30. Population Growth and Regulation *(Chapter 51, 52)*

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I. Introduction to Ecology *(1193-1195, 1222-1225)*

# A. Definition

B. Four Perspectives on Ecology

C. Central Questions in Ecology

II. Unlimited Population Growth *(1232-2333)*

A. Reproduction

B. Geometric Population Growth

1. Simplest case: bacterial division

2. Graphical representation

3. Mathematical representation

C. Exponential Population Growth

1. Births and deaths

2. Per capita birth and death rates

D. Examples from Human Population Studies

E. Per Capita Growth Rate (*r*) as a Population Characteristic

1. Variations in *r*

2. The intrinsic rate of increase (*r*max)

F. Effects of r on N

III. Limited Population Growth *(1234-1240)*

A. Resource Limitation

1. Resources that can be depleted

2. Crowding

B. Density‑Dependent Responses

C. Logistic Population Growth

1. Sigmoid (= logistic) growth curve

2. Carrying capacity and population regulation

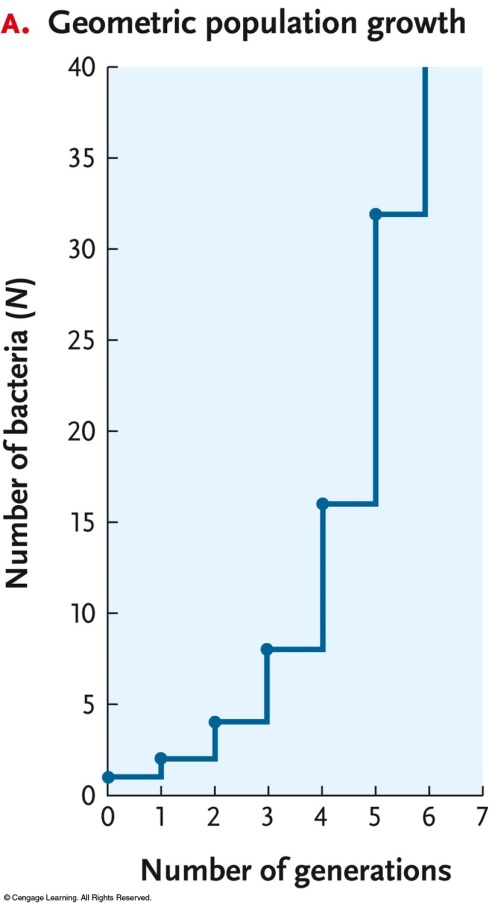
3. Growth of introduced populations

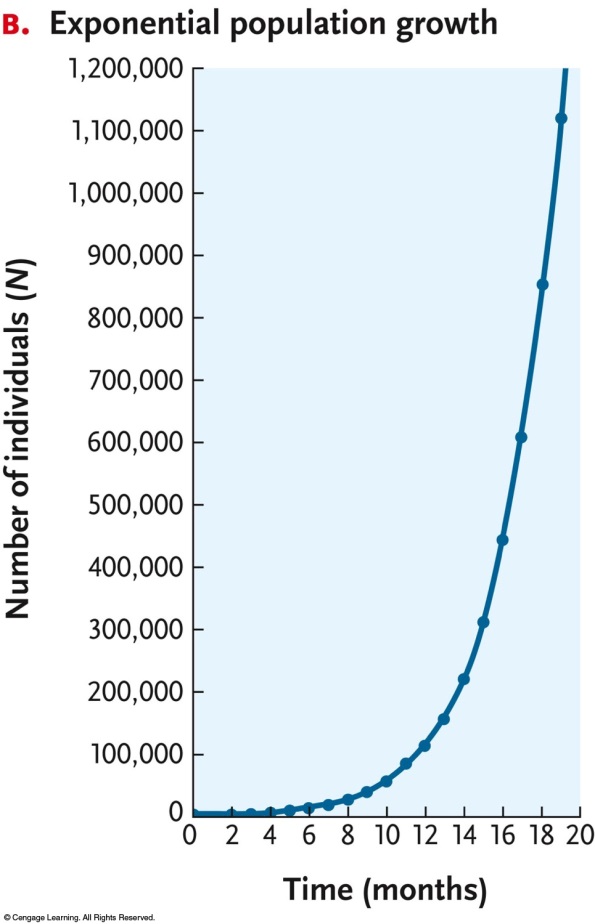
D. Interactions Causing Density‑Dependent Population Regulation

1. Predation

2. Competition

30-1





30-2

