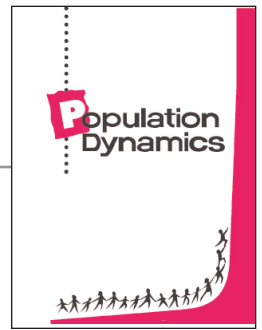


The People Connection

Student Reading

“Population growth may be the most pressing issue we face as we enter the new millenium.”

National Geographic Magazine, January 1998



Central to so many of the environmental, social, and economic issues facing the planet today are people—our numbers and our behaviors. Although barely noticeable on a day-to-day basis, human population pressures threaten the health of our ecosystems and the quality of life for Earth’s inhabitants.

Consider that in the six seconds it takes to read this sentence, 15 more people will inhabit the globe. In fact the world’s population grows at nearly a record pace, adding a New York City every month, and a Germany each year.¹ At the turn of the century there were six billion of us and counting. This growth in human numbers has been described as a “A population explosion,” doubling ever faster over the past 300 years.

What Ignited the Explosion?

Rapid population increases have been a very recent development in the scope of human history. People lived on Earth for about three million years before the world population reached 500 million around 1600. Until then, **birth rates** and **death rates** were in balance, keeping the population stable. Although birth rates were high, death rates—particularly among children—also remained high.

By the 17th century, this balance of birth and death rates began to change as advances in medical care, sanitation, food production, and nutrition increased **life expectancy** for children and adults. Death rates dropped, but birth rates remained high and the population grew steadily. By 1800, at the height of the Industrial Revolution in North America and Europe, global population reached one billion.

As industrialization grew throughout the Western world, people exchanged their agrarian lifestyles for homes and jobs in burgeoning cities. Without land to farm, large families became neither necessary nor practical. Slowly, birth rates dropped in rapidly industrializing nations. This three-part population pattern—from high birth and death rates, to high birth and low death rates, and finally to low birth and death rates—is now referred to as the “**demographic transition.**”

In the non-industrialized nations of Africa, Latin America, and Asia, however, birth rates remained high at the same time that death rates dropped as new agri-

cultural and medical technologies were imported from more developed countries. Economic conditions in these nations did not always improve as life spans increased. The result has been a pattern throughout much of the globe of population explosion while the demographic transition stagnates in the middle stage. By 1960, the world population reached three billion. Just 15 years later, in 1975, the population soared to four billion and topped five billion in 1987. In 1999, the population reached six billion, completely doubling in less than 40 years. It now appears that global population growth is finally turning a corner as birth rates begin to fall worldwide. Even so, **demographers** now project that the global population will continue to grow, albeit more slowly than in the past century, adding an additional one to four billion more people by the middle of this century.²

How does the quality of life on Earth vary now from what it was when there were half as many people? How might it be in the future when there are many more of us? How many people can the Earth support sustainably?

