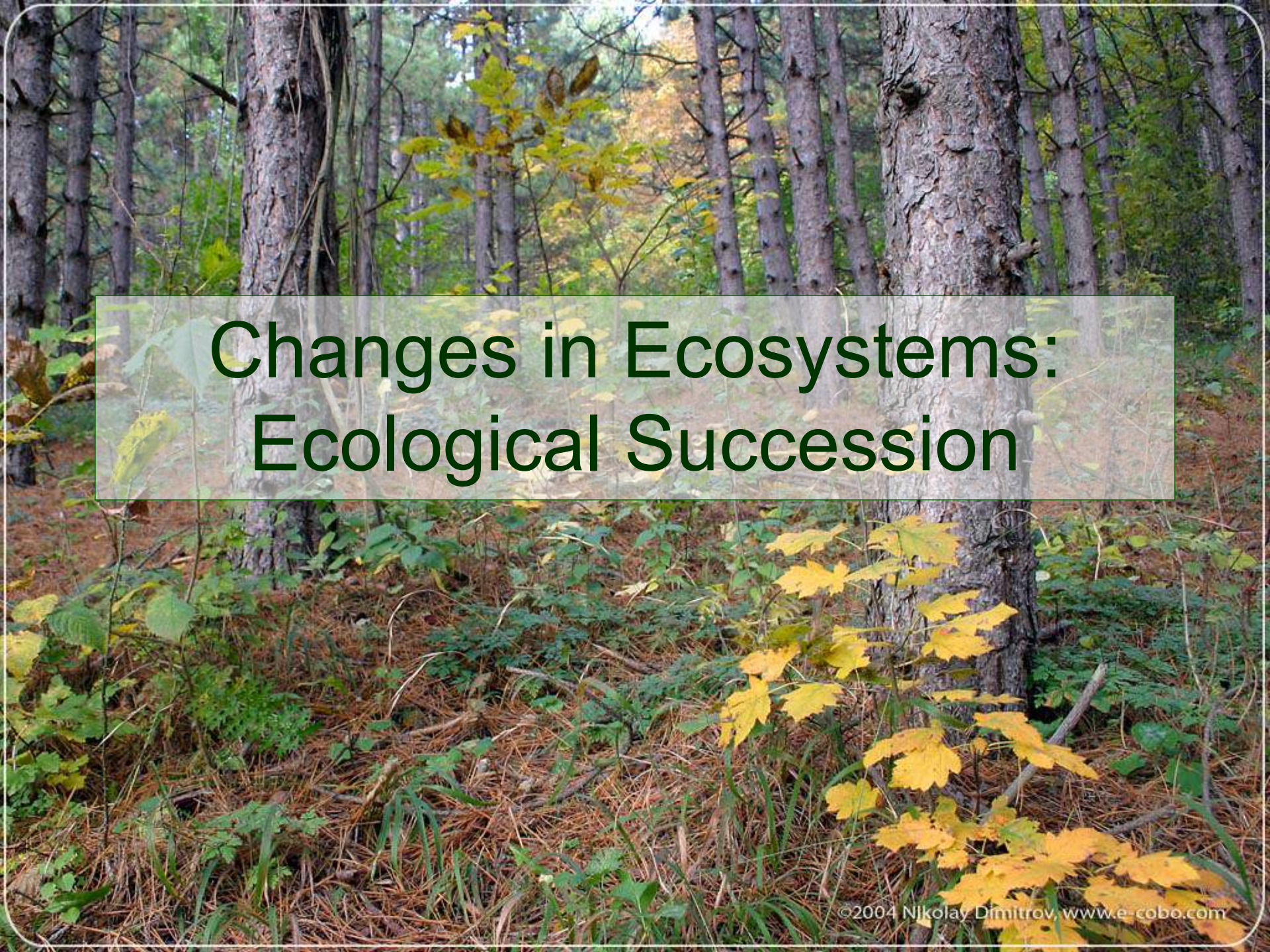


Warm Up

Identify two producers of **both** terrestrial & aquatic ecosystems.



Changes in Ecosystems: Ecological Succession

Definition:

- Natural, gradual changes in the types of species that live in an area; can be primary or secondary
- The gradual replacement of one plant community by another through natural processes over time

Primary Succession

- Begins in a place without any soil
 - Sides of volcanoes
 - Landslides
 - Flooding
- Starts with the arrival of living things such as lichens that do not need soil to survive
- Called **PIONEER SPECIES**





According to the picture, what is an example of a pioneer species?



