

CHAPTER 13

Biospheric Refugees

*It is not necessary to change,
Survival is not mandatory.*

W. Edwards Derrington

The sad truth is that most evil is done by people who never make up their minds to be either good or evil.

Hannah Arendt

*Try not to become a man of success,
But rather try to become a man of value.*

Albert Einstein

Environmental degradation, overpopulation, refugees, narcotics, terrorism, world crime movements, and organized crime are worldwide problems that don't stop at a nation's borders.

Warren Christopher

. . . nature does not bestow them [natural resources] on us; we seize on them in her despite.

Jean-Jacques Rousseau
Book IV, Confessions, 1770, published 1782

Defining a Biospheric Refugee

A "biospheric refugee" is an individual member of a species (e.g., *Homo sapiens*) that is forced to leave a formerly habitable area of the Biosphere because the area has become less hospitable or inhospitable. For example, humans living in the Maldives Island group and the Bermuda Islands will be displaced by rising sea levels (e.g., ScienceDaily 2011a). I have previously used the term "environmental refugees," but am now replacing it with "biospheric refugees" to designate humans who are relocating on a finite planet to a new ecosystem that is perceived to have better resources or other benefits.

Another example of increased risk that is bacteria that are spreading in warming oceans and "causing a proliferation of the *Vibrio* genus of bacteria, which can cause food poisoning, serious gastroenteritis, septicemia and cholera" (Melvin 2011). Both sea level rise and contamination of seafood would almost certainly displace inhabitants of coastal areas.

Outbreaks of old diseases are another risk because unvaccinated individuals can carry diseases to other areas when they become biospheric refugees. With both smallpox and polio, a global effort was required to control these diseases, and the effort was effective. However, "In early 2007, . . . violent opposition to vaccinations arose in Pakistan's Northwest Frontier Province. In 2009, the Taliban refused to let health officials administer polio vaccinations in Pakistan's Swat Valley. . . . devastating floods in 2010 displaced millions, hindering vaccination initiatives and allowing the disease to spread. . . . At the end of August 2011, there have been 77 cases of polio in Pakistan, compared to the 43 cases for the same period in 2010" (Earth Policy Institute 2011). "Smallpox plagued humanity for thousands of years. In the 18th century, smallpox killed one out of every ten children in France and Sweden. Over the 20th century, the virus caused between 300 and 500 million deaths worldwide. No effective treatment was ever developed. . . . The eradication of this devastating disease is one of the public health's greatest achievements. It involved mass vaccinations and surveillance to track and contain outbreaks. In 1977, ten years after the World Health Organization (WHO) began an intensive eradication program, the last naturally occurring case of smallpox was identified in Somalia. And on May 8, 1980, the World Health Assembly declared smallpox eradicated" (Earth Policy Institute 2011).

Globalization of Resources

The only way to protect and nurture the Biosphere is to use a quality control system to monitor and assess that quality control conditions are being met to ensure the health and integrity of the Biosphere. The severe, existing damage is persuasive evidence that sovereign nations are either incapable or unwilling to develop such systems. A global issue could be addressed by convening a global conference; however, since the series of conferences on global warming, from Kyoto, Japan to Cancun, Mexico, has failed to significantly reduce the risk of global warming, a successful regional conference might be the best starting point. One such conference, "Transitions to a Low Carbon Energy System in Europe," is proposed in October 2011 by the EEAC Working Group Energy (program co-ordination: christain.hey@umweltrat.de [EEAC WG Energy chair; German Advisory Council on the Environment SRU] EEAC-European Environment and Sustainable Development Advisory Councils, www.eeac-net.org) and deserves serious attention since carbon free energy sources will reduce atmospheric greenhouse gas emissions.

Meanwhile, the damage to the Biosphere continues. Recent examples follow.

(1) "A leak from a shallow water crude oil pipeline in the Main Pass Area of the Gulf of Mexico has led Chevron to shut down its Louisiana Main Pass pipeline network, . . . Both the U.S. Coast Guard and the Louisiana Oil Spill Coordinator's Office said they had not been informed of a leak off the coast" (McGurty and Sheppard 2011).

(2) "Europeans face greater risk of illness, property damage and job losses because of the impacts of climate change on the seas around them . . . (ScienceDaily 2011b). Unlike citizens of the United States, where denial of the scientific evidence of climate change is still very strong, in Europe "Worried citizens, whose biggest top-of-mind concerns are sea level rise and coastal erosion, are taking personal actions to reduce carbon emissions" (ScienceDaily 2011b). At least Europeans will be better prepared for the inevitable consequences of climate change when they occur, but a global preparedness is mandatory if civilization is to survive.

