PRESSURE POINT

Lost Diversity

Abdul H. Zakri

The United Nations Millennium Development Goals will not be met without a serious effort to halt biodiversity loss.

Biodiversity flourishes at all levels: from species to whole ecosystems, and represents the full measure of life on our planet. The problem is that in recent years, we have been losing these life forms at an unprecedented rate.

It has been 30 years since the naturalist Edward O. Wilson popularized the concept of biodiversity, and more than 15 years since the member states of the United Nations (UN) agreed to protect, sustain and share the benefits of biodiversity through the Convention on Biological Diversity (CBD).

So, what progress has been made in slowing biodiversity loss and what steps should the scientific community take to help in this effort?

The international community has pledged to slow the rate of biodiversity loss by 2010. Practical steps need to start with the Millennium Ecosystem Assessment (MA), begun in 2001 and completed in 2005, which was the most comprehensive evaluation of the ecological health of the planet ever undertaken. More than 1,350 experts from 95 countries provided a detailed profile of the state of the world's habitats, ecosystems and biodiversity.

The MA shows that pressures on biodiversity — including population growth, increased wealth and more intensive energy use — have grown, and that biodiversity loss is an obstacle to meeting some of the UN Millennium Development Goals, such as poverty reduction, food security and environmental sustainability.

For example, nearly one-half of the world's tropical dry forests have been replaced by cultivated land, largely comprising monoculture crops, and more than one-third of the Mediterranean forests have been converted to other uses, most notably farmland and development. Such trends have important long-term implications for the health of the planet. Furthermore, they pose immediate risks to the developing world, where people often rely on natural resources for their survival.

In addition to assessing the damage, the MA presents ways to help stem, and ultimately reverse, ecosystem degradation and biodiversity loss. The most critical step is to begin to incorporate the preservation and protection of biodiversity into strategies for sustainable development. The MA describes several places where this has been achieved — for example, in Costa Rica's vibrant eco-tourism industry. Governments in developing countries need to be convinced that environmental protection and preservation can go hand-in-hand with poverty reduction.

How can scientists contribute? The most useful way is to devise global scientific strategies for enhancing our understanding of biodiversity. Laying the scientific groundwork is critical to gaining public support for action. The Intergovernmental Panel on Climate Change (IPCC), which was set up by the World Meteorological Organization and the UN Environment Programme and was the co-winner of the 2007 Nobel Prize (with Al Gore), has shown that scientists have the power to mobilize public support to address critical environmental issues.

A similar strategy can now be applied to biodiversity. Just as the IPCC provided a 1990 baseline for reducing greenhouse-gas emissions, so the MA provides a 2005 baseline for biodiversity. The MA report has not yet created the necessary political momentum for change. However, there are lessons here too from the IPCC. It was not until its third report that the climate panel began to have a dramatic impact on global political discourse. The cumulative weight of evidence provided by the IPCC over nearly two decades has slowly altered public awareness of the climate-change challenge.

I was fortunate to serve as co-chair of the MA Board. I know that I speak for the more than 1,300 scientists who participated in the initiative when I say that it is our fervent hope that our first report will be followed by additional assessments of the planet's health. Another assessment is already needed to tell us what we have and have not achieved since 2005. Such exercises are not cheap: the MA cost some US$30 million. That is comparable to each IPCC report. Yet, it is a small price to pay if it leads to improving the health of the planet.

Where do we go from here? Ideally, we need a second MA before the fifth replenishment of the Global Environment Facility (GEF) in 2010. The GEF is the foremost instrument for helping developing countries to protect the environment while creating a foundation for sustainable livelihoods. At the same time, we must agree on a set of indicators that convey to the public the importance of biodiversity and the cost of continuing on our current path of species loss. The IPCC transformed public understanding of climate change by emphasizing the simple matrix of parts per million of carbon dioxide in the atmosphere. We need a comparable, simple yet powerful, indicator for biodiversity.

Initially, we must arrive at a scientific understanding of the problem and the options for addressing it. Then, scientists must convey their understanding to the public in ways that can be understood. We need to follow the IPCC's lead and develop the MA into an ongoing project that allows both scientists and the public to monitor the success — or failure — of our efforts to preserve the planet's biodiversity. ■

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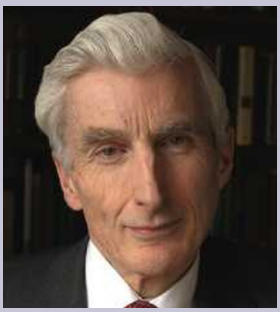
VIEWPOINT | Martin Rees

International collaboration is part of science's DNA



Many of the challenges that science faces today — for instance, climate change, food and energy security, and the spread of infectious disease — are global in nature and require a global response. These factors make international collaboration in science more important than ever. Yet, successful collaboration depends on all parties having a certain level of scientific and technological capacity. That is a primary reason why scientific capacity must be built in developing countries. In fact, projects that fail to help build a strong scientific base — capable of serving society long after the project is complete — are not worth pursuing. International projects in science must address both local needs and global concerns. Institutions in the North that are hoping to help their colleagues in the South should focus their efforts on training, international exchange and infrastructure development. That has been, and will remain, the ultimate goal of collaborative initiatives that the Royal Society in the UK has pursued with its colleagues in Africa and other developing countries. Institutions in the developing world need to ensure that the funds scientists and scientific institutions receive are properly utilized and have an impact on society. Scientists in the developing world also need to build close ties with policy-makers in their own countries to help sustain support over the long term. Money spent haphazardly, and with no long-term political will to strengthen research capacity and infrastructure, will ultimately be wasted. Money invested to advance a strategic vision for capacity building, and backed by the political will to succeed, can change the world.

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