

**Forest Conservation Portal,**  
<http://forests.org/>



---

## Measuring loss of biodiversity the expert way

*Source:* Copyright 2005, SciDev.Net

*Date:* March 11, 2005

*Byline:* Mike Shanahan

Biologists have devised a new method of rapidly assessing how much human actions are affecting the natural world.

They say their method will help in determining progress towards the internationally agreed target of significantly reducing biodiversity loss by 2010.

R. J. Scholes and R. Biggs of South Africa's Council for Scientific and Industrial Research published their 'biodiversity intactness index' last week in *Nature*.

The index discards the traditional approach of compiling lists of species and estimating the rate at which they are going extinct.

Instead, it draws on expert knowledge about how human activities increase or decrease the total populations of groups of ecologically similar species — such as insect-eating birds or large herbivorous mammals.

Using a simple equation, the index gives a measure of how close populations of each of these 'functional groups' are to those in pre-industrial times.

The researchers tested their index by looking at seven countries in southern Africa.

They asked experts on plants, mammals, birds, reptiles and amphibians about how different degrees of human impact, including agriculture and urbanisation, affected groups of similar species in six types of habitat.

The researchers used existing data sources to assess how much of the study area each of these habitats occupies and the patterns of land use in each.

Overall, their index suggests that by 2000, populations of the plants and animals assessed had declined, on average, to 84 per cent of their pre-industrial levels.

The greatest loss was among mammals (71 per cent) and in grasslands, where the index estimates that animal and plant populations have fallen to 74 per cent of former levels.

Species lists — currently the most widely used method for estimating biodiversity loss — show that 99 per cent of species remain across the area studied.

This difference, say the biologists, shows that only looking at whether a species still exists rather than

the state of its population is not sensitive enough to accurately reveal the state of biodiversity.

The 188 countries that are party to the Convention on Biological Diversity set the 2010 target in 2002. But biodiversity is a difficult concept to define as it encompasses all facets of the variety of life on Earth: from genes to species to entire ecosystems.

It also covers the range of ways in which species interact, which together allow natural systems to continue functioning. Because of this, simply counting species numbers and assessing their risk of extinction does not give a detailed indication of how intact the natural world is as a result of human activities.

Scholes and Biggs say their index overcomes this problem and meets the convention's criteria for measuring biodiversity as it is scientifically sound, sensitive to changes over time or between locations, accurate, affordable and easy to understand.

As a method, it is also fast. Estimating the state of southern Africa's biodiversity took the researchers a few weeks of work, whereas detailed population surveys would have taken decades.

However, they note that the index might be insensitive to the long-term effects on biodiversity of climate change or habitat fragmentation.

"Biodiversity assessments need to move away from species lists and species extinction rates, because often the existence and proximity of local populations matters more," said Georgina Mace, director of science at the Institute of Zoology, United Kingdom, in the same issue of Nature.

"Scholes and Biggs' biodiversity intactness index (BII) makes a start in satisfying many requirements and provides a robust, sensitive and meaningful indicator," she said.

The index can be assessed for a single group of species, pooled for a specific habitat type, or combined further to give a picture of the state of biodiversity across entire regions.

For their study, the researchers assessed biodiversity in Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland and Zimbabwe.

The greatest decreases in biodiversity, according to the index, were in Lesotho and Swaziland, the two countries with the greatest density of human population.

Originally posted at: <http://www.scidev.net/news/index.cfm?fuseaction=readnews&itemid=1971&language=1>

---

#### **Forests.org users agree to the following as a condition for use:**

This site contains copyrighted material the use of which has not always been specifically authorized by the copyright owner. We are making such material available in our efforts to advance understanding of forest conservation and related environmental, scientific, political, human rights, economic, democracy, and social justice issues. This constitutes a 'fair use' of any such copyrighted material as provided for in section 107 of the US Copyright Law. In accordance with Title 17 U.S.C. Section 107, the material on this site is distributed without profit to those who have expressed a prior interest in receiving the included information for research and educational purposes. For more information go to:

<http://www.law.cornell.edu/uscode/17/107.shtml>. If you wish to use copyrighted material from this site for purposes of your own that go beyond 'fair use', you must obtain permission from the copyright owner. All efforts are made to provide accurate, timely pieces; though ultimate responsibility for verifying all information rests with the reader. Reading on line, downloading

or other use of this information signifies acceptance of these conditions, and the [Full Disclaimer](#), and may occur on these terms only.

See the [Forest Conservation Portal](http://forests.org/) at <http://forests.org/>  
Networked by Forests.org, Inc., [gbarry@forests.org](mailto:gbarry@forests.org)