

## Integrative Biology 102: Lecture Outline Population Ecology

### Lecture Objectives

By the end of the lecture, you should be able to:

1. list and explain factors that produce changes in population size.
2. contrast a J-shaped population growth curve with an S-shaped population growth curve.
3. indicate which part of an S-shaped growth curve represents biotic potential, environmental resistance, and carrying capacity.
4. distinguish between density-dependent and density-independent factors and give examples of each using plants and people.
5. contrast the effects of density-dependent and -independent factors on population growth.
6. Contrast r- and K-selected species.

**Reading:** Ch. 6.

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#### Terms

S-shaped	density-independent	biotic potential
J-shaped	density-dependent	exponential growth
r-selected	natality	ecological carrying capacity (cc)
K-selected	environmental resistance	fertility

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#### 1. Population growth

$$\text{Equation } r = (B - D) / N$$

Factors in equation

Increase

r-max (Biotic Potential)

J-shaped

Decrease = Environmental Resistance

Density-dependent factors

Density-independent factors

## 2. Carrying capacity

S-shaped population growth curves

Population crashes

Life history strategies

**For the next lecture** on Human Population Dynamics, read Ch. 7. Be ready to answer these questions in lecture:

- \* How should the growth of human populations be controlled?
- \* What is an acceptable human population's carrying capacity? ethical carrying capacity?