

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

Directions:

Fill in the blanks.

Ecological Principles Segment

1. Key Objectives

- To define _____.
- To define ecological succession.
- To evaluate methods of _____ and sustaining ecosystems.

2. Ecology

- Is the study of the relationship between an _____ and its environment
- Involves scientific study of the interactions determining the distribution and abundance of organisms
- Includes multiple levels:
 - biosphere
 - ecosystems
 - communities
 - _____
 - organisms

3. Ecological Levels

- Include the biosphere
 - the sum of the surfaces, atmosphere and _____ of the earth which is occupied by living organisms
- Which are large, naturally occurring and occupy a major habitat are known as biomes
 - examples include:
 - aquatic biome
 - forests biome
 - _____ biome
 - wetlands biome

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

4. Aquatic Biomes

- Are found within a body of water
- Include:
 - _____
 - defined by a very low concentration of salt; includes ponds, lakes, streams and rivers
 - _____
 - defined by a high concentration of salt; includes oceans and estuaries

5. Forest Biomes

- Are dominated by trees
- Include:
 - tropical
 - most diverse of all ecosystems; lacks seasonal climate, but can have wet and dry seasons
 - _____
 - includes deciduous and coniferous forests; has a seasonal climate
 - _____
 - northernmost forests with seasonal climate including long winters and short summers; mostly coniferous trees

6. Grassland Biomes

- Are dominated by grasses and are mostly devoid of trees and shrubs
- Include:
 - _____ grassland
 - present in temperate climates
 - _____ grasslands
 - found in warm or hot climates

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

7. Wetland Biomes

- Are dominated by aquatic vegetation and poorly draining soils
- Include:
 - bogs
 - wetland which accumulates dead plant material
 - _____
 - wetland with grasses and mineral rich water
 - _____
 - wetland dominated by emergent vegetation
 - swamps
 - wetland dominated by trees

8. Ecological Levels

- Include ecosystems
 - are the _____ at which:
 - biotic and abiotic elements interact within a biome
 - flow of energy and chemical materials occurs
 - include organisms and their interactions with abiotic elements
 - are shaped by interactions of _____, elevations and topography with biotic elements

9. Ecological Levels

- Include communities
 - are the assemblage of different populations of _____ species in an area
 - examples include:
 - all species living on a dead tree
 - all species _____
- Include populations
 - are groups of organisms of the same species occupying a particular space at the same time

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

10. Ecological Levels

- Include organisms
 - are individual members of a population
 - can either be:
 - _____
 - organisms which produce food or biomass through the process of photosynthesis
 - _____
 - organisms which obtain food and energy through the consumption of other organisms

11. Photosynthesis

- Is the process by which green _____ convert sunlight to plant tissue from carbon dioxide and water
 - requires the presence of chlorophyll, or green pigments, in plants which absorb light
- Provides an important by-product, oxygen, which helps maintain the oxygen cycle
 - all living things, including plants, _____; organisms require oxygen to break down glucose in order to create energy
 - process results in carbon dioxide and water by-products

12. Niches

- Describe how organisms match specific environmental conditions and _____ of resources and competitors
- Can be influenced by:
 - competition with other species
 - predation
 - _____
 - mutualism

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

13. Ecological Interactions Between Organisms

- Include:
 - mutualism
 - when two species benefit from ecological interaction
 - _____
 - when one species benefits while another is unaffected
 - competition
 - struggle between two organisms for the same resource, such as food, space or mates
 - _____
 - when one species kills another for food

14. Nutrient Flow

- Is facilitated in all ecosystems through a variety of _____ processes
 - natural processes which provide for the cycling of chemicals between biotic and abiotic factors including:
 - water
 - oxygen
 - carbon
 - _____
 - phosphorus

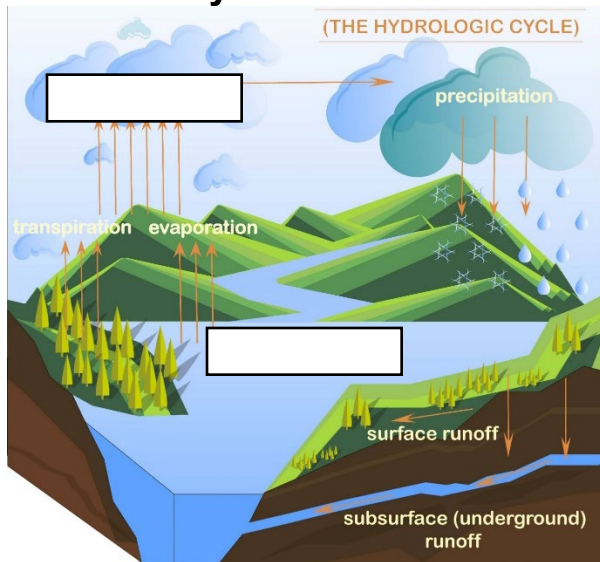
Nutrient: chemical substance required by an organism for growth, reproduction and maintenance