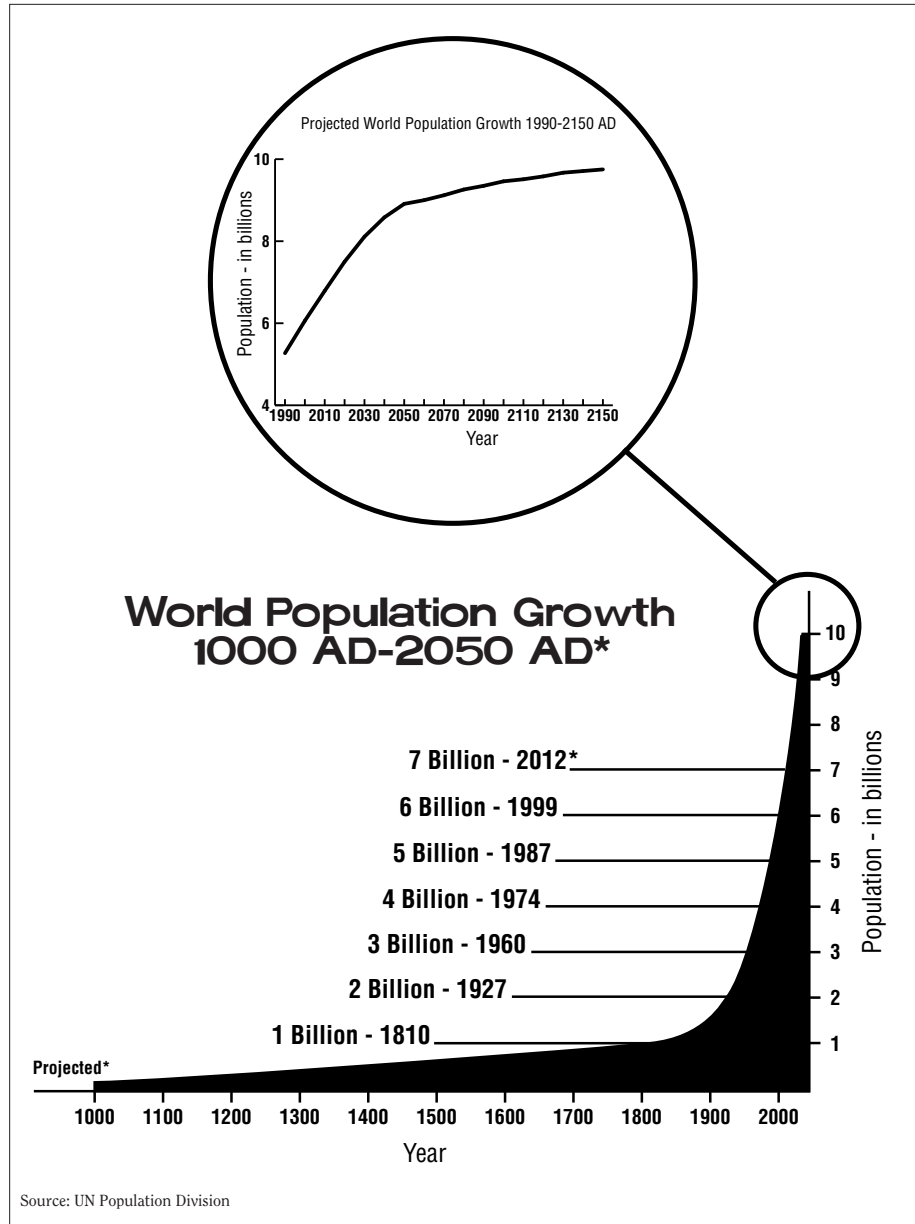
Crowding the Earth

No one knows for sure how many people the Earth can support. Every environment has a **carrying capacity** – the point at which there are not enough natural resources to support any more members of a given species. In *How Many People Can the Earth Support?*, author Joel Cohen attempted to answer that very question by collecting dozens of expert estimates made in recent decades. Finding the Earth’s carrying capacity is difficult because the number of people the Earth can support depends greatly on how people use the Earth’s resources. Although estimates varied, Cohen was able to conclude from scholars that,

*The possibility must be considered seriously that the number of people on Earth has reached, or will reach within the next century, the maximum number the Earth can support in modes of life that we and our children and their children will choose to want.*³

The population issue, then, is not one of numbers but of carrying capacity. The entire world population could fit into Texas, and each person could have an area equal to the floor space of a typical North American home. But this ignores the amount of land required to provide each of us with the raw materials for survival (food, water, shelter, clothing, and energy) and all that has become essential to our modern lifestyles (transportation, electronic communication, and consumer goods and services). Scientists in Vancouver, Canada, tried to calculate local residents' "ecological footprint,"—the land and water area that would be required to support the area's population and material standard indefinitely. They found that the Vancouver area's population requires an area 19 times larger than its home territory to support its present consumer lifestyles – wheat fields in Alberta, oil fields in Saudi Arabia, tomato fields in California.⁴

While the continents are vast, only a small fraction (1/10) of all the land in the world is **arable**.⁵ The rest has been built up into cities and towns or is inhospitable to growing crops. While the number of people continues to grow, the small portion of land which must support these people remains the same, or shrinks as cities expand. The size of the human population affects virtually every environmental condition facing our planet. As our population grows, demands for resources increase, adding to pollution and waste. More energy is used, escalating the problems of climate change, acid rain, oil spills, and nuclear waste. More land is required for agriculture, leading to deforestation and soil erosion. More homes, factories, and roads must be built, occupying habitat



lost to other species that share the planet, leading increasingly to their extinction. Simply put, the more people inhabiting our finite planet, the greater stress on its resources.

Population Growth: North American-style

With 98 percent of the population increase today occurring in developing countries, many North Americans feel that they neither contribute to nor are affected by the problem. In fact, the United States is the fastest growing industrialized country, growing by 2.6 million people each year. This is of particular concern to the global environment, as affluent lifestyles in North America place disproportionate demands on the

world's resources and leave a much larger "ecological footprint." While North Americans constitute just five percent of the world population, they consume 25 percent of the world's energy and produce 24 percent of the world's carbon dioxide emissions.⁶

Evidence of population growth surrounds us —intensifying traffic congestion, urban and suburban sprawl, and landfill space too full to handle the mounting garbage and hazardous waste that North Americans create daily. In the last 200 years, the United States has lost 71 percent of its topsoil, 50 percent of its wetlands, 90 percent of its old-growth forests, 99 percent of its tallgrass prairie, and up to 490 species of native plants and animals with another 9,000 now at risk.⁷ We are currently developing rural land at the rate of nine square miles per day⁸, and paving 1.3 million acres each year — an area roughly the size of Delaware.⁹ Many attribute these problems solely to wasteful habits. However, as we in North America increase our population, we compound our ecological impact. Efforts to relieve environmental stress by cutting consumption would be undermined, if not negated, by continued population growth or by stabilization at a size larger than our resources can sustain.⁹

In making their policy recommendations to the President of the United States in 1996, the President's Council for Sustainable Development (PCSD) stated clearly that "A human impact on the environment is a function of both population and consumption patterns" and recommended policies to move toward voluntary population stabilization at the national level.¹⁰

What Can Be Done?