- A. Large carnivores
- B. Insects
- C. Pine trees
- D. Small carnivores

✓
✗
✗ [MC All]

Primary Succession

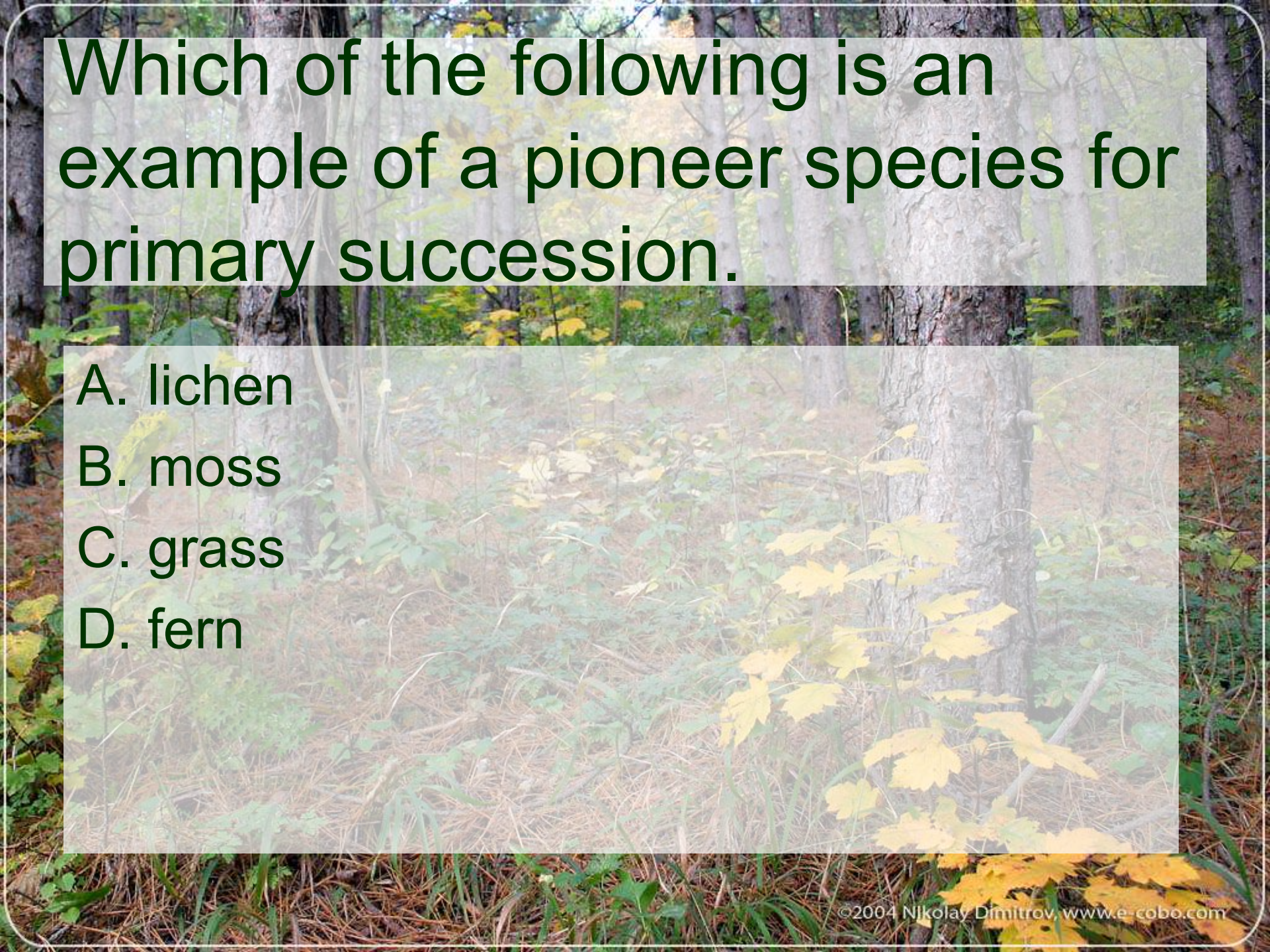
- Soil starts to form as lichens and the forces of weather and erosion help break down rocks into smaller pieces
- When lichens die, they decompose, adding small amounts of organic matter to the rock to make soil