(3) Coral reefs "will be the first entire ecosystem to be destroyed by human activity" according to Professor Peter Sale who has "studied the Great Barrier Reef for 20 years" and "currently leads a team at the United Nations University Institute for Water, Environment and Health" (Marszal 2011). Coral reefs are a keystone ecosystem in the world's oceans and an important source of both food and recreational dollars. The people who depend on them will almost certainly become biospheric refugees.

(4) "The extent the Arctic sea ice has reached on Sep. 8 [2011] with a 4.240 million km² [is] a new historic minimum. . . . the ice melt in the Arctic would further proceed and even exceed the previous historic minimum of 2007. It seems to be clear that this is a further consequence of the man-made global warming with global consequences. Directly, the livelihood of small animals, algae, fishes and mammals like polar bears and seals is more and more reduced" (Heygster 2011).

(5) "The conversion of Earth's land surface to urban uses is one of the most irreversible human impacts on the global biosphere. It drives the loss of farmland, affects local climate, fragments habitats, and threatens biodiversity. . . . a worldwide observed increase in urban land area of 58,000 km² from 1970 to 2000. . . . Across all regions and for all three decades, urban land expansion rates are higher than or equal to urban population growth rates, suggesting that urban growth is becoming more expansive than compact." (Seto et al. 2011).

Why is humanity behaving in such suicidal manners? Destroying the biospheric life support system in which *Homo sapiens* evolved and often flourished is not a rational act. Neither is destroying the natural capital that produces the renewable resources upon which the human economy depends. The best explanation of this behavior is that the Biosphere is perceived as a miscellaneous collection of plants and animals that should be protected only if no adverse effects occur in the human economy. The present Biosphere is an interacting, living system upon which humans depend and without which civilization could not survive. The first five biospheres did not produce conditions so essential to human survival, and *Homo sapiens* could probably have not survived in any of them. Humanity must develop a more accurate vision of the present Biosphere and act accordingly.

Three Billion More

Frequent statements indicate that the global human population is expected to add 3 billion additional people on or before the end of the 21st century. Some assertions have been made that the population will then stabilize, but no persuasive information indicates how this stabilization will or will not happen sooner. Of course, a pandemic disease comparable to the "Black Death" might well reduce the human population to match or go below Earth's carrying capacity for humans, but one hopes for a more compassionate solution to the problem of overpopulation.

" . . . a taboo is 'a prohibition excluding something from use, approach or mention because of its sacred and inviolable nature'" (Hardin 1996, p. vii). "If we refuse to discuss a subject, how can we inform the unknowing what it is that is sacred? . . . A word-taboo held inviolate for a long time becomes a taboo on thinking itself (for how can we think of things we hear no words for?)" (Hardin 1996, p. viii). "Science, to be successful, must be open. As soon as a barrier to discussion becomes evident, we know that scientific investigation has been stopped in that direction" (Hardin 1996, p. x). If even discussing overpopulation is taboo, one cannot be surprised that society has no plans to feed and

house or provide education and health care for the projected 3 billion additional people nor how to cope with the biospheric refugees who will result if these basics are not available or provided.

Hardin (1998) discusses the ostrich factor – “the stupid ostrich thrusts its head and neck into a bush, ‘imagining that the whole of the body is concealed’” (Hardin 1998, p. 1) – in society, i.e., society is observing a taboo and closes off the search for causes of crises. Lack of discussion on biospheric refugees ignores the causes of such crises as sea level rise, food scarcity, and agricultural water supply. As early as 1965 (Cairns 1965), trends in population growth were showing that the global human population would reach 6 billion in 2000 if continued. Why has the discussion of this crisis (any others) been taboo?

Misery as a Means of Population Control

Approximately 1.1 billion people are currently starving and approximately 2 billion are malnourished, which confirms that the human population grows faster than the food supply (Malthus 1798). Economist Kenneth E. Boulding’s (1971, p. 137) “Dismal Theorems” are a relatively recent evaluation of overpopulation, including technology’s enhancement.

First Theorem: “The Dismal Theorem”

If the only ultimate check on the growth of population is misery, then the population will grow until it is miserable enough to stop its growth.

Second Theorem: “The Utterly Dismal Theorem”

This theorem states that any technical improvement can only relieve misery for a while, for so long as misery is the only check on population, the [technical] improvement will enable population to grow, and will soon enable more people to live in misery than before. The final result of [technical] improvements, therefore, is to increase the equilibrium population which is to increase the total sum of human misery.

