Work on your LAB [20 min]: Mark-Return-Recapture

1.2 A Sample Census-Wildlife.doc

Lab - Mark_Return_Recapture.pdf

Lab Report - Mark_Return_Recapture.pdf

Classroom

Field..Miramichi River

NOTES:

- Only <u>1 lab report</u> needs to be passed per group.
- If you are absent, see me to make it up during IS.
- link is below for the extension question.

http://www.miramichisalmon.ca/northwest-miramichi-river-smolt-study/

DUE: By the FIRST of class on Friday

Population Growth...

- A population is a group of organisms of one species that interbreed and live in the same place at the same time (e.g. deer population).
- **Organism** → a living thing
- **Species** → level of classification
- The term "**population growth**" refers to how the number of individuals in a population increases (or decreases) with time.
- If a population has a constant birth rate through time and is never limited by food or disease, it has what is known as **exponential growth**.

EXAMPLE of Exponential Growth

Fluctuations of Human Populations...

- LOCALLY
- REGIONALLY
- GLOBALLY

Calculating Exponential Growth

Formula for Exponential Growth

A quantity A that has exponential growth can be modeled by

$$A = P(1 + r)^n.$$

- A measures the quantity at any time.
- P is the initial value of A, when $n = 0$.
- r is the rate (%) of growth, *in decimal form.* *
- n is the elapsed time.

http://www.math.andyou.com/pdf/152.pdf

http://www.math.andyou.com/152

EXAMPLE: The growth rate of a bacteria culture is 52% each hour. Initially, there are two bacteria. How many bacteria are there after 12 hours?

$A = P(1 + r)^n$

A = ?
P = 2
r = 52% ÷100 → 0.52
n = 12 hrs

$A = 2(1 + 0.52)^{12}$

A = 304 bacteria

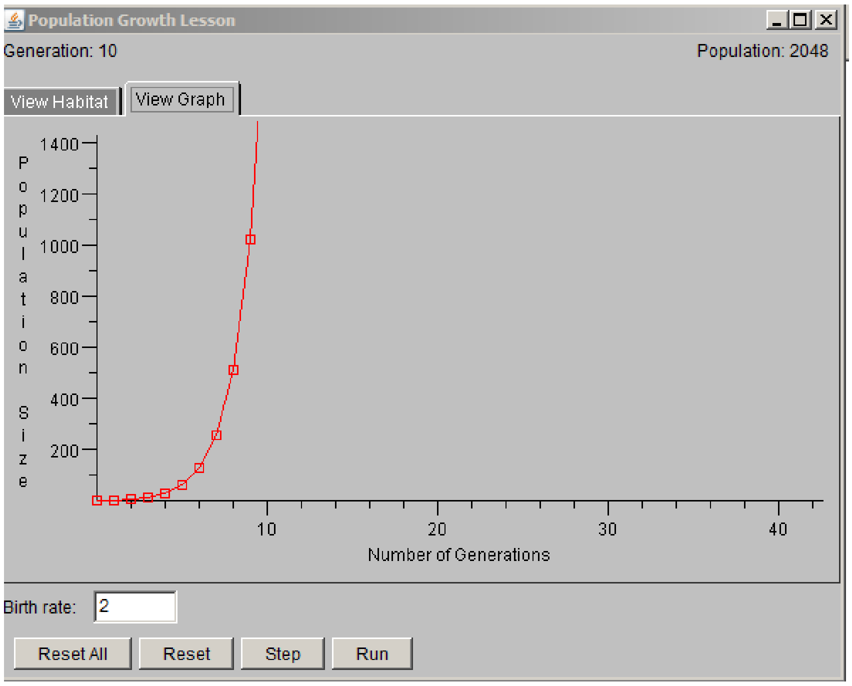
SOLUTION

Under ideal conditions:

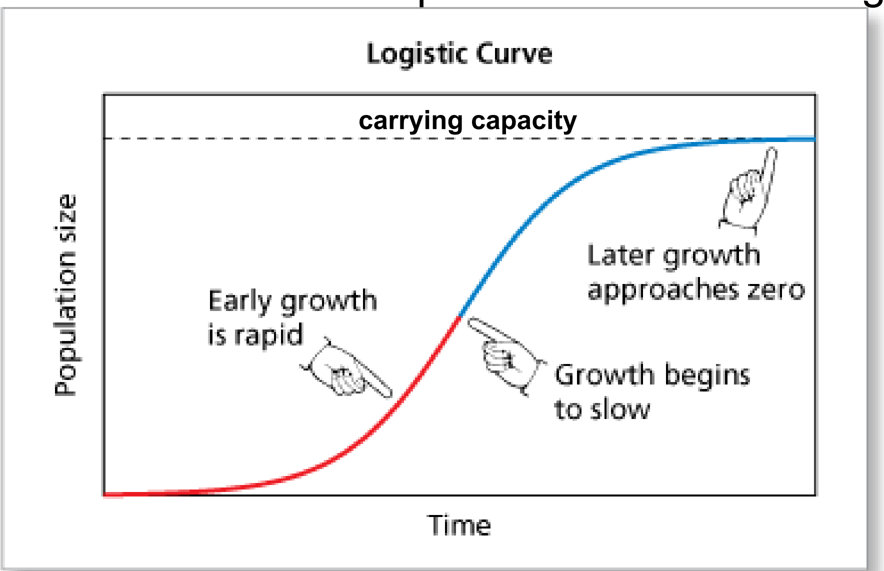
living

1. the **biotic potential** of a population is the maximum rate at which it can increase
2. **exponential growth** occurs - the population increases by the same percent from one time period to the next.

http://www.otherwise.com/population/exponent.html

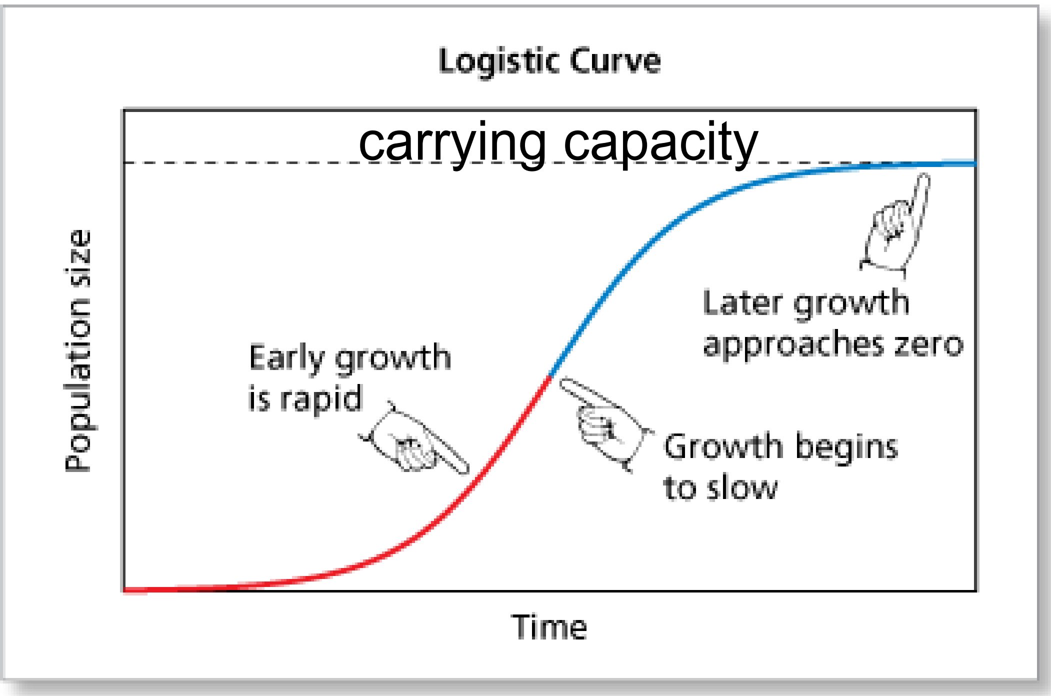


- In nature, there are always limits to growth. A population will reach a size limit imposed by a shortage of one or more of the **limiting factors** of light, water, space and nutrients.
- **Carrying capacity** represents the highest population that can be maintained for an indefinite period of time by a particular environment.
- When a population grows exponentially at first, and then levels off to a stable number near the carrying capacity, it is called **logistic growth**. Logistic growth is much more common in nature than long-term exponential growth.
- **Natural Capital** - refers to all the natural resources on which people depend upon and includes resources we use to produce manufactured goods.



Exponential Growth -> "J"Curve

Logistic Growth -> "S" curve



Attachments

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