Primary Succession

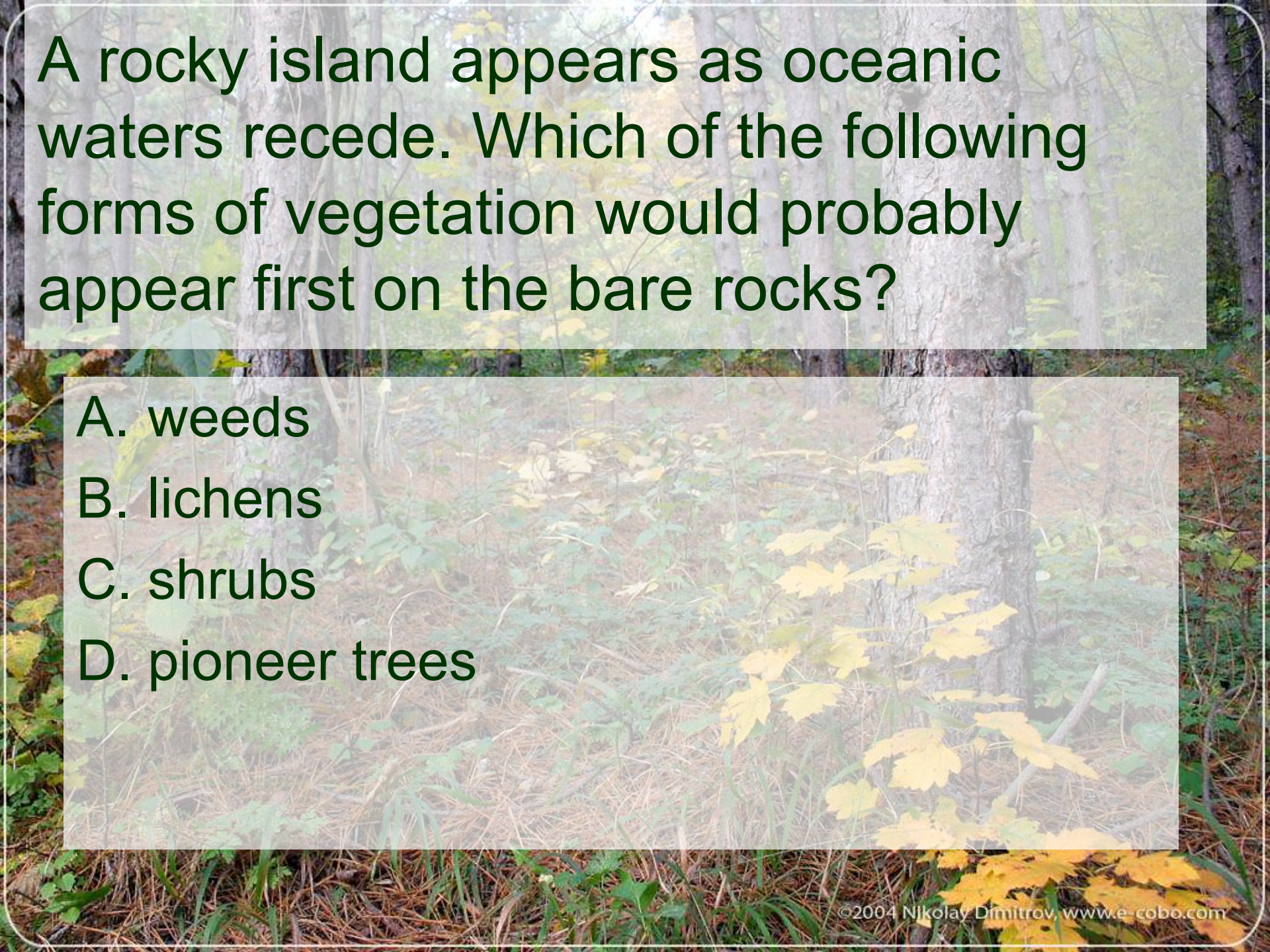
- Simple plants like mosses and ferns can grow in the new soil



