

## AS I SEE IT

# Future of life on Earth

John Cairns, Jr.\*

Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, USA

One lesson from the five great global extinctions is that species and ecosystems come and go, but the evolutionary process continues. In short, life forms have a future on Earth, but humankind's future depends on its stewardship of ecosystems that favor *Homo sapiens*. By practicing sustainability ethics, humankind can protect and preserve ecosystems that have services favorable to it. Earth has reached its present state through an estimated 4550 million years and may last for 15 000 million more years. The sixth mass extinction, now underway, is unique because humankind is a major contributor to the process.

Excessive damage to the ecological life support system will markedly alter civilization, as it is presently known, and might even result in human extinction. However, if humankind learns to live sustainably, the likelihood of leaving a habitable planet for posterity will dramatically increase. The 21st century represents a defining moment for humankind — will present generations become good ancestors for their descendants by living sustainably or will they leave a less habitable planet for posterity by continuing to live unsustainably?

In addition to humankind's relationship with natural systems, other ethical problems must be confronted. For example, how can society expect individuals who do not know where their next meal is coming from to be concerned about the future of civilization and life on Earth? How can humankind ensure a fair and equitable use of resources within its own species and with the 30+ million other life forms that share the planet? How can humankind preserve the integrity of natural systems and maintain human civilization?

This journal has the opportunity to open a dialogue on these and other crucial ethical issues to the benefit of all humankind. Some illustrative issues follow:

1. How can humankind meet the basic needs of its own species and the planet's ecological life support system upon which human lives depend?

2. How can humankind begin to live sustainably so that its descendants will inherit a habitable planet?

3. How can humankind focus more attention on 'social health' (i.e. social capital) when basic needs have not been met? Can humankind reduce poverty, wars, terrorism, suicide, and other undesirable attributes of the human condition as a step toward increased social health?

4. How can humankind be persuaded to purchase products from manufacturers who reclaim their used products for reuse and recycling?

5. How can developed nations reduce their ecological footprint size to reflect the world's average? Secondly, how can the affluent keep their ecological footprint at a level that will not damage the integrity of natural systems so that the monetary savings can be used to aid those whose basic needs are not being met?

6. How can humankind persuade individuals to use native plants and grasses on their private property and use only natural rainfall for this vegetation?

7. How can humankind reduce the use of pesticides, artificial fertilizers, and other chemicals that contaminate water supplies in its households and on its personal properties?

8. How can citizens be persuaded to use public transportation whenever possible and to use energy efficient appliances, including automobiles?

9. How can individuals be persuaded to use fewer resources per capita in developed countries until the basic needs of the poor have been met?

10. How can humankind be persuaded to cease shrinking the planet's natural systems to accommodate human artifacts?

11. When will humankind give derelict ecosystems in each bioregion a high priority and begin to restore them?

12. How can humankind persuade governments (local to national) to cease environmentally harmful subsidies?

\*Email: jcairns@vt.edu

Many prophets, such as Robert Malthus and Garrett Hardin, have tried to convince humankind that it is dependent upon the resources of a finite planet and that failure to acknowledge that exceeding the planet's carrying capacity for humans will vastly increase human suffering and mortality. What has happened to natural systems in the last century is appalling and has probably disrupted evolutionary processes enough to produce ecological disequilibrium for a few centuries or more. Since humankind's basic life support system is ecological (as opposed to technological), this situation is high risk.

Terrorists can kill and/or maim millions, but change in climate, shortage of water, loss of topsoil, depletion of resources, and dominance of pest species beyond present levels could kill billions. When cultures and individuals forsake ethics or distort its overall aims, tragedy is the most likely result. In much of the world, success is measured by material possessions and wealth, which has made the world increasingly impersonal.

The profligate use of resources inflicts damage on natural systems and human society. Technological advances have produced some dramatic benefits; however, as Garrett Hardin notes, 'one can't only do one thing.' Technological advances have also produced unintended, unexpected, and hazardous results as well. These unexpected, hazardous results, in the aggregate, place humankind's future—and even its existence—at risk.

The complex interactions of biology/ecology, economics, and technological and social factors must be

understood and coped with in an ethical, sustainable way to save both natural systems and humankind. Ethical views must not alienate humankind from the natural world. Science has documented much of what is at risk and some of the actions needed to reduce risk. Instead of denigrating the knowledge (e.g. global warming) and placing undue emphasis on the uncertainties (which always exist in science), leaders and citizens should give attention to those areas upon which mainstream science has reached a consensus. Unsustainable practices can be halted, but, even though remedies are known, they are not acted upon. It is not too late for a paradigm shift to occur.

Humankind has the information to improve the future of life on Earth, including the human species, but it lacks the leadership and the resolve to do enough. History judges civilizations by how they cope with the challenges they face; however, if humankind fails this challenge, no judgment will be needed. If humankind succeeds in implementing sustainable practices, it will give posterity (of all species) a better life.

The economic disparities in *Homo sapiens* have been well documented, and humankind will not achieve sustainable use of the planet until these disparities are markedly reduced within the species. Similarly, humankind must not take such a disproportionate share of the planet's resources from other life forms. Ethos and ethics together with equity and fairness are essential to achieve sustainability. Life on Earth will almost certainly persist! Humankind must practice ethics to increase the probability of being part of the future!

*Editorial responsibility: Mary Batson (Managing Editor), Oldendorf/Luhe, Germany*

*Submitted: February 24, 2004; Accepted: February 26, 2004  
Published on the web: February 26, 2004*