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# The Greatest Challenge of Our Species

By THOMAS LOVEJOY

In a cavernous London conference center so devoid of life as to seem a film set for “The Matrix,” 3,000 scientists, officials and members of civil society organizations met in the last week of March to consider the state of the planet and what to do about it.

The Planet Under Pressure conference is intended to feed directly into the “Rio+20” United Nations Conference on Sustainable Development this coming June, 20 years after the Earth Summit in Rio convened the largest number ever of heads of state and produced, among other things, two international conventions, one for climate change and the other for biological diversity.

While it is not as if nothing has been achieved in the interim or that scientific understanding has stood still, it is obvious that new science is not needed to conclude that humanity has failed to act at the scale and with the urgency needed.

In the United States, in particular (but not exclusively), far too much attention has been given to the non-issue of whether climate change is real or not. In the meantime the heating of the atmosphere proceeds inexorably, the Arctic ice has thinned and retreated at its summer low to a point that it might be tied to the exceptionally warm spring in Europe and North America. Spring bloom has erupted early in North America and Europe. Most people just say how nice the weather is with no sense of the march of climate change.

Since the industrial revolution, developed nations have contributed significantly to the atmospheric burden of greenhouse gases. That led to a two-tier arrangement in the Kyoto Protocol, originally adopted in 1997, basically giving time to developing countries to improve their economies before taking major action.

The response of the United States at the time was to abdicate its traditional leadership position with a Senate vote based on the myopic notion that there was no point in doing anything if China and India were to keep on building coal-fired power plants. In the meantime, China is making measurable progress in decarbonizing its economy and has become the largest producer of solar panels in the world.

But the issue before humanity is, in fact, bigger than fossil fuel combustion, and far bigger than climate change. The Stockholm Environment Institute summed it up nicely in an analysis that identified a planet departing from planetary boundaries in three ways: climate change, nitrogen use and loss of biodiversity.

The use and frequent overuse of nitrogen fertilizer primarily by industrialized agriculture has polluted streams and lakes, and, in turn, coastal waters around the world. The resulting dead zones in coastal waters and estuaries are devoid of oxygen and largely devoid of life. They have doubled in number every

decade for four decades — an increase by a factor of 16. The amount of biologically active nitrogen in the world is twice the natural level.

The greatest violation by far of planetary boundaries is in biological diversity. This is because, by definition, all environmental problems affect living systems; biological diversity integrates them all. Running down our biological capital is pure folly.

The planet works as a biophysical system that moderates climate (global, continental and regional) and creates soil and its fertility. Ecosystems provide a variety of services, not the least of which is provision of clean and reliable water. Biological diversity is the essential living library for sustainability. Each species represents a unique set of solutions to a set of biological problems, any one of which can be of critical importance to the advance of medicine, to productive agriculture, to the biology that provides current support for humanity, and, most importantly, will provide solutions to the environmental challenge.

Looking ahead, we not only have to deal with these planetary scale problems but also find ways to feed and produce a decent quality of life for at least two more billion than the seven billion people already here. We need to do this without destroying more ecosystems and losing more biological diversity.

Human ingenuity should be up to the challenge. But it has to recognize the problem and address it with immediacy and at scale.

An important step, a “Future Earth” organization, was announced at the conference. It will bring all the relevant scientific disciplines together to work on this, the greatest challenge in the history of our species. This is essential because many physical scientists seem blind to the importance of biology in how the living planet works, and how it can provide critical solutions. Economics and social sciences are critical as well.

History will measure the impact of the Planet Under Pressure conference and the extent that Rio+20 rises to the challenge. The moment has come to realize that this planet which brought us into existence must be managed as the biophysical system that it is. It is time to get our hands on the steering wheel, not to save the planet but to keep it habitable.

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