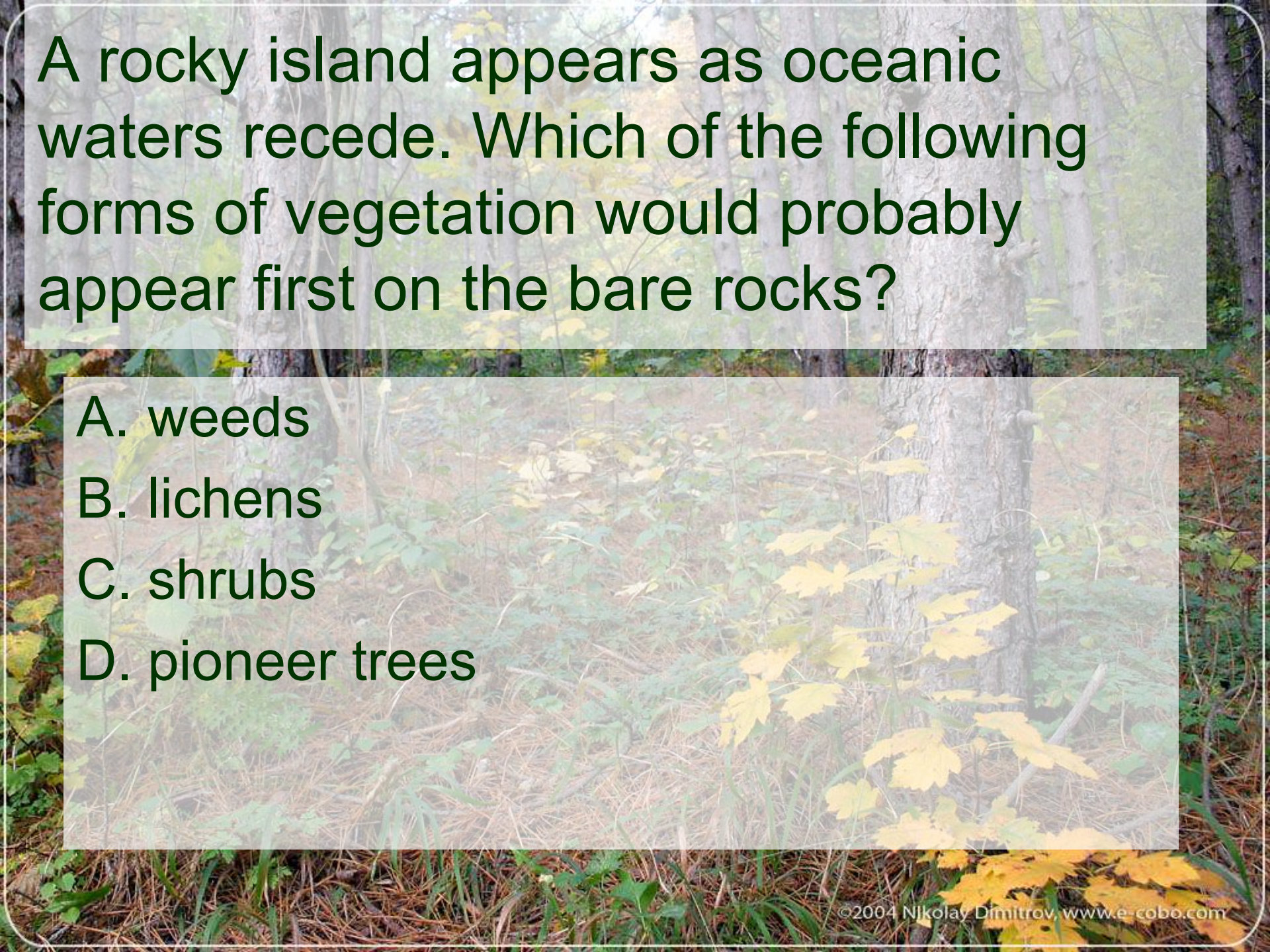
A photograph of a forest floor with green and yellowing leaves, and tree trunks in the background. A semi-transparent white box is overlaid on the top half of the image, containing the main question text.

Which of the following is an example of a pioneer species for primary succession.

- A. lichen
- B. moss
- C. grass
- D. fern

The background of the slide is a photograph of a forest floor. It shows various trees with green and yellowing leaves, and a ground covered in pine needles and some green plants. A semi-transparent white rectangular box is overlaid on the top half of the image, containing the main text.

A rocky island appears as oceanic waters recede. Which of the following forms of vegetation would probably appear first on the bare rocks?

