

This print-out should have 30 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Pop Ecology 05
001 10.0 points

Of the following scenarios, which might be expected in the logistic model of population growth?

- I) As N approaches K , r increases.
- II) As N approaches K , b increases.
- III) As N approaches K , d increases.

1. I and II only
2. III only
3. II only
4. I only
5. I and III only

Raven53 18
002 10.0 points

Population studies do *not* include

1. demography.
2. dispersion.
3. size.
4. biodiversity.
5. density.

Starr 45 22
003 10.0 points

A scientist captures and marks 20 deer in an area, marks them with collars, and releases them. Two months later the scientist captures 20 deer in the same area and notes that 10 of the deer have collars.

Based on this capture-recapture experiment, how many deer are in the area?

1. 200

2. 20

3. 400

4. 40

StarrC 39 07
004 10.0 points

In the wild, orangutans generally live for about thirty-five years. During this time, they usually produce three or four offspring. Juveniles remain with their mothers for as long as seven years.

What type of survivorship curve best fits orangutans?

1. type III
2. None of these
3. type II
4. type I

Pop Ecology 31
005 10.0 points

Energetic trade-offs between or among life history traits are involved in Natural selection, and include

- I) age at first reproduction.
- II) number of reproductive episodes per lifetime.
- III) number of offspring per reproductive episode.

1. III only
2. I and III only
3. II only
4. I only
5. I, II, and III

Pop Ecology 32
006 10.0 points

What do Life history strategies result from?

- I) natural selection
- II) environmental pressures
- III) conscious choice

1. I, II, and III
2. III only
3. I and II only
4. II only
5. I only

Raven53 15
007 10.0 points

During a coastal storm, 3 deermice (*Peromyscus*) huddled on a tree trunk were carried several miles out to sea and washed ashore on a small island (500 acres) where there were no deermice. The vegetation of the island supported these mice which primarily eat seeds. Also in the island there were small birds, hawks and a variety of lizards eating seeds. Two of the mice were female, and already pregnant when they arrived; later they both mated with the male. Over time a population of deermice was established on the island.

Assuming that a deermouse reproduces two to three times a year, with 3-6 offspring per litter, the population of deermice on the island within 2 years

- I) is K -selected;
- II) is r -selected;
- III) has reached its biotic potential.

1. I and II only
2. All are true.
3. III only
4. None is true.
5. II only
6. I and III only
7. I only

8. II and III only

Raven53 42

008 10.0 points

Organisms with a Type III life history are probably

1. at their carrying capacity.
2. subject to low predation rates.
3. idiopathic.
4. r -selected.
5. K -selected.

Starr 45 06

009 10.0 points

The size a population will be some time in the future can be calculated from current population size and

1. the life history curve.
2. the per capita birth rate.
3. the net reproduction per individual per unit of time.
4. the per capita death rate.

GA SB4 04

010 10.0 points

Ten breeding pairs of rabbits are introduced onto an island having no natural predators and a good supply of water and food. What will most likely happen to the rabbit population?

1. It will die out due to an increase in the mutation rate.
2. It will increase exponentially until it exceeds carrying capacity.
3. It will decrease and then increase indefinitely.

4. It will remain constant due to equal birth and death rates.

Holt Bio 18 05

011 10.0 points

The rate of population growth has increased since 1650 because of which of the following?

1. a decrease in the birth rate
2. an increase in the birth rate
3. a decrease in the death rate
4. an increase in the death rate

Pop Ecology 03

012 10.0 points

Relatively r -selected species generally have all of the following characteristic *except*

1. numerous offspring.
2. parental care of offspring.
3. a disturbed habitat.
4. small offspring
5. little homeostatic capability.

Pop Ecology 27

013 10.0 points

What do ecologists define as the maximum population size that a particular environment can support with no net increase or decrease over a relatively long period of time?

1. a K-selected population
 2. carrying capacity
 3. an opportunistic population
 4. an r-selected population
 5. logistic population growth
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Pop Ecology 28

014 10.0 points

Which of the following statements about the logistic model of population growth is *false*?

