

Intermediate Science 7
Unit 1: Interactions In An Ecosystem
Topic 7: Succession



Student Name _____

Succession- Refers to the series of changes that every community undergoes over long periods of time

What is the process of succession?

Pioneering Plants and Animals (the first organisms to appear in succession) appear in an area, forming a primitive community. This community will change and react to various environmental conditions and be replaced by increasingly more complex communities until a final, stable climax community is formed.

There are two types of succession:

1. Primary Succession: A sequence of changes that begin in an area where there is no soil or other forms of life. (For example, bare rocks that eventually become a coniferous forest).

An example of a series of 7 stages in primary succession is:

STAGE 1: BARE ROCK

SATGE 2: LICHENS (Pioneer Species)



STAGE 3: MOSS

Mosses catch windblown material to increase the amount of soil. They grow over the surface of the rock. The soil becomes deeper in this stage.

STAGE 4: HERB

There is now enough soil to support herbs such as fireweed, daisies and Canada thistle. The roots of herbs produce carbonic acid which attack rock. The soil becomes deeper and dead leaves add to its surface.

STAGE 5: SHRUB

There is now enough soil to support woody plants such as blueberry and raspberry plants. These plants continue to deepen the soil.

STAGE 6: DICIDUOUS TREE

There is now enough soil to support tall trees (examples of tress that grow at this stage are: white birch, and trembling aspen)

STAGE 7: CONIFEROUS FOREST

Coniferous trees grow up among the deciduous trees. They grow taller than them and shade them. Eventually the whole forest is filled with coniferous trees, such as white pine, white spruce, black spruce and balsam fir.

This final stage is now a **climax community** (a community of dominant organisms that will not undergo a change in species. Abiotic factors determine the type of climax community that will become established. These abiotic factors are: climate - temperature, precipitation and availability of sunlight; soil - salinity, fertility, moisture and texture; and geographical features -







latitude, altitude, proximity to mountain ranges or large bodies of water). The interaction of these abiotic and the biotic factors present keep the climax community stable.



Stages of Primary Succession (the first 3 stages, bare rock, lichens and moss, are shown in the first 'block')

2.Secondary Succession: A sequence of changes that begin with soil already there because of an existing community that has been destroyed by such things as fire, clear cutting or volcano

An example of Secondary Succession: from Pond to Forest

<p>A colony of beavers dam a stream, creating an open pond in the forest, and the surrounding trees die.</p>	
<p>Plants that like damp conditions thrive around the edges of the pond.</p>	
<p>As these plants complete their life cycle and die, they add to the accumulating organic matter which is making the pond shallower</p>	
<p>As years pass the pond begins to dry out and the pond-edge plants (cattails and sedges) take over the whole pond.</p>	
<p>Around the ponds edges, the plants are being replaced by shrubs.</p>	
<p>Finally, the shrubs are replaced by trees...</p>	

PART A: MULTIPLE CHOICE

Instructions: Shade the letter of the correct answer on the computer scorable answer sheet provided

1. What is succession?
 - (A) One community type replaces another over time
 - (B) A forest is destroyed and replaced by a pond
 - (C) A climax community is destroyed forever
 - (D) A series of natural changes leading from climax to pioneering community

2. Which is a major difference between primary and secondary succession?
 - (A) The types of climax community are different.
 - (B) Soil with seeds is characteristic of secondary succession.
 - (C) Soil with seeds is characteristic of primary succession.
 - (D) The steps leading to the climax community are identical in both.

3. What factors might result in a primary succession?
 - (A) A forest is destroyed by fire.
 - (B) A farmer abandons his fields.
 - (C) Pollution causes rapid plant growth in ponds.
 - (D) An island is formed by volcanic activity.

4. What is a climax community?
 - (A) The final stable community in a succession.
 - (B) Bare rock represents the climax community.
 - (C) The first types of plants and animals to be established.
 - (D) The point when all life forms become extinct.