- 
- The background of the slide is a photograph of a forest floor. It shows various trees with green and yellowing leaves, and a ground covered in pine needles and some green plants. A semi-transparent white rectangular box is overlaid on the bottom half of the image, containing the multiple-choice options.
- A. weeds
 - B. lichens
 - C. shrubs
 - D. pioneer trees

Primary Succession

- The simple plants die, adding more organic material



- The soil layer thickens, and grasses, wildflowers, and other plants begin to take over

Primary Succession

- These plants die, and they add more nutrients to the soil



- Shrubs and trees can survive now

Primary Succession

- Insects, small birds, and mammals have begun to move in



- What was once bare rock now supports a variety of life

Climax Community

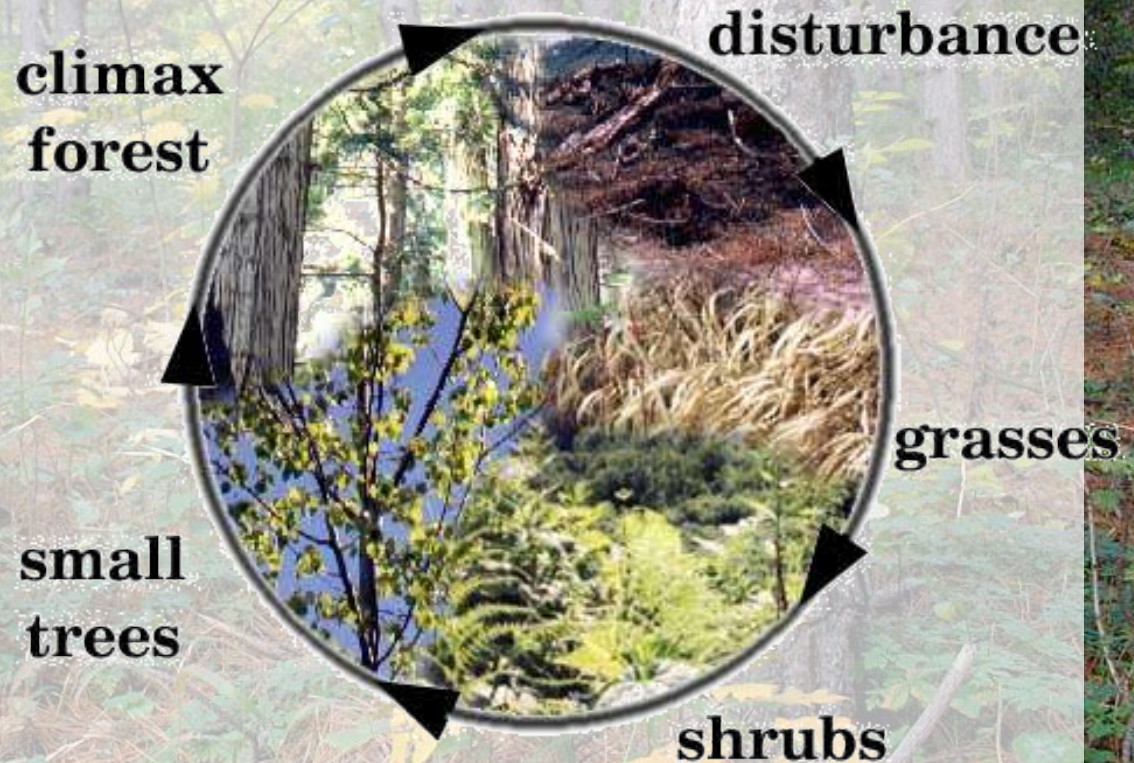
- A stable group of plants and animals that is the end result of the succession process
- Does not always mean big trees
 - Grasses in prairies
 - Cacti in deserts

