Chapter 6

**The Human Population and Its Impact**

**Core Case Study: Planet Earth: Population 7 Billion**

* The evolution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a total population of 2 billion has taken 200,000 years
* It has taken less than \_\_\_\_\_\_\_\_ years to reach the second 2 billion
* It took \_\_\_\_\_\_\_\_ years to add the third 2 billion
* \_\_\_\_\_\_\_\_ years later, the population topped 7.1 billion
* What is a sustainable human population?

**6-1 How Do Environmental Scientists Think about Human Population Growth?**

* The continuing rapid growth of the human population and its impacts on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ raise questions about how long the human population can keep growing

Human Population Growth Shows Certain Trends

* Rate of population growth has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in recent decades
* Human population growth is unevenly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ geographically
* People are moving from rural to urban areas--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Human Population Growth Impacts Natural Capital

* As the human population grows, so does the global total human ecological \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carrying capacity
  + Total number of people who could live in reasonable freedom and comfort \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, without decreasing the ability of the earth to sustain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ generations

Natural Capital Degradation

**6-2 What Factors Influence the Size of the Human Population?**

* Population size \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through births and immigration, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through deaths and emigration
* The average number of children born to women in a population (total \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate) is the key factor that determines population size

The Human Population Can Grow, Decline, or Remain Fairly Stable

* Population change = (births + immigration) – (deaths + emigration)
* Crude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
  + The number of live \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/1000/year
* Crude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
  + The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/1000/year

Women Are Having \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Babies, But the World’s Population Is Still \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
  + Number of children born to a woman during her \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-level fertility rate
  + Average number of children a couple must have to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ themselves
  + Approximately 2.1 in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries
  + Up to 2.5 in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries
* Total fertility rate (TFR)
  + Average number of children born to women in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Between 1955 and 2012, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TFR dropped from 5 to 2.4
  + However, to eventually halt population growth, the global TFR will have to drop to \_\_\_\_\_\_\_\_

**Case Study: The U.S. Population – Third Largest and Growing**

* Population still growing and not leveling off
  + \_\_\_\_\_\_\_\_ million in 1900
  + \_\_\_\_\_\_\_\_ million by 2012
* Drop in TFR in U.S.
  + Rate of population growth has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What have been some changes in lifestyle in the U.S. during the 20th century?
* Immigration
  + U.S. has admitted almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as many immigrants and refugees as all other countries \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Several Factors Affect Birth Rates and Fertility Rates

* Children as part of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force
* Cost of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ children
* Availability of private and public \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Educational and employment opportunities for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Average age of a woman at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Availability of legal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Availability of reliable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ methods
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ beliefs, traditions, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ norms

Several Factors Affect Death Rates

* Life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Infant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
  + Number of live births that \_\_\_\_\_\_\_\_\_\_ in first year
* High infant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate indicates:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ food
  + Poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + High incidence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Affects an Area’s Population Size

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + The movement of people \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ of specific geographic areas
* Causes:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ improvement
  + Religious and political \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ refugees

**6-3 How Does a Population’s Age Structure Affect Its Growth or Decline?**

* The numbers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in young, middle, and older age groups determine how fast a population grows or declines

A Population’s Age Structure Helps Us Make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Age \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ categories
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ages (0-14)
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ages (15-44)
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ages (45 and older)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the fastest-growing age group

**Case Study: The American Baby Boom**

* \_\_\_\_\_\_\_\_ million people added from 1946-1964
  + 36% of adults
* Affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Now becoming senior citizens
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of America

Populations Made Up of Mostly Older People Can Decline \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decline
  + Manageable
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decline
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ problems
    - Proportionally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ young people working
    - Labor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Populations Can Decline due to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Death Rate: The \_\_\_\_\_\_\_\_\_\_ Tragedy

* AIDS has killed more than \_\_\_\_\_\_\_\_ million people
* Many young adults die – loss of most productive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Sharp drop in life \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ community
  + Reduce the spread of HIV through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ care
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ assistance and volunteers

**6-4 How Can We Slow Human Population Growth?**

* We can slow human population growth by reducing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, elevating the status of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and encouraging family \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The First Step Is to Promote Economic Development

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transition
  + As countries become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - First \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates decline
    - Then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates decline
* Four stages
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Empowering Women Can Slow Population Growth

* Factors that decrease total fertility rates:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Ability to control \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Women:
  + Do most of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ work and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ care
  + Provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ health care
  + \_\_\_\_\_\_\_\_ of all work for \_\_\_\_\_\_\_\_ of world’s income
* Discriminated against \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Family Planning Can Provide Several Benefits

* Family planning in \_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries
  + Responsible for a \_\_\_\_\_\_\_\_ drop in TFRs
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ benefits – money spent on family planning saves far more in health, education costs
* Two problems
  + \_\_\_\_\_\_\_\_ pregnancies unplanned, \_\_\_\_\_\_\_\_ end with abortion
  + Many couples do not have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to family planning
* How can family planning programs be expanded?

**Case Study: Slowing Population Growth in India**

* Population: \_\_\_\_\_\_\_\_ billion people in 2012
* Problems
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degradation
* Causes
  + Bias toward having \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ children
  + Poor couples want \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ children
  + Only \_\_\_\_\_\_\_\_ of couples use family planning

**Case Study: Slowing Population Growth in China: A Success Story**

* World’s most populous country
* Threat of mass starvation in the \_\_\_\_\_\_\_\_\_\_
* Government established a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ family planning and birth control program
  + Reduced number of children born per woman from \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_

Three Big Ideas

* The human population is increasing rapidly and may soon bump up against environmental limits
* Increasing use of resources per person
  + Expanding the overall human ecological footprint and putting a strain on the earth’s resources
* We can slow population growth by reducing poverty through economic development, elevating the status of women, and encouraging family planning

Tying It All Together: World Population Growth and Sustainability

* Exponential growth is unsustainable in the long run
* Employing solar and other renewable technologies can help cut:
  + Pollution
  + Emissions of climate-changing gases
* Reuse and recycle materials
* Focus on preserving biodiversity