

## NECK-DROOPING POSTURE OF ORIENTAL WHITE-BACKED VULTURES (*GYPES BENGALENSIS*) IN CLOSE PROXIMITY TO HUMAN OBSERVERS

KEY WORDS: *Oriental White-Backed Vulture*, *Gyps bengalensis*; *diclofenac*; *neck-drooping posture*; *thanatosis*.

Populations of three *Gyps* vulture species on the Indian subcontinent have undergone recent rapid declines due to elevated rates of mortality from diclofenac poisoning (Green et al. 2004, *J. Appl. Ecol.* 41:793–800; Oaks et al. 2004, *Nature* 427:630–632; Shultz et al. 2004, *Proc. R. Soc. Lond. B.* 271 (Supplement 6):S458–S460; Gilbert et al. 2006, *Oryx* 40:388–399). Researchers proposed that vultures adopted a previously undescribed neck-drooping posture prior to death (Prakash 1999, *J. Bombay Nat. Hist. Soc.* 96:365–378; Prakash et al. 2003, *Biol. Conserv.* 109:381–390) that was used to identify ailing vultures (Cunningham et al. 2003, *Anim. Conserv.* 6:189–197). However, Gilbert et al. (2007, *J. Raptor Res.* 41:35–40) showed that neck-drooping was a poor predictor of ill-health and death in Oriental White-backed Vultures (*Gyps bengalensis*) and most likely serves a normal thermoregulation function. Here we describe observations of Oriental White-backed Vultures (OWBV) adopting the neck-drooping posture in the presence of human observers. The context of the observations suggests that neck-drooping has additional functions which are not yet understood.

All observations were made at our study sites in Pakistan, described by Gilbert et al. (2006), between December 2000 and August 2004. On the first occasion, a juvenile Oriental White-backed Vulture that had just bathed was observed standing on the ground on a frequently-used footpath. The bird's feathers were waterlogged, and it was standing with wings extended and head erect, in a pose characteristic of sunning raptors (Houston 1980, *Ibis* 122:366–369). A man riding a donkey approached the vulture, which responded by folding its wings and standing erect and alert. As the man rode to within approximately 2–3 m, the vulture adopted the neck-drooping posture and remained motionless as the man paused to look at it and the donkey approached to within 0.5 m. After the man and donkey departed, the vulture resumed its erect, alert posture, and eventually took flight.

The second kind of observation was made >10 times and filmed once in two wild-caught Oriental White-backed Vultures, a juvenile and a subadult, held in captivity in an aviary at Bahauddin Zakariya University, Multan, Pakistan. When undisturbed, the birds stood erect and alert, but in the presence of a human observer, the birds adopted the neck-drooping posture, even closing the nictitating membranes of their eyes and appearing lethargic and sick, or asleep. Upon being touched by an observer, however, the birds responded instantly by raising their heads and necks and vigorously defending themselves by lunging at the observer with their bills, only to resume neck-drooping as the observer backed away. The birds resumed a normal, erect, and alert posture after the observer left, and all these birds remained healthy for up to 4 yr following first observation of neck-drooping behavior.

These incidental observations of vultures in the wild and in captivity suggest to us that in some circumstances neck-drooping posture in Oriental White-backed Vultures may have a function in addition to thermoregulation proposed by Gilbert et al. (2007). Vultures that were otherwise standing alert and erect were seen to adopt the neck-drooping posture in the close proximity of humans, although only when unable to escape by taking flight. Similar immobility or death-feigning behavior (thanatosis) has been described in a wide range of species and interpreted as a predator avoidance strategy (Franq 1969, *Am. Midl. Nat.* 81:556–68; Sargeant and Eberhardt 1975, *Am. Midl. Nat.* 94:108–119; Gabrielsen and Smith 1985, *Acta Physiol. Scand.* 123:393–398; Burghardt and Greene 1988, *Anim. Behav.* 36:1842–1844; McCallum 1999, *Herpetol. Rev.* 27:90). The behavior has been described in Turkey Vultures (*Cathartes aura*) on the nest when approached by humans (Vogel 1950, *Auk* 67:210–218), and in African White-backed Vultures (*Gyps africanus*; Kirui 2000, *CCA Ecol. J.* 2:44; Mundy 2006, *Vulture News* 55:32) and Hooded Vultures (*Necrosyrtes monachus*) when attacked by African lion (*Panthera leo*), in which case such behavior allowed their escape from the predator (Mundy et al. 1992, *The vultures of Africa*, Academic Press, London, U.K.). The similarities in form and context between our observations of neck-drooping posture in Oriental White-backed Vultures and thanatosis in other species suggest an additional function of this posture in Oriental White-backed Vultures that warrants additional investigation. We propose the hypothesis that neck-drooping is a posture that Oriental White-backed Vultures adopt when approached by humans and unable to flee, and that vultures in the neck-drooping posture look sick and are, therefore, something that humans might normally choose to avoid rather than approach. Our observations have not been investigated in a quantitative manner. We provide them as supplementary to the conclusions of Gilbert et al. (2007) to suggest that vulture postures and behaviors may serve more than one function, and to emphasize that Oriental White-backed Vultures, in captivity or in the wild, might adopt a posture that suggests sickness, without other clinical signs of ill health.

This project was funded by the Gordon and Betty Moore Foundation, The Peregrine Fund, Disney Wildlife Conservation Fund, and other important donors. We thank the following individuals and organizations for their partnership, help and co-operation: Ornithological Society of Pakistan (OSP), Punjab Department of Wildlife and Parks, National Council for the Conservation of Wildlife (NCCW), Bahauddin Zakariya University Multan, WWF (Pakistan), Zoological Society of San Diego, and Washington State University. We also thank Muhammad Asim for his invaluable assistance.—**Richard T. Watson** (e-mail address: [rwatson@peregrinefund.org](mailto:rwatson@peregrinefund.org)), **Martin Gilbert**, and **Munir Virani**, The Peregrine Fund, 5668 West Flying Hawk Lane, Boise, ID 83709 U.S.A.

Received 23 April 2007; accepted 30 October 2007