15. Water Cycle

- Is the continuous movement of water throughout the biosphere
 - also known as the _____
- Involves:
 - evaporation and transpiration continually pulling water into the lower atmosphere and then releasing it once again as precipitation
 - evaporation is the transformation of water into gas
 - transpiration occurs when plants release _____ during photosynthesis and respiration

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

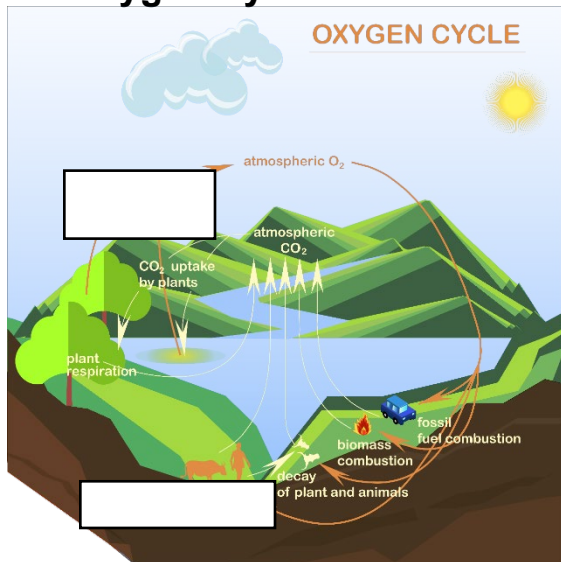
16. Water Cycle



17. Oxygen Cycle

- Is the _____ of oxygen throughout the biosphere
- Begins during photosynthesis when plants _____ into the atmosphere

18. Oxygen Cycle

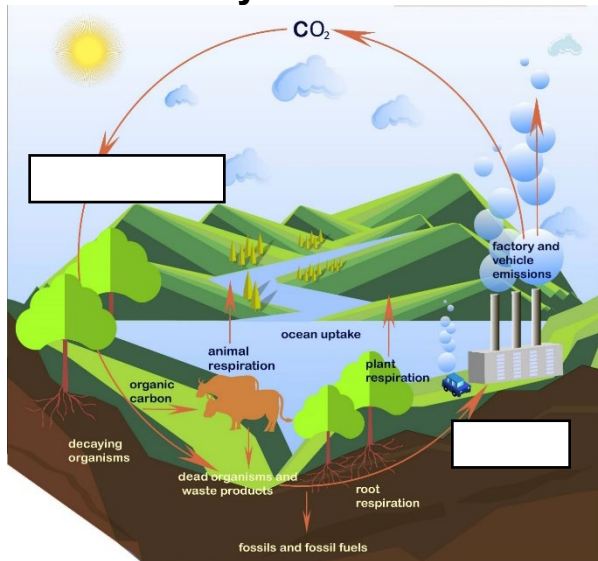


Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

19. Carbon Cycle

- Is the continuous movement of carbon throughout the biosphere
- Is possible through the exchange and release of carbon between the atmosphere via _____ and respiration of plants and animals
 - producers capture atmospheric carbon for photosynthesis
 - producers and consumers release carbon dioxide during respiration as _____ are oxidized

