

# CHAPTER 1

## Earth's Biosphere

This chapter acquaints readers with Earth's Biosphere since it is rarely mentioned in public discourses.

- (1) The Biosphere is more than a collection of plant and animal species — it is an operating system.
- (2) The present Biosphere is the one in which *Homo sapiens* evolved and flourished.
- (3) If “business as usual” continues, the present Biosphere will collapse (lose a huge number of its component species) and, over evolutionary time, be replaced by a new, quite different Biosphere that is unlikely to be favorable to *H. sapiens* — after a great extinction, the majority of species are different.
- (4) The consumer economy is workable because of a continual flow of renewable resources provided by the Biosphere. So why do polls always show a high priority for the human economy, and the environment (i.e., the Biosphere) is barely listed in the top 20 priorities?
- (5) A present ecological overshoot (i.e., using renewable resources faster than the Biosphere can regenerate them) is at present 154%, which is clearly unsustainable.
- (6) The Biosphere could cross more crucial tipping points in the near future, which would place humankind at serious risk. Extinction cannot be ruled out for both humans and a vast number of other species.

I have 14 Power Point lectures online as of February 2011 (more are being prepared and will be added as they are completed). The presentations are part of the National Academy of Sciences Members' Lectures site (<http://www.pitt.edu/~super1/NAS/nas.htm>) for the Supercourse Lecture series. All are available free.

*Biospheric Health and Integrity: The Top Priority for Humankind*, November 2009

<http://www.pitt.edu/~super1/lecture/lec36401/index.htm>

*Global Climate Pacts: Self Destructive or Successful?*, December 2009

<http://www.pitt.edu/~super1/lecture/lec36631/index.htm>

*Monitoring Biospheric Health and Integrity*, January 2010

<http://www.pitt.edu/~super1/lecture/lec36771/index.htm>

*Eco-ethics and Sustainability Ethics to Protect the Biospheric Life Support System*, February 2010

<http://www.pitt.edu/~super1/lecture/lec37061/001.htm>

*Environmental Refugees: Ethical Issues Involving Overpopulation*, February 2010

<http://www.pitt.edu/~super1/lecture/lec37171/001.htm>

*Expanding Ecotoxicology to Enhance the Health of the Biosphere*, March 2010

<http://www.pitt.edu/~super1/lecture/lec37301/001.htm>

*Biospheric Changes are Treat Multipliers*, April 2010

<http://www.pitt.edu/~super1/lecture/lec37481/001.htm>

*Sustainability and the Biospheric Life Support System*, April 2010

<http://www.pitt.edu/~super1/lecture/lec37491/001.htm>

*The Effect of Environmental Refugees upon Biospheric Health and Integrity*, June 2010

<http://www.pitt.edu/~super1/lecture/lec37961/001.htm>

*Biospheric Feedback Loops and Rapid Global Climate Change*, June 2010

<http://www.pitt.edu/~super1/lecture/lec38611/001.htm>

*Societal Adaptation to a Badly Damaged Biosphere*, October 2010

<http://www.pitt.edu/~super1/lecture/lec40121/001.htm>

*Slowing Down Biospheric Change*, November 2010

<http://www.pitt.edu/~super1/lecture/lec40521/001.htm>

*The Sword of Damocles and the Biosphere*, January 2011

<http://www.pitt.edu/~super1/lecture/lec41211/001.htm>

*Changing Behavior to Nurture the Biosphere is the Right Thing to do*, February 2011

<http://www.pitt.edu/~super1/lecture/lec41211/001.htm>

*Dumb Growth and the Biosphere*, March 2011

<http://www.pitt.edu/~super1/lecture/lec41681/index.htm>

*Human Effects upon Evolutionary Processes in the Biosphere*, April 2011

<http://www.pitt.edu/~super1/lecture/lec41961/index.htm>