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## Collision Course?

### Researchers Tag Golden Eagles with Satellite Telemetry Devices, Track Migration To Assess Risks of Wind Energy Development in Pennsylvania

Twice yearly, above the Appalachian Mountains in central and western Pennsylvania, a rarely witnessed winged migration takes place. Hundreds of eastern golden eagles – majestic raptors with wingspans that can exceed seven feet -- traverse the state to their winter and summer territories, passing above the mountain ridges through what preliminary research shows to be an unchanging 30-60 mile wide corridor of air space.

It's a spectacular sight, but one that could prove to be fatal.

The eagles' flight path overlaps with land areas that hold significant potential for wind power development in Pennsylvania, setting these majestic birds on a potential collision course with fast-moving turbine blades. In the hope of avoiding such a scenario, a team of researchers at the National Aviary and Powdermill Avian Research Center, the biological research station of the Carnegie Museum of Natural History, has come together to track and map the birds' movements. Data collected via satellite tracking will for the first time provide detailed information on where and how individual eastern golden eagles migrate through the entire Appalachian Mountain flyway. That information will then be shared with land managers and government officials for consideration during the siting, permitting and construction phases of wind farm development in Pennsylvania.



*Eastern golden eagle is released after being tagged.*

"At present there is little science to guide the development of wind power on Appalachian ridges," says Dr. Todd Katzner, Director of Conservation & Field Research at the National Aviary. "Our aim in conducting this research is to provide the scientific information necessary to allow decision-makers to pursue use of renewable energy sources with environmental benefits, while at the same time developing this technology in an eagle-friendly way. In Pennsylvania we have a unique opportunity to conduct research before turbines are built, allowing the state to develop this technology in the most appropriate way possible."

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The research team on this project is composed of a diverse group of collaborators, including Dr. Todd Katzner, Director of Conservation & Field Research at the National Aviary; Robert Mulvihill, Field Ornithology Projects Coordinator, Powdermill Avian Research Center; Mike Lanzone Assistant Field Ornithology Projects Coordinator, Powdermill Avian Research Center; Trish Miller, GIS Coordinator, Powdermill Nature Reserve; Dr. David Brandes, Associate Professor of Civil and Environmental Engineering, Lafayette College; and Dan Ombalski, Director, Tussey Mountain Hawkwatch.

Tracking efforts began in November 2006 when the team trapped and tagged two migrating golden eagles near the town of Central City, Pennsylvania. The birds were outfitted with a telemetry device attached via a nonabrasive harness made of Teflon ribbon. Configured as a backpack, the device is able to obtain highly accurate GPS-quality location fixes and then transmit these data via the ARGOS satellite system. An additional bird was tagged and released in March 2007.

“The data we are collecting from these birds and others that we will tag will not only show the birds’ flight paths, but also altitude and flight speed under a suite of climatic and topographical conditions, enabling us to create explicit landscape-scale computer models that predict migration patterns and individual flight behavior during migration,” says Dr. Katzner. “These models will enable us to look at the cumulative impacts of many wind farms on eagle movements and identify critical migration bottlenecks where turbine development should proceed with caution. It is essential to have this kind of detailed information before wind power projects are sited and constructed.”

Wind power development is the world's fastest growing energy technology and in many cases has clear environmental benefits. Industrial scale wind power development along the narrow ridgetops of the Appalachians, however, has been shown to present significant threat to flying animals as illustrated by the thousands of bats found dead at turbines in previous years. This project aims to provide managers and planners with the tools to allow golden eagles to avoid a similar kind of fate.

***For a live map that tracks the progress of the eastern golden eagles that have been tagged, go to <http://www.aviary.org/csrv/eaglePA.php>***

Additional Resources: Kitty Julian, Carnegie Museum of Natural History  
412.622.3328 (o) / 412.956.2612 (m)

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*The National Aviary inspires respect for nature through an appreciation of birds.*

*The mission of the Powdermill Nature Reserve is to advance understanding of our natural world and to communicate that knowledge through research, exhibits and educational programs.*