by Rick Watson,
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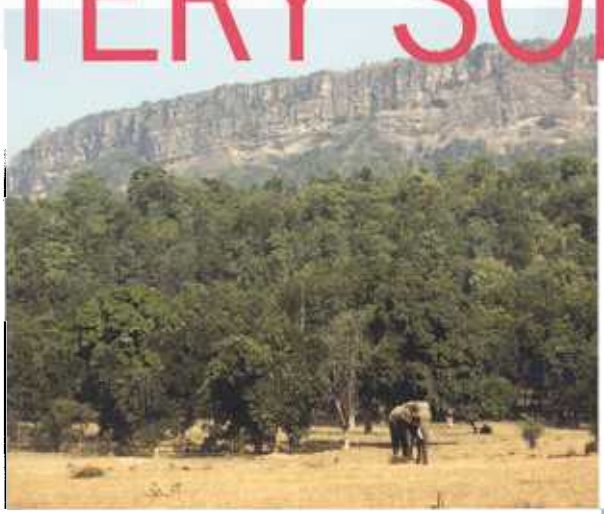
A DEADLY MYSTERY SOLVED

When, in 2000, biologists suggested that a new, possibly viral, infectious disease might be responsible for hundreds of thousands of vulture deaths in South Asia, we at The Peregrine Fund were requested to investigate. If disease was the cause, then it could spread to Europe and even Africa, with disastrous consequences.

We elected to work in Pakistan and Nepal, where laws permitted the collection and export of vulture samples and where we would be joined in our efforts by The Ornithological Society of Pakistan and Bird Conservation Nepal. Lindsay Oaks, a specialist in avian diseases, lead a team of experts in analyzing the samples collected. We began field studies at the largest remaining vulture colonies in each country, measuring rates and patterns of mortality.



Above: The Bhandavgargh National Park in central India provides nesting cliffs for endangered vultures and serves as a refuge for many other species such as the Asiatic elephant./© Munir Virani, The Peregrine Fund

Right: Researchers Martin Gilbert (left) and Munir Virani (center) take to the road by camel trailer in search of vultures./The Peregrine Fund

The road since has been long, hard, hot, and dusty—much like the Punjab landscape in which we worked. We quickly found that vultures were dying in high numbers of kidney failure, called "gout" in birds. A white, paste-like deposit of uric acid coated their internal organs. More than 85 percent of the birds died of this single cause, but the question was, "Why?"

Long-billed vulture pair/© Munir Virani, The Peregrine Fund

Initial samples analyzed by Oaks' team showed no consistent signs of pathogenic viral or bacterial disease, nor were there any signs of pesticides, poisons, heavy metals, or nutritional deficiencies known to cause kidney failure. Frustrated, Oaks asked for fresher samples: "...they may be too autolysed to find delicate viruses...." Veterinarian Martin Gilbert, biologist Munir Virani, and Pakistani partners went back to the field, worked harder and longer, often at night to escape the summer's blistering daytime highs of 120 degrees Fahrenheit. Their task? Collect vultures as they dropped dead from their tree roosts or nests.

Despite the troubles that erupted in Pakistan following 9/11 and the war in Afghanistan, they worked on. Fresh samples were sent to the United States for testing—but still, nothing. By late 2002, Oaks' team concluded that an infectious disease was most probably not at work. The patterns of mortality and diagnostic tests suggested acute poisoning. We began looking at chemicals and drugs used on the vultures' primary source of food: dead domestic livestock. One drug stood out: diclofenac, known to cause kidney failure in mammals...and possibly birds.

Initial test results showed diclofenac present in all the birds that died of gout but in none of the others. Additional test results were consistent with the initial finding.

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Long-billed vulture/© Munir Virani, The Peregrine Fund

Eureka! At last, after nearly 3 years of painstaking investigation, we had found the probable cause of death.

Since then, we have confirmed that diclofenac is present in all vultures that die of gout and is responsible for the precipitous decline of these birds in Pakistan, and probably elsewhere in South Asia. We have evidence that vultures feeding on a dead buffalo or goat

previously treated with normal veterinary doses of diclofenac can easily consume a lethal amount of contaminated meat.

What now? Time is not on the vultures' side. We have a small window of opportunity—months, not years—to prevent species

White-rumped vultures/© Martin Gilbert, The Peregrine Fund

extinctions by eliminating diclofenac from vultures' food sources and through captive breeding and release. With U.S. Department of State endorsement, we called for a high-level meeting in Kathmandu, Nepal, in February 2004, where we outlined our results and sought commitments from the governments of India, Pakistan, and Nepal to control veterinary use of diclofenac and to support species restoration efforts. All agreed. Additional field work will bring answers needed to other questions: Are there places where diclofenac is not used and vultures remain safe? How big an area must be free of the drug to sustain a viable vulture population? What market forces are propelling the sale of diclofenac and what could substitute?

Species recovery can only occur when governments commit to solve the causal problem and organizations and individuals set aside their differences to work together. Having found the cause of vulture mortality, our new goals are clear.

Asian Vulture Population Project Partners

Bird Conservation Nepal
Bombay Natural History Society
Yong Ding Li
Kushal Mookherjee
Oriental Bird Club
Ornithological Society of Pakistan
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