1. It predicts the growth of most populations with great accuracy.
2. It fits an S-shaped curve.
3. It describes population density shifts over time.
4. It predicts an eventual state in which birth rate equals death rate.
5. It incorporates the concept of carrying capacity.

Pop Ecology 34

015 10.0 points

What does the logistic equation predict as N approaches K for a certain population?

1. The carrying capacity will increase.
2. The population will show an Allee effect.
3. The growth rate will not change.
4. The growth rate will approach zero.
5. The population will increase exponentially.

Pop Ecology 38

016 10.0 points

An unlimited population growth is often prevented because death rates increase as the population density increases, in an example of

1. positive feedback.
2. r -selection.
3. K -selection.
4. the Allee effect.

5. negative feedback.

Raven53 22

017 10.0 points

What symbol is used for the biotic potential representing growth without limits at its maximal rate?

1. $\frac{dN}{dt}$
2. K
3. r
4. N
5. $\frac{N}{K}$

Raven53 26

018 10.0 points

Density-dependent factors

- I) ultimately cause adaptation as competition for limiting factors increases;
- II) affect the size of the population;
- III) act to regulate population growth.

1. I only
2. I and III only
3. II and III only
4. None of these
5. All of these
6. II only
7. III only
8. I and II only

Raven53 29

019 10.0 points

The r strategists are characterized by

- I) early age of first reproduction;
- II) large brood size/numerous offspring;

III) little or no parental care/short generation time.

1. III only
2. All of these
3. II and III only
4. I and II only
5. None of these
6. I only
7. II only
8. I and III only

Raven53 33

020 10.0 points

In the Logistic Growth Model of population growth, as the number N of individuals in a population approaches the carrying capacity K , the rate $\frac{dN}{dt}$ of growth will be affected by

1. increased competition with other species.
2. a decreased death rate from predation.
3. an increased birth rate.
4. limiting factors in the environment.
5. increased competition within the species.

Starr 45 25

021 10.0 points

If a population consists of 500 individuals and r for the population is 0.5 per month, how many individuals will there be in the population one month later?

1. 1,000
2. 500

3. 750

4. 250

Starr 45 26**022 10.0 points**

The equation

$$G = r_{\max} N \left(K - \frac{N}{K} \right)$$

describes

1. the demographic transition model.
2. logistic growth.
3. biotic potential.
4. exponential growth.

Pop Ecology 12**023 10.0 points**

A person studying the vital statistics that affect population size is called

1. a biologist.
2. a cartographer.
3. a demographer.
4. None of these
5. a biogeographer.

Pop Ecology 29**024 10.0 points**

Density-dependent regulation of populations can be contributed by which of the following?

1. predation
2. None of these
3. intraspecific competition for nutrients
4. All of these
5. the accumulation of toxic wastes

Starr 45 12**025 10.0 points**

Since the 1950s, the global fertility rate has

1. increased tenfold.
2. almost doubled.
3. declined significantly.
4. remained approximately the same.

StarrC 39 12**026 10.0 points**

Suppose a hurricane decimates the area in which a population of sea squirts lives, killing many of them at random.

This is an example of which type of control of population size?

1. density-independent
2. None of these
3. density-dependent

Pop Ecology 35**027 10.0 points**

There are several human populations that are of equal size and net reproductive rate, but different in age structure.

Of the populations the one that is most likely to grow the most during the next 30 years is the one with the greatest fraction of people in which of the following age ranges?

1. 10 to 20 years
2. 40 to 50 years
3. 30 to 40 years
4. 20 to 30 years
5. 70 to 80 years

Starr 45 17**028 10.0 points**

What would happen to the population size of the world if every couple alive today decided to have only two children?

1. Population size would continue to grow for another 200 years.
2. Population size would stabilize immediately.
3. Population size would continue to grow for another 60 years.
4. Population size would begin to decrease immediately.

Starr 45 27

029 10.0 points

An age structure diagram that is shaped like a pyramid (very broad at the base and narrow at the top) is typical of a population that is undergoing

1. rapid growth.
2. negative growth.
3. zero growth.
4. slow growth.

Starr 45 28

030 10.0 points

The current average annual rate of increase for the human population is about

1. 9 percent.
2. 5 percent.
3. 36 percent.
4. 1.7 percent.