

Balance Within Ecosystems

Chapter 9 study Guide

1. Two ways population size can increase are Birth and immigration.
2. Two ways population size can decrease are death and emigration.
3. How do you calculate population density? For example suppose you counted 20 butterflies in a garden measuring 10 square meters. The population density is : $20/10=2$. (pg 324)
4. **Limiting factors** are environmental factors that cause a population to stop growing. Identify and describe the effects of 3 limiting factors. (pages 325-326) **Climate, for example an unusually cold spring can kill the young of many species. Space, for example the amount of space a plant can grow determines the amount of sunlight and nutrients it gets. Food and water: when there is not enough organisms may die off or have to move.**

5. The largest population an area can support is called: Carrying capacity.

6. In the graph on the right, what is the population of deer carrying capacity of the environment in Meadowland Park? **65 individuals**

7. Adaptations are behavioral and physical characteristics that allow an organism to live successfully in its environment.

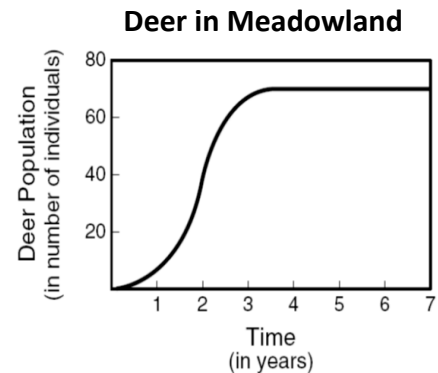
8. Explain the 4 types of structural adaptations with an example for each:

body parts such as beaks, tentacles,

camouflage: walking leaf insect

mimicry: monarch butterfly versus viceroy butterfly

defense strategies: poisonous sprays



9. Explain the 2 types of behavioral adaptations with an example for each.

10. **An instinct is a behavioral adaptation that an organism is born with. (eg a spiders ability to weave a web)**

Learned behavioral adaptations: a wolf pup has to be taught how to hunt.

11. How does natural selection affect the survival of a population?

The organisms that are best suited to their environments are most likely to survive.

12. Compare and contrast primary and secondary succession. List the possible causes of each.

Primary: Begins in a place without any soil

Sides of volcanoes

Glacier recession

Starts with the arrival of living things such as lichens and mosses that do not need soil to survive called PIONEER SPECIES

Secondary: Begins in a place that already has soil and was once the home of living organisms

Occurs faster

Example: after forest fires or other natural disasters: tornadoes, hurricanes, floods.

13. Identify abiotic/biotic resources you obtain from your ecosystem.

Abiotic: water, sunlight, oxygen, minerals

Biotic: food, materials to build shelter (wood), fuels

14. How can non-native species affect an ecosystem? Give two examples in Louisiana.

A non-native species such as nutria was brought to Louisiana for its fur. Later was released into ecosystems to control weeds. But the animals ate many other types of wetlands plants.

Another example is the water hyacinth. This plant grows very fast in wetlands, taking over space and nutrients from native plants.

15. There are several examples of how human activities may harm the balance in an ecosystem? What happens to soil when grasses are overgrazed by cattle?

Desertification: animals may eat grasses more quickly than they can grow. Without grass roots topsoil can blow away.

16. What are the benefits of energy production? What are the consequences? pg 345

Energy is very important in our everyday life. It provides a way of transportation, warm homes and electricity. However drilling for oil may result in oil spills. Also mining can strip vegetation.

17. What are the advantages and disadvantages of agriculture technology? pg 346

Many technologies have been developed to increase the amount of food produced.

Clearing forests to create farmland reduces oxygen production. Also trees absorb carbon dioxide from the atmosphere. With fewer trees more carbon dioxide remains in the atmosphere.

Insecticides and herbicides used by farmers to kill insects and weeds can enter weeds. Both chemicals can be absorbed by plant roots. They may also wash into streams and lakes and poison the organisms that live there.

Fertilizers may also wash into streams and lakes and poison the organisms that live there.

18. What is the environmental impact of human habitation and transportation? Pg 347

Clear cutting forests to build homes damages ecosystems.

Millions of people travel in cars planes and trains. As gasoline is burned it produces carbon dioxide. Carbon dioxide is believed to contribute to global warming.

19. Why is biodiversity important? Pg 349

Economic Value (food, raw materials, medicines)

Ecological value: species may depend on each other for food or shelter.

20. How can entire ecosystems such as a rainforest and mountain ranges be used to generate sources of money? pg 349

Ecotourism

Supply of food raw materials.

21. What is a keystone species? Give an example. Pg 349

A keystone species affects the survival of many other species. An example is the sea otter in the Kelp forest.

22. What would happen if a keystone species is removed from an ecosystem? pg 349

The population of other organisms in an ecosystem may increase too much destroying the ecosystem.

23. What factors affect biodiversity? Pg 351-352

Climate

Area

Niche Diversity

Genetic Diversity: a diverse pool of genes ensures that individuals will pass a variety of traits to their offspring.

24. Which area is more likely to have the greatest biodiversity? Why? Pg 351

A rain-forest. Warm climate.

25. What is extinction? What causes it? pg 353

Extinction is the disappearance of all members of a species.

Climate change, disease, and volcanic eruptions can cause extinction.

26. Explain the differences among a threatened species, an endangered species, and an extinct species. Pg 353

threatened species: could become endangered

endangered species: could become extinct.

27. What are 4 ways in which humans can negatively affect biodiversity? (pg 354)

Habitat destruction and fragmentation

Poaching

Pollution

Introducing exotic species.

28. How can habitat fragmentation contribute to extinction? Pg 354

Breaking habitats into isolated pieces can cause organism to die of thirst or hunger.

29. What is the illegal removal of wildlife called? Pg 354 **Poaching**

30. How can pollution contribute to species extinction? Pg 354

Pollution may reach animals through water, food or air they breathe. Pollution can make organisms weak or cause birth defects.

31. What are 4 positive ways that humans can affect biodiversity? Pg 355

Captive breeding

Habitat preservation

Laws

Treaties