UNIVERSITY OF CALCUTTA

TOPIC

REPORT ON CONSERVATION OF WHITE RUMPED VULTURE (*Gyps bengalensis*)

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CONSERVATION OF WHITE RUMPED VULTURE (*Gyps bengalensis*)

1. INTRODUCTION:-

The White Rumped Vulture or Gyps bengalensis is an Old World Vulture native to South and Southeast Asia. The well-supported clade of the genus Gyps which includes Asian, African and European populations. It has been determined that this species is basal with the other species being more recent in their species divergence. The vulture has been listed as Critically Endangered on the IUCN Red List since 2000, as the population severely declined. In 1980s, the global population was estimated at several million individuals, and it was thought to be "the most abundant large bird of prey in the world". As of 2016, the global population was estimated at less than 10,000 mature individuals. White Rumped Vultures die of kidney failure caused by Diclofenac poisoning. Gyps bengalensis qualifies as Critically Endangered because it has suffered an extremely rapid population decline primarily as a result of feeding on carcasses of animals treated with the veterinary drug diclofenac.

2. CONSERVATION STATUS:-

Critically Endangered (IUCN)

There are many threats to Gyps bengalensis. Disease, pesticides, environmental contamination, poisoning, reduced food availability, calcium deficiency, reduced nesting habitat, nest predators, hunting and aircraft strikes are the most common. DDT and HCH pesticides have been banned in INDIA but are still extensively used. High levels of two pesticides have been found in tissue samples in carcasses. Breeding declines of these species seem to be congruent with pesticide usage, however more recent studies have established a strong link between catastrophic Asian vulture declines and consumption of carcasses of animals treated with the veterinary drug diclofenac. Other vulture poisoning incidents may result from the intentional poisoning of carcasses, usually to rid a town of predatory mammals. Populations of white-rumped vultures have declined by as much as 95% in Pakistan and India. Populations in south-eastern Asia disappeared in the early 20th century, disappearing altogether from Malaysia and southern China.

3. SCIENTIFIC CLASSIFICATION:-

Kingdom: - Animalia

Phylum: - Chordata

Class: - Aves

Order: - Accipitriformes

Family: - Accipitridae

Genus: - Gyps

Species: - G. bengalensis

4. GEOGRAPHIC RANGE OF DISTRIBUTION:-

Gyps bengalensis is very common on the Indian subcontinent. It regularly occurs in Pakistan, India, Bangladesh, Nepal, Bhutan, Myanmar, Thailand, Laos, Cambodia, and southern Vietnam. It formerly occurred in southern China and Malaysia but is now extinct in that region. It has also been found in southern and central Afghanistan, mostly in the southern area and also in the central part of Afghanistan. In Pakistan, they are found mostly in the Indus valley and along the Himalayas to assam valley and the southern parts of the Assam hills. As recently as 1985 the species was described as possibly the most abundant large bird of prey in the world. However, it disappeared from most of South-East Asia in the early 20th century and the only viable populations in the region are found in Myanmar and Cambodia, mainly in the north. Given the lack of intensive agriculture and associated chemical use in South-East Asia and the continued presence of large areas of suitable habitat for the species, the primary reason behind its decline in this part of its range is thought to be the demise of large ungulate populations and improvements in animal husbandry resulting in a lack of available carcasses for vultures, as well as the impact of poisoning events as an accidental consequence of local hunting and fishing practices.

5. POPUATION OF THE SPECIES:-

The global population of White Rumped Vulture is almost certainly numbered several million individuals. In 1990s, the dramatic decline across the range of its global population is now estimated to fall within the band 2,500-9,999 mature individuals. This species has suffered a 99% population decrease in India and nearby countries since the early 1990s. The decline has been widely attributed to poisoning by diclofenac, which is used as veterinary non-steroidal anti-inflammatory drug (NSAID), leaving traces in cattle carcasses which when fed on leads to kidney failure in birds. Diclofenac was also found to be lethal at low dosages to other species in the genus Gyps and other NSAIDs were also found to be toxic, to Gyps as well as other birds such as storks. It was shown between 2000-2007 annual decline rates in India averaged 43.9% and ranged from 11-61% in Punjab.

