The People Connection

Student Reading

"Population growth may be the most pressing issue we face as we enter the new millennium."
--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 a near-record pace, adding the population of New York City every month and of 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 "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 the year 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 agricultural 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 of population explosion throughout much of the globe 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. An additional billion people is expected to be added by late 2011. 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 two to three 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 2.9 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 23 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 seven square miles per day[8] and a total of 3.9 million miles of road have been paved – enough to circle the globe at the equator 157 times.[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.

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 "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]

In 2012, a fourth Earth Summit will be held, again in Rio de Janeiro, Brazil. This summit will not only reaffirm the goals of the 1992 Earth Summit, but will also address emerging issues. The United Nations will reaffirm its commitment to achieving the Millennium Development Goals, including "eradicating extreme poverty and hunger, empowering women

and ensuring environmental sustainability."[13] Many of these issues have been compounded by recent population growth and the global economic crisis, which threaten water, food, and energy security around the world. Although President Obama has not yet endorsed the summit, the directors of several large environmental organizations have encouraged him to do so. If Obama decides to endorse Earth Summit 2012, he will join the leaders of nations such as France, Norway, and India.

Action can also be taken on regional, local and personal levels to stabilize the global population. 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, 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![14]

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 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 to the world's people and resources. In fact, the global population is expected to reach seven billion in late 2011. 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.[15] 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.

1,2 Population Reference Bureau, 2010 World Population Data Sheet, July 2010.
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4 William Rees and Mathis Wackernagel, Our Ecological Footprint: Reducing Human Impact on the Earth (Canada: New Society Publishers, 1996).
5 FAOSTAT, 2008, Food and Agriculture Organization of the United Nations, 2 October 2007 <http://faostat.fao.org>.
6 Energy Information Administration, 2007, U.S. Department of Energy, (date accessed?) <www.eia.doe.gov>.
7 World Resources Institute, The 1993 Information Please Environmental Almanac (New York: Houghton Mifflin, 1993).
8 Goldstein, Rob. "U.S. farmland being eaten away by development, govt report shows." *Conservation Maven*. 29 April 2010, http://www.conservationmaven.com/frontpage/us-farmland-being-eaten-away-by-development-govt-report-show.html
9 Brown, Lester R. "Paving the Planet: cars and crops compete for land." *Earth Times*, March 2001,. http://www.sdearthtimes.com/et0301/et0301s7.html
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 United Nations, Agenda 21: United Nations Programme of Action from Rio, April 1993, par. 5.3.
12 United Nations Population Fund, Programme of Action of the International Conference on Population and Development, Cairo, Egypt, 1994, par. 1.11.
13 Sustainable Development: implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development. United Nations General Assembly, 64 Session, Agenda item 53, 14 December 2009.
14 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).
15 Population Reference Bureau.

Glossary

1992 U.N. Conference on Environment and Development (Earth Summit): conference in Rio de Janeiro, Brazil focusing on environmental development and sustainability that produced the Rio Declaration on Environment and Development, Agenda 21, the U.N. Framework Convention on Climate Change, the U.N. Convention on Biological Diversity, and the Statement of Forest Principles

arable: land that can be cultivated for the production of crops

birth rate: the number of babies born annually per 1,000 women of reproductive age in any given set of people

carrying capacity: the maximum number of people a given area can support without degrading the natural, social, cultural, and economic environment for present and future generations

death rate: the number of individuals who die annually per 1,000 individuals in any given set of people

demographer: a scientist studying the characteristics of human populations, such as size, growth rate, and other vital statistics

demographic transition: population change over time, in the three part pattern: high birth and death rates, to high birth and low death rates, to low birth and low death rates

ecological footprint: a resource management tool that measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes under prevailing technology

fertility rate: the average number of live births per woman during her reproductive years, among a given set of people

life expectancy: the average number of years someone is expected to live based on current health trends

U.N. International Conference on Population and Development (ICPD): September 1994 conference in Cairo, Egypt, which provided recommendations for stabilizing world population through its Cairo Plan; the Plan calls for improved heath care and family planning services for women, children, and families throughout the world and also emphasizes the importance of education for girls as a factor in the shift to smaller families.

zero population growth: a demographic balance where a population neither grows nor declines