Secondary Succession

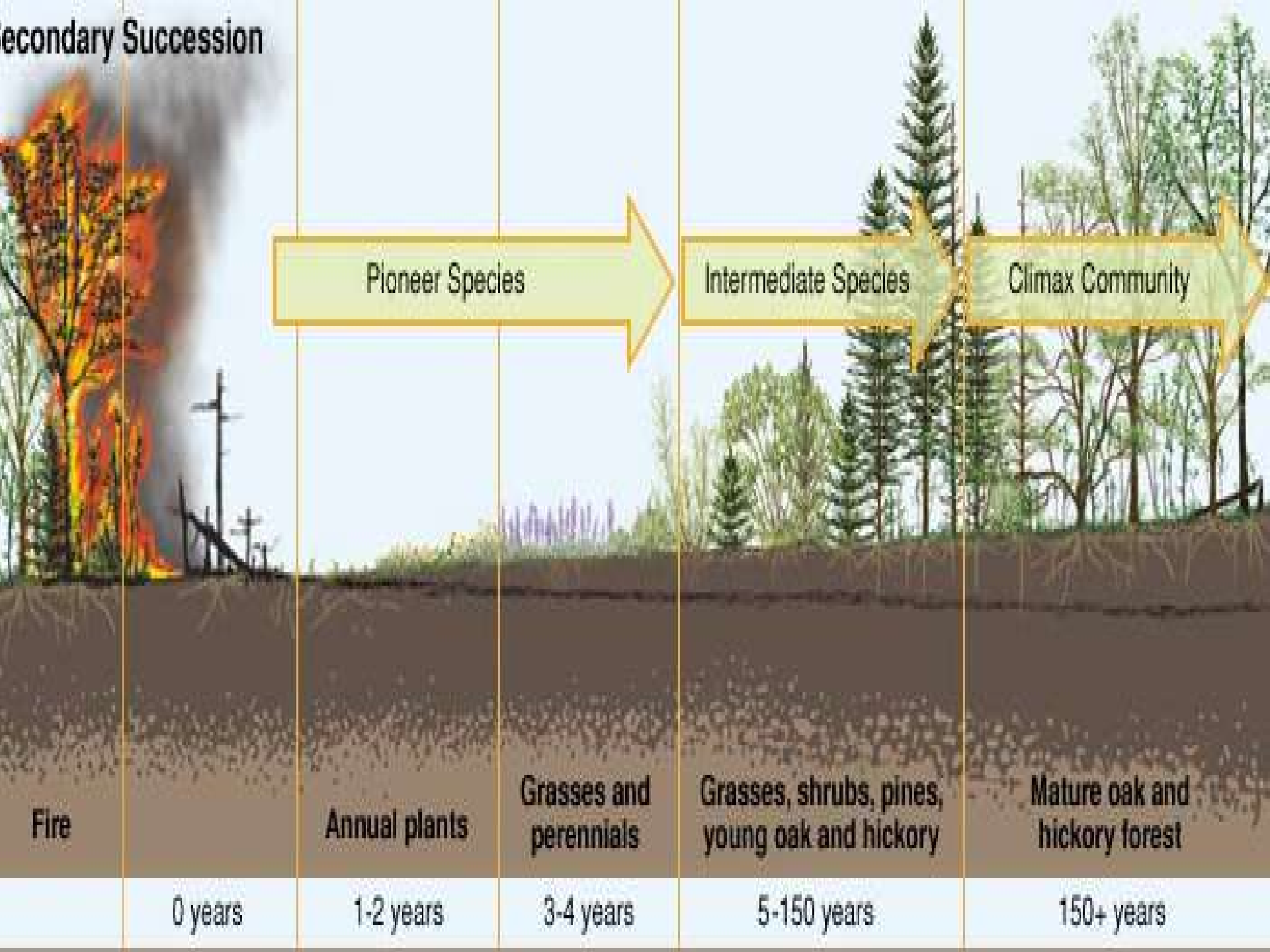
- Begins in a place that already has soil and was once the home of living organisms
- Occurs faster and has different pioneer species than primary succession
- Example: fires, tornado, etc

What grows after the disturbance takes place?

- A. grasses
- B. shrubs
- C. small trees
- D. climax forest



Secondary Succession



Pioneer Species

Intermediate Species

Climax Community

Fire

Annual plants

Grasses and
perennials

Grasses, shrubs, pines,
young oak and hickory

Mature oak and
hickory forest

0 years

1-2 years

3-4 years

5-150 years

150+ years

A fire destroys several hundred acres of forest. Which of these would you first expect to observe growing in the months immediately following the fire?

- A. trees
- B. grasses
- C. shrubs
- D. vines

A forest of pine trees is burned over a 10 mile area when lightning strikes a tree. In the spring, a few seedlings begin to sprout. This is an example of **secondary** succession.