An alternate hypothesis is an epidemic of avian malaria, as implicated in the extinctions of birds in the Hawaiian Islands. The population changes may be linked with long term climate cycles such as the El-Nino Southern Oscillation.

Population of *Gyps bengalensis*

6. PHYSICAL DESCRIPTION:-

White-rumped vultures are medium-sized, dark vultures. Adults are 75 to 85 cm tall, their wing span is 180 to 210 cm, and their weight ranges from 3.5 to 7.5 kg. The sexes are approximately equal in size. Adults are darker than juveniles. Adult has blackish plumage, white neck-ruff, rump and underwing-coverts, silvery panel on upper surface of secondary, dark head and neck,

and rather short, heavy, mostly silver bill. The nostril openings are slit-like. Juvenile are dark brown with prominent white shaft-streaks, especially below. White down on head and neck and usually a brownish nape-patch. Sub adults are drabber brown. The undersides of the wings are a dark slate to brownish color. During flight, the white under wing coverts are highly visible. The eyes are a yellowish brown color and the legs are blackish. Their bill is short, deep, and stout. The undertail coverts are black. All Gyps bengalensis can be distinguished by the white bar located on the underside of the wing.

Gyps bengalensis

7. ECOLOGY, HABITAT AND BEHAVIOUR:-

White-rumped vultures are often found in cities, towns and villages, near human habitation. They occur in temperate areas, mostly in plains where it utilizes light woodland and occasionally in hilly regions. Gyps bengalensis is generally found in open areas and fields enclosing scattered trees. Up to 15 large nests may be observed in a single roost tree. At night, white-rumped vultures roost in trees. They rest for about two hours before dark.

It feeds on carrion, both putrid and fresh. While feeding considerable aggregations can form, and regular communal roost sites are used. It is social and usually found in conspecific flocks. It breeds in colonies in tall trees, often near human habitation. Movements are poorly known, although satellite-tagged birds have shown that they will forage over a vast range. The degree of connectivity of apparently separate populations is not known. Vultures also play a key role in the wider landscape as providers of ecosystem services, as they were previously heavily relied upon to help dispose of animal and human remains in South Asia. White- rumped vultures have

adapted well to living near humans. Occasionally, they can come into conflict with the human population in close proximity to them.

Habitat of White-rumped Vulture

8. TREND:-

The species declined in South- East Asia during the 20th century, apparently as a result of the collapse of large ungulate populations owing to over-harvesting by human hunters. Declines in the major part of the population throughout Indian Subcontinent probably began in the 1990s and were very rapid, resulting in an overall population decline than 99% over a 10-15 year period.

9. THREATS AND DECLINE :-

White-rumped vulture was very abundant in its range in the 1985s. But important declines due to poisoning by Diclofenac, which is used as veterinary non-steroidal anti-inflammatory drug (NSAID), leaving traces in cattle carcasses which when fed on leads to kidney failure in birds, hard weather conditions and hunting for meat, involve new classification of this species which is now Critically Endangered. Diclofenac was also found to be lethal at low dosages to other species of Gyps and other NSAIDs were also found to be toxic. They has suffered a 99% population decrease in India and nearby countries. It was shown between 2000-2007 annual decline rates in India averaged 43.9% and ranged from 11-61% in Punjab. Organochlorine pesticide residues were found from egg and tissue samples from around India and DDE, Dieldrin in muscles and liver of vulture.

Affected vultures were initially reported to adopt a drooped neck posture and this was considered a symptom of pesticide poisoning, but this also may be a thermoregulatory response as the posture was seen mainly during hot weather. It has been suggested that rabies cases have increased in India due to the decline of vulture.

In Southeast Asia, the near-total disappearance of white-rumped vultures predated the present diclofenac crisis, and probably resulted from the collapse of large wild ungulate populations and improved management of dead livestock, resulting in a lack of available carcasses for vultures.

Threats to White-rumped vultures

10. ECONOMIC IMPORTANCE FOR HUMANS:-

White-rumped vultures are important in helping prevent the spread of diseases ridding areas of carcasses. Declines in vulture numbers in India and Pakistan are resulting in an increase of carcasses remaining to feral dog populations, leading to an increase in the number of feral dogs, which transmit rabies to human populations.