Third Theorem: “The moderately cheerful form of the Dismal Theorem”

Fortunately, it is not too difficult to restate the Dismal Theorem in a moderately cheerful form, which states that if something else, other than misery and starvation, can be found which will keep a prosperous population in check, the population does not have to grow until it is miserable and starves, and it can be stably prosperous (Boulding 1971).

Severe food shortages already exist in 2011 in various parts of the world. The situation in Somalia, both food and potable water, is appalling, especially since much of the relief food has been stolen and is being sold in villages where children are starving. The situation can only deteriorate further since climate change is adversely affecting both food and water supplies and the human population is still growing exponentially. This crisis should be enough to initiate a free and open discourse on bringing Earth’s population within Earth’s carry capacity and preventing more humans from living in misery.

An Alternative Vision of the Future

My own vision “in progress” follows.

- (1) Biospheric refugees have disappeared because humans are living within Earth’s carrying capacity.
- (2) Humans nurture the Biosphere and live in harmony with the universal laws of physics, chemistry, and biology.
- (3) Social evolution replaces technology as the primary means of solving problems.
- (4) Free and open discussions have replaced taboos on discussion of human population size, ecological overshoot, economic growth, carrying capacity, and evolution.
- (5) Denigration of scientists and scientific evidence is not used to avoid making tough choices about global warming and other global problems.
- (6) Political leaders have the courage to inform citizens that their lifestyle is unsustainable (i.e., a 21st century counterpart of Winston Churchill’s “blood, toil, sweat, and tears” speech at the outset of World War II).
- (7) Corporations are regarded as legal entities and are not given some of the same rights as humans.
- (8) Beyond the basic necessities of food, shelter, and clothing, a “social contract” is in place to restrain greedy individuals from consuming a disproportionate share of Earth’s finite resources (i.e., orders of magnitude more than the average citizen).
- (9) Since many decisions must be based on scientific information, all citizens understand the scientific process and how it works.
- (10) Above all, humankind must pledge to leave a habitable planet for posterity and must back up the pledge with continuous action to protect the biospheric life support system, including both natural capital and ecosystem services.

Acknowledgment. I am indebted to Darla Donald for transcribing the handwritten draft and for editorial assistance in preparation for publication and to Paula Kullberg, Karen Cairns, Peter Leigh, and Shireen Parsons for calling useful references to my attention.

LITERATURE CITED

- Boulding, K. 1971. *Collected Papers*, Vol. II. Colorado Associated University Press, Boulder, CO.
- Cairns, J., Jr. 1965. *Population Dynamics*. American Institute of Biological Sciences, Patterns of Life Series, Rand McNally and Company, Chicago, IL.
- Earth Policy Institute. 2011. Two stories of diseases: smallpox and polio. 15Sept http://www.earth-policy.org/data_highlights/2011/highlights19.
- Hardin, G. 1996. *Stalking the Wild Taboo, Third Edition*. The Social Contract Press, Petoskey, MI.
- Hardin, G. 1998. *The Ostrich Factor: Our Population Myopia*. Oxford University Press, Oxford, UK.
- Heygster, G. 2011. Arctic sea ice extent small as never before. Institute of Environmental Physics, University of Bremen. <http://www.iup.uni-bremen.de/seaice/amsr/minimum2011-en.pdf>.
- Malthus, T. 1798. *An Essay on the Principle of Population*. J. Johnson, London.
- Marszal, A. 2011. Coral reefs 'will be gone by the end of the century.' The Independent 11Sept <http://www.independent.co.uk/environment/nature/coral-reefs-will-be-gone-by-end-of-the-century-2352742.html>.
- McGurty, J. and D. Sheppard. 2011. Chevron confirms Gulf of Mexico oil leaks. Reuters, 14Sept <http://www.reuters.com/article/2011/09/14/us-pipeline-chevron-mainpass-idUSTRE78D07M20110914>.
- Melvin, D. 2011. Scientists: bacteria spreading in warming oceans. Associated Press 13Sept http://hosted.ap.org/dynamic/stories/E/EU_OCEAN_WARMING?SITE=MAHYC&SECTION=HOME&TEMPLATE=DEFAULT.
- ScienceDaily. 2011a. Sea levels much less stable than earlier believed, new coral dating method suggests. 11Sept <http://www.sciencedaily.com/releases/2011/09/110911145228.htm>.
- ScienceDaily. 2011b. Major threats foreseen due to Europe's changing marine environments. 13Sept <http://www.sciencedaily.com/releases/2011/09/110913122039.htm>.
- Seto, K. C. M. Fragkias, B. Guineralp and M. K. Reilly. 2011. A meta-analysis of global urban land expansion. *PLoS One* 6(8):e23777.