Ecological Succession

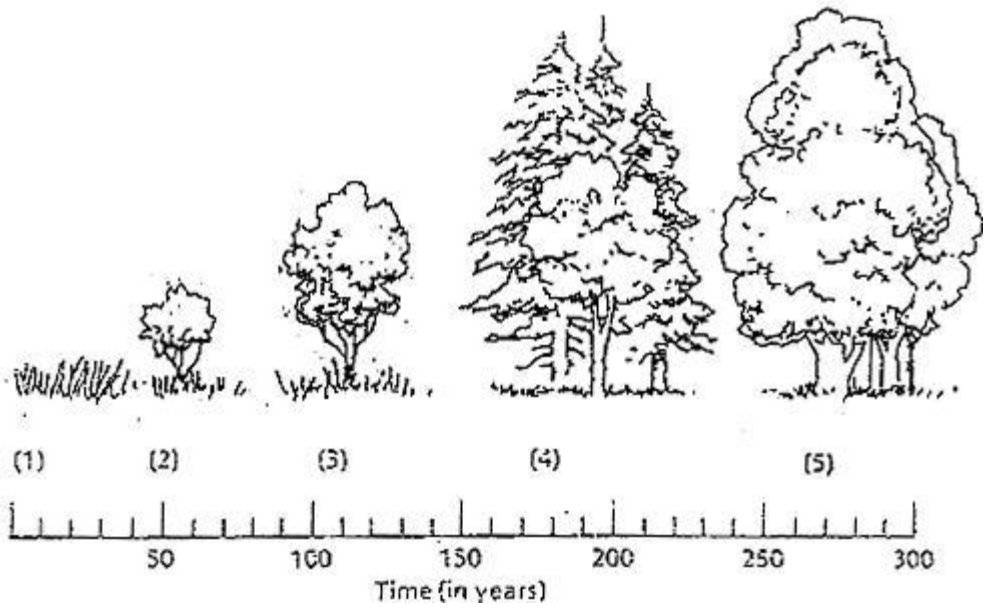
Stable ecosystems can remain this way indefinitely unless homeostasis is disrupted. Natural disasters such as volcanic eruptions, floods and forest fires are events that can upset this delicate balance. Human activity such as deforestation and pollution can also lead to disruption of homeostasis in an ecosystem.

When an ecosystem has been partially or entirely destroyed by one of these events, a new stable, self-sustaining ecosystem will develop over time. This process is referred to as **ecological succession**.

The initial environment is harsh and inhospitable to most life. Certain organisms such as **lichens** (a fungal/algal symbiote) are able to live off of rock and as a result create shallow soil. Their actions make the environment **less favorable for themselves** and **more favorable** for the next stage. These organisms that appear first after an area has been cleared are referred to as **pioneer organisms.**

As succession progresses, lichens or other pioneers are replaced by simple grasses, then by more complex plants, small trees and finally a complex forest of large trees. This last group of producers is stable and self-sustaining and is referred to as the **climax community.** The climax community can remain indefinitely unless there is a significant disruption.

Use the diagram below to answer the questions that follow:



1. Identify the stage that consists of pioneer organisms. Explain how you know this.

Stage 1 consists of pioneer organisms as they are the first living things to appear.

2. Describe what each stage does for the next in succession.

Each stage makes the environment less favorable for itself, while making it more favorable for the next stage.

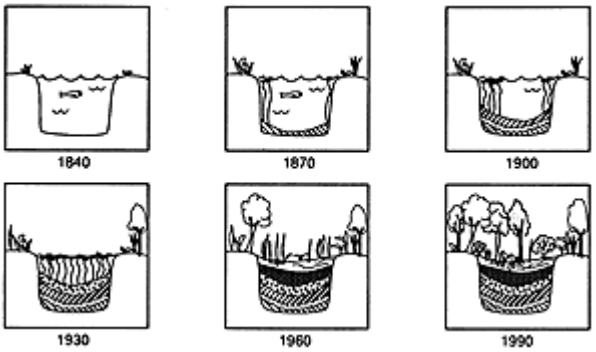
3. Why is stage 5 considered the climax community here?

Stage 5 is the climax community because it is the final group of producers and it is stable.

4. How long can this climax community exist? Explain.

This climax community can last for hundreds of years as it is now self-sustaining. This will continue unless a natural disaster or severe human intervention occurs.

5.



What event caused this pond ecosystem to become a forest ecosystem?

The pond ecosystem was gradually changed into a terrestrial (land) ecosystem by succession. (SEE ANSWERS TO MULTIPLE CHOICE ON NEXT PAGE)

1.3

2.2

3.2

4.4

5.2

6.1

7.3

8.2

9.2

10.4