The danger of collision between birds and airplanes is a grave fear of pilots everywhere but especially in India, where vultures contribute to 25% of bird-plane strikes. Of this percentage, Gyps bengalensis causes the most problems because of its commonness, weight, its habit of flocking, and its ability to fly to high altitudes.

11. CONSERVATION:-

It has been suggested that Meloxicam (another NSAID) as a veterinary substitute that is safer for vultures would help in the recovery. Currently, only the Cambodia and Burma populations are thought to be viable though those populations are still very small, below hundreds. Campaigns to ban the use of diclofenac in veterinary practice have been underway in several south Asian countries.

Conservation measures have included reintroduction, captive-breeding programs and artificial feeding or "vulture restaurants". Two chicks, which were apparently the first captive-bred white-rumped vultures ever, hatched in January 2007, at a facility at Pinjore. However, they died after a few weeks, apparently because their parents were an inexperienced couple breeding for the first time in their lives – a fairly common occurrence in birds of prey.

CITES Appendix II. It has been reported from many protected areas across its range. The governments of India, Nepal and Pakistan passed legislation in 2006 banning the manufacture and importation of diclofenac as a veterinary drug, with India passing further legislation in 2008 banning the manufacture, sale, distribution or use of veterinary diclofenac. In the same year, the Indian government ordered a crackdown on companies selling diclofenac. A letter from the Drug Controller General of India warned more than 70 drug firms not to sell the veterinary form of diclofenac, and to mark human diclofenac containers 'not for veterinary use'. In October 2010, the government of Bangladesh banned the production of diclofenac for use in cattle, and the distribution and sale of the drug were due to be outlawed during the first half of 2011.

These bans have led to a reduction of diclofenac within ungulate carcasses in India and a study of 11 administrative districts in Nepal found diclofenac use dropped by 90% since 2006 following the introduction of measures to reduce its use. The availability of diclofenac in veterinary drug stores in Bangladesh decreased from 100% in 2008-2009 to 53% in 2011-2012. However, levels of diclofenac contamination still remain high and human forms of the drug are still sold for veterinary use. In response to the misuse of human diclofenac, the Government of India banned the manufacture of all diclofenac products in vial sizes larger than 3ml (the single dose for humans) in 2015, and this is predicted to make the drug too expensive and too complicated to use on large bodied animals and thereby stop its misuse in livestock. Efforts to replace diclofenac with a suitable alternative are on-going and are showing signs of success with evidence for a decrease in diclofenac and an increase in the safe alternative. An alternative drug, meloxicam, which is out of patent and manufactured in Asia has been tested on Gyps vultures with no ill-effects; though three additional drugs, aceclofenac, nimesulide, and ketoprofen, are known to be toxic to vultures, and approximately another 10 drugs need to be tested.

Vulture restaurants are increasingly used as ecotourism attractions in parts of the specie's range, particularly Cambodia and Nepal, to raise awareness and fund supplementary feeding programs and research. The exchange of diclofenac with meloxicam near breeding colonies is taking place in Nepal and Cambodia with diversionary feeding with diclofenac free carcasses. Diversionary feeding has been shown to reduce but not eliminate vulture mortality from diclofenac poisoning, and uncertainty over the movements of Asian Gyps vultures makes the effectiveness of measures such as these uncertain. Birds have been satellite tagged in various parts of their range to improve understanding of their movements, foraging range, side fidelity etc. and to aid the development of suitable conservation strategies for the species.

Socioeconomic surveys in Nepal have shown that local people are strongly in favour of vulture conservation because of associated ecological services that vultures provide.

SAVE (Saving Asia's Vultures from Extinction) has developed the concept of Vulture Safe Zones ; areas around important vulture breeding colonies, where education and advocacy efforts are focused on eliminating the use of diclofenac and other vulture-toxic drugs, such as ketoprofen (banned in Coimbatore, Erode and Nilgiris Districts). There are currently multiple Vulture Safe Zones being established in India, Nepal, Pakistan and Bangladesh. These areas will provide a safe environment into which birds bred in captivity can be released, as well as supporting wild birds. They can also bring in vulture-related income for locals, through ecotourism.

