

1  **Chapter 14**

## Population Ecology

2  **14.1**

- Ecology
  - Study of interactions between organisms and their environment
    - Individuals
    - Populations
    - Communities
    - Ecosystems

3  **14.2**

- Population perspective
  - Not individuals
  - Adaptations

4  **14.3**

- Population growth
  - $r$  = birth rate – death rate
  - $N$  = number currently present in population
  - Change =  $r \times N$

5  **14.4**

- Density-dependent limits
  - Food
  - Space
  - Parasites & disease
  - Predation

6 

- Carrying capacity ( $K$ )

7 

- Density-independent factors
  - Weather & Geology
    - Floods, earthquakes, fires
  - Habitat destruction
  - Technology

8  **14.5**

- Population cycles

9  **14.6**

- Maximum sustainable yield
  - Rarely know carrying capacity
  - Often do not know current population #'s
  - Do not understand natural cycles
  - Harvesting leads to adaptations in life histories

10  **14.7**

- Life history
  - Age of reproduction
  - Survival & reproduction
  - Litter size
  - Longevity
- Reproductive investment
  - Cost per episode
  - Survival for future episode

11  **K-Selected & r-Selected**12  **14.8**

- Survivorship curves

13  **14.13**

- Population pyramids

14  **14.15**

- Humans
  - Expand habitats
  - Increase productivity
  - Circumvent problems

15 

- Ecological footprint
- Earths carrying capacity?
  - Human population now appear to be stabilizing
    - [Projected to peak at 9.3 billion in 2075](#)

16  **In-class Assignment & Homework**

- Are you concerned about current human population growth and carrying capacity?  
Why or why not?

17  **Assignment**Ecological Footprint

Take the ecological footprint quiz by following this link: <http://www.myfootprint.org/>

1. How many acres does it take to support your lifestyle?
2. How do you compare to other people from your country?
3. How many biologically productive global hectares are available per person?
4. If everyone lived like you, how many planets would we need to support ourselves?
5. Click on the "Take Action" button and try out the "Take Action Calculator". What actions can you take that will help you to reduce your footprint?
6. Are you willing to try those actions? Why or why not?