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Microsoft Takes on Biodiversity Modeling

By Leon Kaye | January 31st, 2013

There's more to model on this Brazilian beach than the crab (Leon Kaye)

Microsoft is at it again. A leader in corporate social responsibility and social enterprise initiatives, now the information technology giant is boosting its environmental stability chops within its corporate citizenship agenda. Scientists within the company's research division are now partnering with the United Nations Environment Program's World Conservation Monitoring Center (UNEP-WCMC) to develop an exhaustive biodiversity modeling for ecosystems throughout the world.

In an article in the journal *Nature*, the Microsoft Research and UNEP authors make the case that such a computer model would accelerate understanding about biodiversity and conservation. This **general ecosystem model**, or GEM, is similar in concept to computer modeling projects that have helped scientists understand the implications of climate change. In plain English, think of this as a three-dimensional system akin to Google Maps, but with a cross section view instead of a relief map, and laden with biological instead of traffic data that anyone could tap into.

This general ecosystem model would simulate the steps that would occur within an ecosystem, and follow the transfer of nutrients within organisms in addition to feeding, decomposition and reproduction. Imagine such a model that would map out a forest in the Pacific Northwest. Data, ranging from plants of all sizes from giant trees to ground cover; animals both wild and domesticated; creatures that eat smaller creatures; organisms that live off other organisms; and just about information about any life form from lichens to bacteria would be included within this system. According to a release on the UNEP site, this general ecosystem model would allow scientists to model what would happen to groups of life forms over time under various conditions.

The concept of a general ecosystem model goes back a generation ago. Scientists at Penn State, for example, developed a modeling system to gauge the conditions of wetlands. The Microsoft-UNEP model, however, could have the capability to measure life activity in all forms, and within any environment.

One prototype, the Madingley Model, is a step towards a holistic and robust general ecosystem model for both land and marine ecosystems. The system can simulate the fate of just about every organism from a few unicellular plankton to the largest marine whale–just at this point, not those IN the soil. As one scientist on the project quipped, "you have to start somewhere." The goal of the Madingley Model's team is to launch more competing models and engender suggestions, or even replacements, for this project. In the end, such a model could give businesses, academics and public officials better data to make more informed positions on conservation policy. As for Microsoft's involvement, we have another example of how collaboration between large global companies and NGOs or government agencies can build capacity to do great things.

Leon Kaye, based in Fresno, California, is a sustainability consultant and the editor of GreenGoPost.com. He also contributes to Guardian Sustainable Business; his work has also appeared on Sustainable Brands, Inhabitat and Earth911. You can follow Leon and ask him questions on Twitter or Instagram (greengopost). He will explore children's health issues in India next month with the International Reporting Project.

[Image credit: Leon Kaye]