Is Diclofenac the only cause of vulture decline?

I support Chhlangani and Mohnot’s argument to initiate planned breeding of vultures in zoos/rescue centres in a sustainable model for conserving vultures. The immediate need to conserve vultures is to have a few captive facilities for a planned breeding programme and maintain the viable population for the purpose. The Central Zoo Authority (a statutory body under the Ministry of Environment and Forests) has plans to support creation of rescue cum-breeding centres for vultures as the one existing at (Vulture Care and Breeding Centre) Pinjore, Haryana. It is envisaged that a self-sustaining population would be maintained at the breeding facilities/rescue centres within a framework of shared goals, expertise and resources and presumed that this endeavour will involve active participation of organizations with expertise on the ecology and behaviour of the species, animal health and conservation genetics and breeding biology.

I have noticed during 1990, death of hundreds of vultures which included mostly white-backed vultures, long-billed vultures and slender-billed vultures, possibly due to poisoning. While working with Birds of Prey Project of Bombay Natural History Society in 1991, studying the status, distribution and ecology in Keoladeo National Park, Bharatpur, and Mudholamalai Wildlife Sanctuary in Tamil Nadu, I noticed many active nests and breeding pairs of vulture. However, the trend has now totally changed and there is large decline in the population of the vultures in these areas, as a result of high mortality among vultures. Recruitment rate has also declined.

With expertise of working on in-situ and ex-situ conservation for the last 14 years, taking in view of all the factors I agree that there is an urgent need for initiating long-term conservation breeding of vultures. However, I have a few suggestions for the agencies entrusted with creation of breeding centres.

- The Conservation Breeding Centres should be set up at different locations as off-exhibit facilities within the historical range of the distribution of vultures as well as a few rescue centres to house the sick vultures.

BMS will have the legal status of a not-for-profit organization.

Membership to the society will be free and will not be mandatory to participate in its activities, although it will facilitate the circulation of information.

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Dead vultures at Agra. (Photo: B. K. Gupta).
CORRESPONDENCE

- The facilities should be kept away from aviculture centres like a poultry farm because of the threat of disease transmission. The centres shall also be established away from human settlements.
- From the available information Gyps vultures are relatively easy to house, keep and maintain in captivity, provided we have the desired facilities and observe proper management techniques.
- Before bringing the birds into captivity, it is important to meet the following criteria: the breeding enclosures/rescue centres to be naturalistic and keeper-friendly; individuals involved with the project to have expertise in vulture husbandry, nutrition and health protocols of the species in captivity; To develop and initiate collection and breeding plans in order to ensure maintenance of genetic variability in captivity, and to enhance representation of genetic variability; To identify aspects on individual, social and reproductive behaviour and reproductive physiology which are critically important in maintaining captive populations; To liaise with experts in exchange of technical knowledge; To assess the habitats for restocking (if any) from captive brood populations; To prepare a manual on the maintenance and husbandry of the species in captivity; To develop standardization of enclosure/technique with regard to maintenance of the species in captivity.

However, I also foresee a few hurdles in initiating a captive breeding programme for the vultures:
- The existing population of vultures in captivity (zoos) taken together cannot constitute the ideal founder population required for the breeding programme, as many may be old, juveniles or sick.
- The vultures cannot be sexed from their phenotypic characters. They need to be captured for such identification. Due to capture stress there can be significant mortality among the birds.
- The in-situ population in many areas has drastically reduced. Capture from these sites for the breeding programme can make the species locally extinct.

In my opinion, the government should invest more resources in preservation of the species in in-situ condition, especially in our National Parks and Sanctuaries and stop the use of Diclofenac in the country. It may be noted that as Indians are getting more civilized in the cities and using more modern equipments for disposal of solid wastes including carcasses, the habitats of vultures have vanished and there is no point in thinking of reviving the city population of vultures through captive breeding. Similar condition is also seen in rural India. Our motto therefore should be to preserve the isolated wild population of vultures wherever it exists in situ itself rather than taking them into captivity as it may further result in extinction.


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Tsunami of 26 December 2004 and related tectonic setting

A large tsunami triggered due to an earthquake offshore Sumatra at 7:58:53 AM local time on 26 December 2004 created havoc in several countries of the Indian Ocean, primarily Indonesia, Thailand, Malaysia, Andaman–Nicobar (India), East Coast of India, Sri Lanka, Somalia, Madagascar and several small islands in this area. It caused maximum loss in terms of affected area, leaving millions of people homeless. More than 200,000 human lives are reported to have been lost and millions have been injured; thousands are reported missing. It has affected the citizens of more than 50 countries including tourists from developed countries. The loss of property is so large that even UN officials hesitate to make an estimate and suggest that it may take decades to normalize the situation in the affected regions. The details of this earthquake are as follows: magnitude = 9.0, focal depth = 30 km, epicenter = 3.32°N and 95.85°E offshore Sumatra with nearest town of Banda Aceh about 250 km NNW in northern part of Sumatra (Figure 1). The main shock was followed by several aftershocks, which were primarily confined to the Burma micro plate extending towards Andaman–Nicobar islands north of the epicentral area. The study of the main shock and the immediate aftershocks suggests that approximately 1200 km of plate boundary slipped along a mega thrust with about 15 m of displacement on the fault plane, which resulted in this seismic activity. Subsequently the magnitude is modified to 9.3 and focal depth to 15 km with much larger slip area covering the entire stretch of Burma micro plate which makes it the second largest recorded earthquake during the last 100 years. The loss owing to this tsunami on such a large scale appears to be due to unpreparedness in the countries bordering the Indian Ocean against tsunami waves and socio-economic conditions of the people living along the coasts of these countries. The lack of preparedness has been primarily attributed to absence of tsunami in the Indian Ocean. However according to records in the last 60–65 years, at least three large tsunamis have hit the Indian coasts related to earthquakes in the Andaman sea in 1941, offshore Karachi in 1945 and the present one. The principle of recurring period may be applied to earthquakes but not to tsunami. The tsunami occurring in 1941 and 1945 suggest that they can strike even at close interval specially because they are likely to originate from an earthquake along the plate boundaries in the Arabian Sea, the Indian Ocean and the Bay of Bengal or any other activity such as landslides or volcanic eruption at the bottom of these oceans. The second one offshore Karachi in 1945 resulted into a wave front of almost the same magnitude as the present earthquake (11–15 m) along the coasts of Gujarat, India. Probably the biggest tsunami was also reported from the Indian Ocean related to the Karkata volcano eruption in 1883. This one was so big that it caused about 40 m high waves along the coasts of Indonesia and some of the is-