There is much that can and has been done toward stabilizing the world population and preserving the environment. Two recent United Nations conferences have brought attention to the importance of slowing population growth. At the **1992 U.N. Conference on Environment and Development (Earth Summit)** in Rio de Janeiro, Brazil, 179 governments adopted a plan of action that recognizes that "the growth of world population and production combined with unsustainable consumption patterns places increasingly severe stress on the life supporting capacities of our planet."¹¹

The **U.N. International Conference on Population and Development (ICPD)** in Cairo, Egypt, which

followed two years later, expanded on many of the principles laid out in Rio. The plan of action developed at the Cairo conference states that early stabilization of world population would make a "crucial contribution" towards improving the lives of people around the planet.¹²

It only takes very small changes in **fertility rates** (the average number of children born to each woman) to make a big difference in when the population will stabilize, and as well as how many people there will be when that happens. According to the United Nations, a drop in the average number of children a woman has in her lifetime by one child per woman could mean a difference of four billion people in the projected population for 2050!¹³

Recent trends show that the population growth rate has begun to decrease, due at least in part to policies enacted or strengthened in response to the recommendations of the U.N. conferences. Programs that expand access to health care, education, and family planning services that enable women to choose the timing and number of their children, as well as those that have improved the status of women and

World Population Clock, 2007			
2007 Population (est.)		World	United States
		6.6 billion	302 million
Births per:	Year	133,202,704	3,931,200
	Month	11,100,142	327,600
	Week	2,554,984	75,600
	Day	364,936	10,800
	Hour	15,206	450
	Minute	253	7.5
	Second	4.2	—
Deaths per:	Year	55,490,538	2,419,872
	Month	4,624,212	201,656
	Week	1,064,203	46,536
	Day	152,029	6,648
	Hour	6,335	277
	Minute	106	4.6
	Second	1.8	—
Natural Increase per:	Year	77,71,166	1,511,328*
	Month	6,475,931	125,944*
	Week	1,490,349	39,064*
	Day	212,907	4,152*
	Hour	8,871	173*
	Minute	148	2.9*
	Second	2.5	—*

*These figures do not include net immigration, which is also a significant factor in U.S. population increase.
Source: U.S. Census Bureau, International Data Base

employment opportunities, all work to lower fertility levels. In 1960, the average woman gave birth to more than five children. Today, the average woman gives birth to just under three children.

However, these positive indicators do not mean that rapid population growth no longer poses a threat



Endnotes

¹ 2006 Population Reference Bureau World Population Data Sheet.

² World Population Prospects: The 2006 Revision Population Database. United Nations, <http://esa.un.org/unpp>.

³ Joel E. Cohen. *How Many People Can the Earth Support?* New York: W.W. Norton and Co., 1995.

⁴ Mathis Wackernagel and William Rees. *Our Ecological Footprint: Reducing Human Impact on the Earth.* Canada: New Society Publishers, 1996.

⁵ Food and Agriculture Organization of the United Nations, <http://faostat.fao.org>.

⁶ U.S. Department of Energy, Energy Information Administration, 2007, www.eia.doe.gov.

⁷ The World Resources Institute. *The 1993 Information Please Environmental Almanac.* Boston and New York: Houghton Mifflin, 1993.

⁸ Alan T. Durning. *How Much is Enough? The Consumer Society and the Future of the Earth.* New York: W.W. Norton and Company, 1992.

⁹ David Pimentel (panelist). A United States Carrying Capacity Overview, @ Carrying Capacity Network Conference. Washington, DC: 1993.

¹⁰ The President's Council on Sustainable Development. *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future.* Washington, DC: U.S. Government Printing Office, 1996.

¹¹ *Agenda 21: United Nations Programme of Action from Rio*, para. 5.3.

¹² *Programme of Action adopted at the International Conference on Population and Development*, Cairo, Egypt, 1994. paragraph 1.11.

¹³ Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. *World Population Projections to 2150.* New York: United Nations, 1998.

¹⁴ Population Reference Bureau.

to the world's people and resources. High growth rates in recent decades mean that almost one-third of the world's people are under age 15 and have not yet entered their child-bearing years.¹⁴ This age structure means there is still potential for steady population increases and the need for international cooperation to continue successful programs. In order to achieve "zero population growth" (stable population) while maintaining low death rates, average births will need to total only about two children per woman worldwide in the years to come.