An action plan for vulture conservation in India was written in 2006 by Ministry of Environment & Forests, but has not been updated. Cambodia and Nepal have updated their 10-year (2016-2025) and 6-year (2014-2019) action plans, and in 2016 an action plan was produced for Bangladesh. In 2012 the governments of India, Pakistan, Nepal and Bangladesh adopted a number of priority actions for the conservation of vultures , proposed by SAVE. These include banning large multi-dose vials of human diclofenac, testing other NSAIDs for toxicity to vultures and expanding the Vulture Safe Zones initiative. In 2014,SAVE produced a Blueprint for the recovery of South Asia's Critically Endangered Gyps vultures that presents key conservation actions for the region and timelines for each action.

The report of the International South Asian Vulture Recovery Plan Workshop in 2004 gave a comprehensive list of recommendations including establishing a minimum of three captive breeding centres, each capable of holding 25 pairs. Captive breeding efforts are on-going and met with success when two chicks hatched in early 2007 at a breeding centre in Pinjore, Haryana. Three more birds hatched in 2009. The centre is part of a captive breeding programme established by the RSPB and the Bombay Natural History Society. A website has been set up to allow researchers to contribute data on known colonies to identify founder individuals for captive flocks that will ensure the full geographical spread of the species is represented in captive breeding efforts. By April 2008, there were 88 in captivity at three breeding centres in India, as well as 11 at a centre established by WWF-Pakistan and 14 in captivity in Nepal. During 2009, these numbers increased to 120 in India, 43 in Nepal and 14 in Pakistan. In late 2009, trials of artificial incubation methods were due to start soon. By November 2015, the total number held in breeding affiliated to SAVE (Saving Asia's Vultures from Extinction) stood at 218 birds at three centres in India, 15 at a centre in Pakistan and 57 at a centre in Nepal, of which 20 juveniles had successfully fledged; and as of 2015 the Indian breeding centres were fledging 60 juveniles of all three resident Gyps species combined. Captive breeding centres often receive vultures that have been found poisoned and then rehabilitated by rescue centres such as the Centre for Wildlife Rehabilitation and Conservation,

Assam, which is run by the International Fund for Animal Welfare (IFAW) and the Wildlife Trust of India. Surveys utilizing vulture restaurants have been carried out in Myanmar in late 2006 and early 2007, simultaneously censusing nesting colonies, vulture deaths and looking for diclofenac use.

Conservation of White-rumped Vultures

12. PROPOSED CONSERVATION ACTION:-

Continue to measure the frequency of diclofenac and ketoprofen-treated carcasses available to vultures. Support the ban on the veterinary use of diclofenac, and support species management or restoration, as needed. Strengthen public awareness and public support programs , including providing veterinary camps and livestock management training. Monitor remaining populations, in particular continue activities in Cambodia and Myanmar. Monitor the sale of veterinary drugs, and contamination of ungulate carcasses or dead vultures. Provide supplementary food sources, with appropriately-sized carcasses, where necessary for food-limited populations. Support captive breeding efforts at a number of separate centres with the aim of holding at least 150 pairs of each species in captivity. Manage genetic stock in the captive-bred population. Promote the immediate adoption of meloxicam as an alternative to diclofenac, and improve its availability. Test other non-steroidal anti-inflammatory drugs to identify additional safe alternative drugs to diclofenac and also other toxic ones. Four additional drugs, aceclofenac, nimesulide, flunixin and ketoprofen, are known to be toxic to vultures, and

approximately another 10 drugs need to be tested, and support bans for these vulture-toxic drugs. Attempt to fully implement a restriction in the size of diclofenac vials sold for human use to make them less practical to use for veterinary purposes and take action against companies that fail to comply with the diclofenac ban. Promote Vulture Safe Zones, with expansion to include trans-boundary efforts as well as the opportunity for vulture-based ecotourism. Safeguard nesting areas from logging. Estimate the potential value of ecosystem services provided by vultures.

Conservation action of White-rumped Vulture

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THANK YOU