture decline?

Reports have started pouring in that in view of the dwindling population of vultures, the reasons like loss of habitat, use of organo phosphate insecticides, other NSAIDS like nimesulides, ketoprofen and ibubrofen, malaria, hunting for meet by some tribes of Andhra Pradesh, Karnataka & Maharashtra, bird hits, thinning of egg cells due to pesticides and food shortage which used to be minor reasons for vulture decline: have now become major. DDT has been linked to thinning of egg cells in raptors including California Condor *(Gymnogyps californianus),* These reasons also need to be looked into.

Conclusion

There is no doubt that the vultures are nature's most efficient scavengers. They are the ultimate recyclers – able to strip a carcass in just an hour to keep environment clean. Vulture crisis is one of the critical ecological issues the world is facing today. They are the most endangered group of birds globally. IUCN has already placed them in critically endangered category and their removal from the ecosystem will affect the equilibrium between populations of other scavenging species. The Parsi are facing serious culture crisis in the absence of vultures as they give their deads to vultures. And why only *Gyps* species, all other species are also equally important as each species of vulture has a specific role in disposing of carrion. There is a need to be vulturiphils rather than being gypsiphils. While ban on diclofenac needs to be imposed strictly, the safety test on aceclofenac needs to be conducted on all vulture species. Meloxicam needs to be promoted but we also have to generate mass awareness about the conservation needs of vultures on the lines of tiger. Last but not the least, we have to own vulture conservation breeding programme. Let us do it now before it is too late.

Hkkjr e fx¼ lj{k.k % dN ,l enn ftUg vR;f/d leFku dh vko';drk g

txnh'k pUn
lkjk'k

gfj;k.kk] Hkkjr d ipdyk fty e tVk; lj{k.k ituu dUn (t lh ch lh)] fitkj uked fo'o dk igyk fx¼ lj{k.k ituu dUn 2016 e cfUn LFky e lof/r fx¼k dk eDr dj jgk gA ;g cEcb ikÑfrd bfrgkl lkslkbVh (ch ,u ,p ,l) vkj gfj;k.kk ou foHkkx d M< n'kd d dBkj ifjJe dk ifj.kke gA tVk; lj{k.k ituu dUn e fx¼k d thou d vudk jgL;k dk mn?kkfVr fd;k x;k] tk vc rd jgL;

Fk D;kfd fx¼k dk igy dHkh Hkh cfUnLFky e vè;;u ugh fd;k x;k FkkA rFkkfi] foyIr gku l fx¼k dk cpku d fy, ,l vudk enn g] ftud fy, ykxk dh lgk;rk dh t:jr gA e[; ennk ;g v/fo'ok l g fd fx¼ voljokn h] [ku fiikl vkj fdlh d eju dh irh{kk dju oky gkr gA vU; fo"k;k e 'kkfey g % LoPNrk cuk, j[ku e fx¼k dh Hkfedk d ckj e 0;kid tkx:drk dk l tu djuk i'k fpfdRlk mi;kx d fy, xj LVhjk;My inkgdjk/h nok d :i e fMDलाफेनिक के उपयोग पर स्व सामाजिक प्रतिबंध लगाना पशुचिकित्सा एवं मानव दवा के रूप में एसीक्लोफेनेक के उपयोग के प्रति दूसरी सोच अपनाना *निमीसूलाइड्स, कीटप्रोफीन* और *आइबूब्रोफेन* जैसी दर्द निवारक दवाओं से गिद्धों की सभी जातियों के गिद्ध संरक्षण प्रजनन पर ध्यान केन्द्रित करना।

References

Chander J. (2014). Current status of vulture conservation in Haryana. *Indian J. Ecol.,* 41(1): 70-73.

Rhys E. Green, Newton I., Shultz S., Cunningham Andrew A., Gilbert M., Pain Deborah J. and Prakash V. (2004). Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. *Journal of Applied Ecology,* 41: 793–800.