Statistical models inspired from Facebook could help endangered animals

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Some endangered animals may live in smaller habitats than scientists realize, leading to inflated estimates of their ability to survive, according to a new University of Florida study.

However, by predicting the animals' habitat movement using models employed to analyze human interactions on social networks such as Facebook, scientists with UF's Institute of Food and Agricultural Sciences find the animals' predicament could be better understood.

Conservationists can use this improved approach to better prioritize habitat restoration efforts for endangered species, said author Robert Fletcher, a UF wildlife ecology and conservation assistant professor.

The study appeared Monday in the journal *Proceedings of the National Academy of Sciences*.

Models are often used to predict the movements of animals when data are difficult to collect due to resource and time constraints faced by researchers. The ability to move to different habitat locations, known as connectivity, is important to the long-term survival of a species, because different locations provide additional resources, shelter and mating opportunities.

The study showed that social network models can predict connectivity better than currently used models, which overestimated animal movement.

“These over predictions are problematic because we might falsely think that populations are viable when they may not be,” Fletcher said.

In the study, researchers compared records of actual movements by the cactus bug and the Everglades snail kite to movement predicted by models. One social network model in particular, known as sender-receiver, was remarkably accurate in predicting both animals’ movements, despite that one animal was a bird that could potentially travel more than 100 miles and the other was an insect that only moves in a range of several feet.

Social network models have been used to try to predict relationships among people in social media as well as in disciplines, such as ecology, where they can help researchers understand which species may interact with each other. This was the first time social network models have been applied to understand connectivity in conservation biology, Fletcher said.

Social network models can also be used to help manage pests, he said. One example is predicting where invasive species will move.

Study authors included doctoral students Miguel Acevedo and Brian Reichert, master’s student Kyle Pias and wildlife ecology and conservation courtesy professor Wiley Kitchens.

Provided by University of Florida

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