

and scarcely documented. Therefore, this lack of scientific data urgently warrants further research using appropriate taxa, reliable techniques and on-the-spot field studies in entire Himalayan range to understand the impact of climate change, its cascading effects and possible ways to mitigate it.

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D. S. RAWAT

Department of Biological Sciences,
College of Basic Science and
Humanities,
G.B. Pant University of Agriculture and
Technology,
Pantnagar 263 145, India
e-mail: drds_rawat@yahoo.com

Is diclofenac the only culprit for declining population of *Gyps* vultures in the Moyar Valley

The widely distributed vulture population of India is currently restricted to a few localities¹. It is now rather well-recognized that vultures, especially those belonging to the genus *Gyps*, are facing a radical population decline for about a decade (95%) in South Asia^{2–5}. The population decline of *Gyps* was first noticed in the mid-1990s in Keoladeo National Park, Rajasthan, where the number of breeding vultures was found to be less than half compared to the earlier decade. By 1999–2000, there were no vultures left within the Park⁶. The reason for population decline of the *Gyps* vultures in the Indian subcontinent is believed to be due to the non-steroidal anti-inflammatory drug, diclofenac used in veterinary practice for treating cattle^{7,8}. It is also believed that apart from diclofenac, other drugs used in veterinary practice such as carprofen, flunixin, phenylbutazone and ibuprofen may also be toxic to vultures and other scavenging birds^{9–11}.

While this trend seems to be typical to the Indian subcontinent, our ongoing work in the Moyar Valley, Sathyamangalam Forest Division, Tamil Nadu, provides a glimmer of hope. The Moyar Valley has a resident population of four species of vultures, viz. Egyptian Vulture (*Neophron percnopterus*), King Vulture

(*Sarcogyps calvus*), White-rumped or White-backed Vulture (*Gyps bengalensis*) and Long-billed Vulture (*Gyps indicus*) in reasonable numbers. It is also rather interesting to note that the Valley has a significant presence of cattle, given the rather pastoral nature of the local human population, wherein the practice of treating the cattle with diclofenac is not prevalent.

To understand the trend in greater detail, a survey on the population of vul-

tures was carried out recently, wherein about 161 km of transects were laid and sampled. In certain cases, existing game roads were used as transect lines. Population estimation based on encounter rates was in accordance with the methodology detailed in the literature^{6,12}. Assessment of food availability was through the enumeration and analysis of carcasses. Additional secondary data were gleaned from the historical records of the Tamil Nadu Forest Department.



Results indicate that a declining trend in vultures was reported for the landscape as early as the late 70s and early 80s by Davidar and Davidar¹³. This was due to the practice of deliberate poisoning of the carcasses, as a perceived revenge seeking method on carnivores by the local people. With the launch and successful implementation of a compensation scheme for loss of cattle by a wildlife enthusiast, people have been weaned away from this rather disastrous practice.

Such initiatives, when supported by concerted habitat improvement and protection programmes have resulted in increasing food availability for the vultures, as evidenced by a higher encounter of wild carcasses being eaten by the vultures. In terms of status and distribution, the White-backed Vulture was encountered more frequently ($n = 343$) followed by the Long-billed Vulture ($n = 178$), King Vulture ($n = 3$) and Egyptian Vulture ($n = 2$). Our present observation clearly reveals that there are considerable number of White-backed vultures and Long-billed vultures sighted in the Moyar Valley. The major food source for vultures in this area was from the wild animal carcasses (90%) than the domestic animals (10%).

It is hence evident that the Moyar Valley is a significant habitat for *Gyps* vultures. To ensure and sustain the recovery that the habitat has supported, it is imperative that the following steps are undertaken. (i) Long-term monitoring of vulture population focusing on hitherto unstudied aspects, such as nesting eco-

logy, roosting sites, breeding success and feeding ecology. (ii) Ensuring that wild animals that had natural death and were free from contagious diseases be made available to the vultures. (iii) Sustained compensation scheme for local villagers by the State Forest Department with reasonable monetary compensation for each domestic animal killed by wild carnivores. (iv) Preventive action on the usage of diclofenac in the settlements as well as fringe villages through awareness campaigns. (v) Building capacities for vulture research and monitoring within forest field staff, livestock owners, villagers, school children and teachers on a periodic basis.

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B. RAMAKRISHNAN^{1,*}
S. RAMASUBRAMANIAN²
M. SARAVANAN³
C. ARIVAZHAGAN⁴

¹Wildlife Trust of India,
No. 10, Sandalwood Dept Road,
Northpet,
Sathyamangalam 638 401, India
²Forest Office,
Sathyamangalam Forest Division,
Sathyamangalam 638 401, India
³Asian Nature Conservation Foundation,
Bangalore 560 012, India
⁴Care Earth, #5, 21st Street,
Tillaiganga Nagar,
Chennai 600 061, India
*e-mail: bio.bramki@gmail.com