20. Carbon Cycle

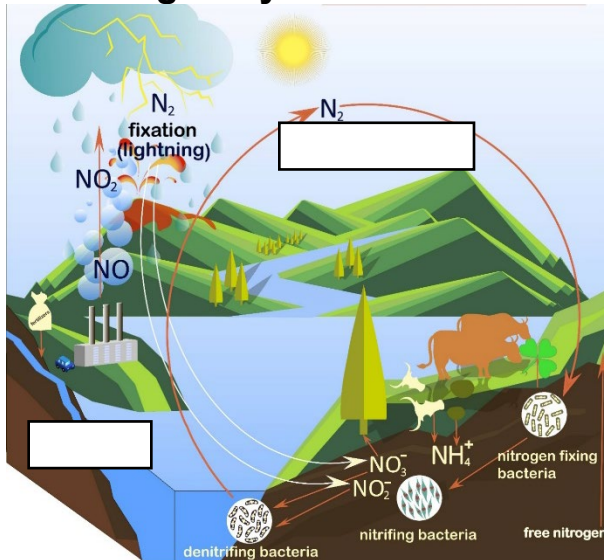


21. Nitrogen Cycle

- Is the continuous movement of nitrogen throughout the biosphere
- Is possible through the process of _____ which is conducted by legumes (such as peanuts), algae and nitrogen-fixing bacteria
 - lightning is also an abiotic nitrogen fixation mechanism
 - electrical energy splits atmospheric nitrogen atoms allowing them to _____ forming nitrogen dioxide which dissolves with precipitation and seeps into the soil

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

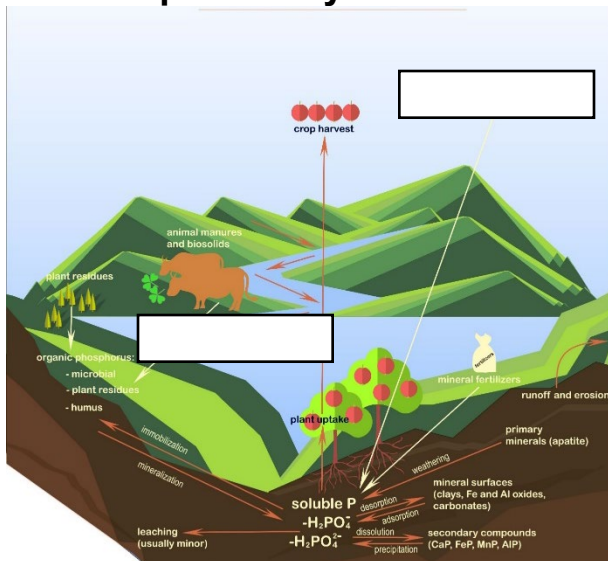
22. Nitrogen Cycle



23. Phosphorus Cycle

- Is the continuous movement of phosphorus throughout the biosphere
- Is accomplished as plants absorb _____ through roots
 - animals consume plants, convert and release phosphorus to complete the cycle
 - _____ also captures phosphorus from water

24. Phosphorus Cycle



Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

25. Energy Flow

- Is passed on by food to organisms and flows through ecosystems by:
 - _____
 - linear representation which shows the flow of energy from one organism to another
 - _____
 - consists of many food chains interacting with one another in a community

26. Ecological Succession

- Is the process by which ecosystems _____ community through development of stages over time
- Is a temporal change in five attributes:
 - species diversity
 - _____
 - dominance
 - relative abundance
 - trophic structure

Temporal change: physical change through time

27. Primary Succession

- Starts when rock is exposed from a geological or _____
 - erosion degrades rock over a period of time to make mineral soil
- Disturbances include:
 - volcanic activity
 - glacial movement
- Usually begins with colonization of lichens, such as fungi, algae and _____
 - these are known as pioneer species
- Continues as the first plants start to grow in these areas

28. Secondary Succession

- Occurs on fertile, open soil where other _____
- Occurs in lands where soil is exposed, either by natural means including fire and flood or by artificial means such as agricultural development
- Begins with the development of pioneer plant species
- Leads to _____ or a climax community

Ducks Unlimited® Ecology Conservation & Management Certification Review – Student Notes

29. Ecosystem Management

- Is the effort by humans to _____ and their environments
- Is accomplished by a large network of:
 - federal and state agencies
 - non-governmental organizations
 - corporate and _____

30. Monitoring Components of Ecosystems

- Is necessary to detect change, especially _____, in ecosystems within the biosphere
 - failure to monitor may have negative impacts on people and impact future generations due to a failure to understand ecosystem changes
 - for example, before the Clean Water and Air Act of 1948, there were few regulations _____, leading to the pollution of many water sources

31. Ecosystem Management

- Oversees the following components:
 - air
 - water
 - soil
 - _____
 - fisheries
 - timber

32. Air

- Can be polluted by _____, factories or fires
- Quality can be improved by some habitats, especially forests
- Quality is monitored by the Environmental Protection Agency (EPA)
 - sets emissions standards for all vehicles manufactured in the United States
 - if companies do not meet these standards, they _____