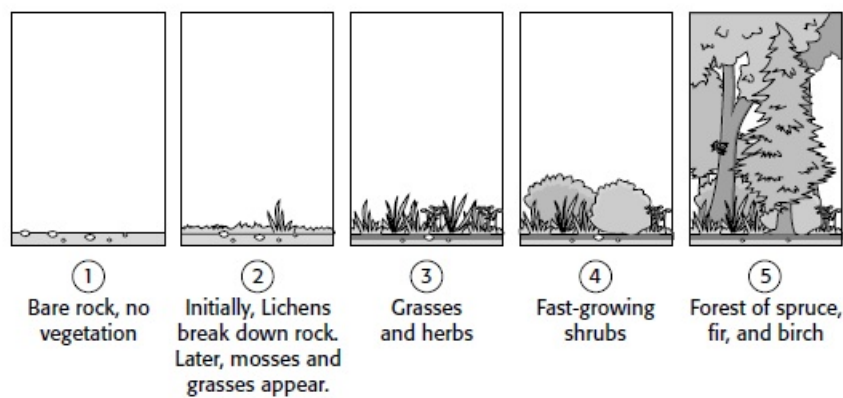
5. Which of the following is not an example of primary succession?
 - (A) Vegetation colonising old lava fields on a volcanic island
 - (B) Salt marsh vegetation on a mud flat
 - (C) Moss growing on mountain cliffs
 - (D) Grassland growing on the site of a previous rainforest

6. A type of succession that occurs in an area where no previous ecosystem existed, soil is newly being created and new species begin to populate the area describes which of the following?
 - (A) Climax community
 - (B) Pioneer species
 - (C) Primary succession
 - (D) Secondary succession

7. Which of the following refers to an ecosystem that is stable and at the end stage of succession?
 - (A) Climax community
 - (B) Pioneer species
 - (C) Primary succession
 - (D) Secondary succession

8. Which of the following terms refers to the first species to inhabit an area after a disturbance?
- (A) Climax community
 - (B) Pioneer species
 - (C) Primary succession
 - (D) Secondary succession
9. The final stage of of succession is a...
- (A) Climax community
 - (B) Pioneer species
 - (C) Primary succession
 - (D) Secondary succession
10. What occurs after a disturbance occurred that left no soil behind?
- (A) Climax Community
 - (B) Secondary Succession
 - (C) Primary Succession
 - (D) Pioneer Species
11. What happens after a disturbance where soil is left behind?
- (A) Climax community
 - (B) Pioneer species
 - (C) Primary succession
 - (D) Secondary succession
12. Which of the following would most likely be a pioneer species?
- (A) Fir Trees
 - (B) Ducks
 - (C) Moose
 - (D) Lichens
13. Which of the following animals would be found in the climax community of Newfoundland?
- (A) Fir Trees
 - (B) Ducks
 - (C) Moose
 - (D) Lichens
14. Which of the following would represent the climax community in Newfoundland and Labrador?
- (A) Barrens
 - (B) Bogs
 - (C) Marsh
 - (D) Spruce, fir, and birch trees

Use the diagram below to answer questions 15 to 20



15. A series of predictable changes that occur in a community over time is called...
- (A) Ecosystem
 - (B) Climax community
 - (C) Pioneer species
 - (D) Succession
16. What process is occurring?
- (A) Primary succession
 - (B) Secondary succession
 - (C) Biotic environment
 - (D) Abiotic environment
17. Which of the following could be a pioneer species?
- (A) Lichens
 - (B) Herbs and grasses
 - (C) Bare rock
 - (D) Spruce, fir, and birch trees
18. Which picture shows a climax community?
- (A) Only 5
 - (B) 1 and 5
 - (C) All of them show a climax community.
 - (D) None of them show a climax community because there are not any animals
19. If a tornado moves through the area ,what will happen next?
- (A) Primary succession
 - (B) Secondary succession
 - (C) A climax community will develop
 - (D) The ecosystem will be at equilibrium
20. The first species to populate the new area is called a
- (A) Primary succession
 - (B) Climax community
 - (C) Secondary succession
 - (D) Pioneer species

PART B: MATCHING

Fill in the blanks on the left with the terms on the right. Please, place your answers on the scantron

21. ___ Pioneer Species	A. Soil must be produced for succession to begin.
22. ___ Secondary Succession	B. species that can establish themselves in areas with little or no soil and few nutrients.
23. ___ Succession	C. Final community is the process of succession.
24. ___ Climax Community	D. The process by which new species gradually replace old species in an ecosystem.
25. ___ Primary Succession	E. When succession occurs with already existing soil.

PART C: WRITTEN RESPONSE

1. Define the term succession.

2. What is the difference between primary succession and secondary succession?

3. In your own words, define “pioneer species.”

4. What is a climax community?

5. Name two examples of a climax community. Where might you find an example of each?

6. The diagram below shows stages of succession from bare rock to the establishment of a forest. Sketch the key features of this diagram in your notebook, and label the diagram to explain what is happening at each stage of succession.

