



System for Calculating the Spatial-Temporal Effects of Environmental Conditions on Animals

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an accurate method to predict and thereby diminish or even prevent the negative effects of changes in global climate, land use and other human activities on the well being of animals.

Overview

Current changes in global climate, land use and other human activities, such as the increased use of pesticides, can have a negative impact on the well being of animals.

The Invention

UW-Madison researchers have developed an accurate method to predict and thereby diminish or even prevent these negative effects. Their system uses an integrated set of models to incorporate all the conditions needed to accurately predict how animals (both ectotherms and endotherms) will react to changes in their surroundings.

The software package contains three subsections: a microclimate model, a model for warm-blooded animals with fur or feathers, and a model for cold-blooded animals, including insects and reptiles. Input for the models is taken from the animal's temperature-dependent behaviors, morphology and physiology.

The software has been successfully used in a number of cases. For example, Professor Porter used it to calculate annual respiratory volumes for several sizes and species of birds in Florida. As a result of this work, the EPA elected to cancel registration of a particular pesticide in Florida.

Applications

- Enables informed decisions in the management of animal environments
- Could aid conservation of rare and endangered species
- Can predict the environmental impact of controlled burns, and the effects of airborne pesticides, pathogens or other agents
- Calculates amounts of ingested contaminants in food and water

Key Benefits

- Provides a full set of models incorporating all conditions needed to predict how animals will react to changes in their environment,

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- Program can be run on a variety of devices and operating systems.
- Front end user interface can be modified for specific applications.

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Additional Information

For More Information About the Inventors

- [John Mitchell](#)

Publications

- Porter W.P, Budaraju S., Stewart W.E. and Ramankutty N. 2000. Calculating Climate Effects on Birds and Mammals: Impacts on Biodiversity, Conservation, Population Parameters, and Global Community Structure. Am. Zool. 40, 597-630.

Tech Fields

- [Clean Technology: Monitoring, remediation & waste reduction](#)
- [Information Technology: Computing methods, software & machine learning](#)

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