OU student use nation's weather radar network to track bird migration at night

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Using the nation's weather radar network, two University of Oklahoma doctoral students have developed a technique for forecasting something other than the weather: the orientation behavior of birds as they migrate through the atmosphere at night. The students have discovered a way to use the latest dual-polarization radar upgrade to measure broad-scale flight orientation of nocturnal migrant birds—a promising development for biologists and bird enthusiasts.

The approach to the problem paired Phillip M. Stepanian, a meteorology and electrical engineering student, and Kyle G. Horton, a biology student, on the study that demonstrates how the upgraded national weather radar network contributed to the understanding of animal flight orientation behavior at a large spatial scale. Stepanian and Horton may be the first to develop a practical application of polarimetric radar data for tracking migrant birds during nighttime flight.

"This is an important advance because we can now measure how migrants compensate for wind speed and direction to achieve a particular migration track direction; essentially extracting a large-scale measure of bird behavior. We are already involved in several follow-on studies that look at the behavioral variation in flight orientation at large spatial scales," says Jeffrey F. Kelly, Oklahoma Biological Survey.

Horton, who is interested in bird strategies and orientation as they migrate from one place to another at night, will use the methodology to track migrant birds on the east coast and weather events that may disrupt

flight patterns of the birds. Stepanian is interested in the method for collecting the data using the nation's upgraded weather radar network. He wants to apply measurements to bird migration in ways not done before, which is a new application of the radar.

The ability to forecast migrant bird patterns will provide biologists and birders with an important tool for tracking nighttime flight of migrants. Horton hopes to answer some big biological questions with this methodology, while Stepanian values the importance of the radar in tracking migrants and applying the data in new and innovative ways.

An article on this study has been published in the Institute of Electrical and Electronics Engineering's *Geoscience and Remote Sensing* online early edition.

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