

## Antibiotic resistance: vultures wintering in India show pattern

Egyptian vultures. | Photo Credit: [Pradeep Sharma](#)

*Escherichia coli*, a pathogen seen in over 90% of Egyptian vultures that migrate to northwest India to spend the winter, tend to show significant difference in resistance to antibiotics within a single season, a study has found.

“The vultures were resistant to certain antibiotics when they arrived and developed resistance to certain other antibiotics when they left. Their sensitivity to certain antibiotics also changed within a few months,” says Pradeep Sharma from the College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan. A team studied vultures that arrived in Bikaner in October 2011 and left in March 2012. The birds fed on cattle carcasses dumped in Jorbeer in Bikaner.

The findings of the study, published in the journal *Infection Ecology and Epidemiology*, are significant because migrating wild birds can spread drug-resistant pathogens and cause disease.

The resistance to multiple antibiotics was as high as about 71.5% in *E. coli* collected from vultures. Resistance of 12-13 bacterial strains to 13 commonly used antibiotics was studied.

“The diversity of *E. coli* community in vultures changed and became homogenised by the end of the wintering period. This is due to the environment that the vultures were exposed to — carcasses, garbage, and domestic animals,” says K.S. Gopi Sundar of the Nature Conservation Foundation in Udaipur and one of the authors of the paper.

“There is not much difference in the percentage resistance to multiple antibiotics that are commonly used. What we found was a change in the pattern of resistance,” says Dr. Sharma, corresponding author of the paper. The study found a change in the resistance pattern of the *E. coli* within a single wintering season.

The vultures that use human-dominated landscapes as part of their life cycle were likely to act as “reservoirs and melting pots of bacterial resistance”, the study said.

The study also showed that vultures were able to incorporate and reflect resistance determinants at the site of wintering and during the period of sampling. “So guidelines to restrict antibiotic use in both humans and animals by one country or region alone will be inadequate when wild birds can spread drug-resistant bacteria,” says Dr. Sundar.

Understanding a shock’s structure is key to predicting how it might disrupt near-Earth space.

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