A. True

B. False





The old-growth forest has remained the same combination of hickories and oaks for 100 years. This is an example of:

- A. Mature forest
- B. Pioneer species
- C. Young forest
- D. Climax community

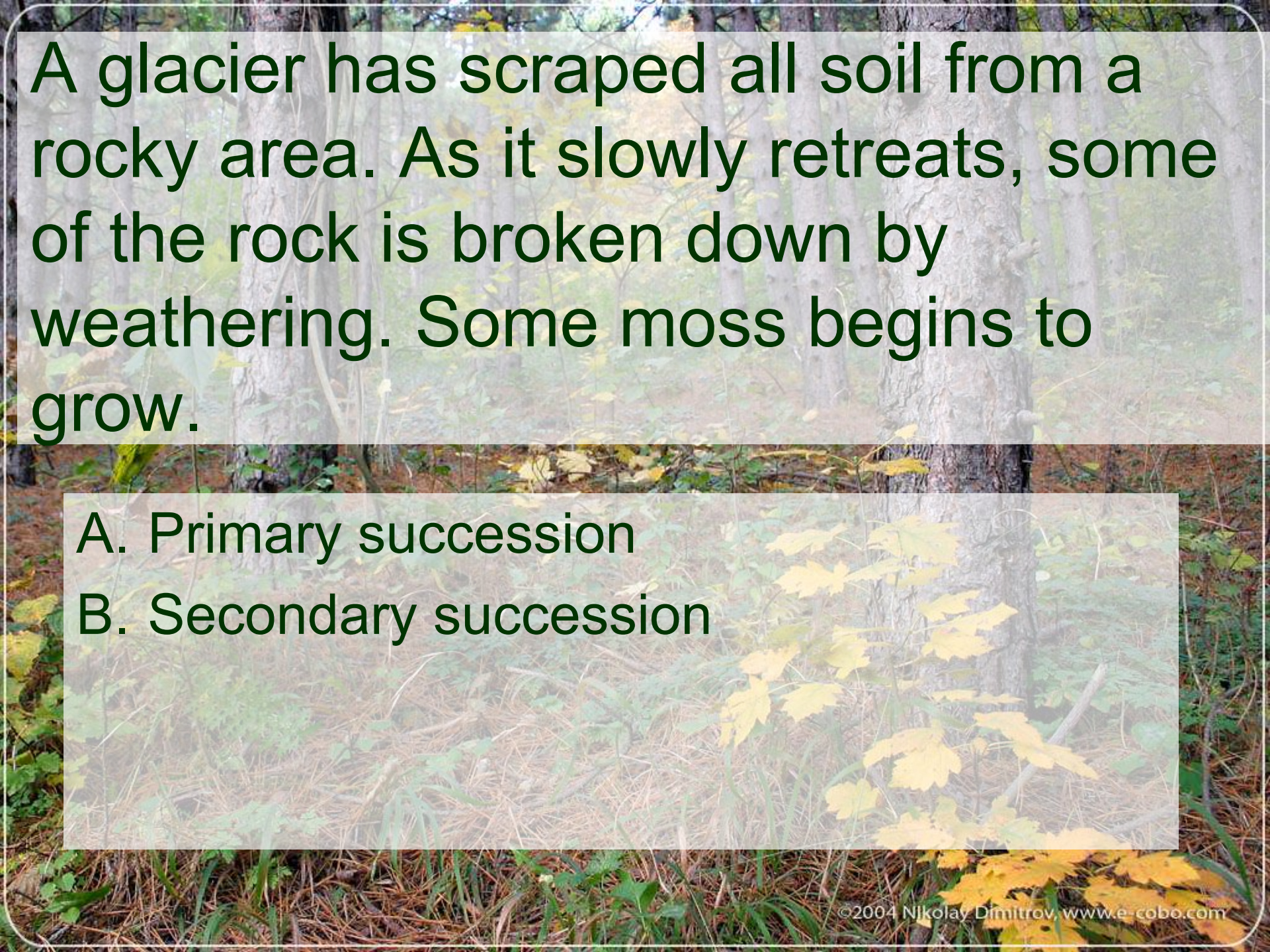
You Tell Me...

- For the following slides, determine which are examples of primary succession and which are examples of secondary succession.

This is an example of:

- A. Primary succession
- B. Secondary succession



The background of the slide is a photograph of a forest floor. In the foreground, there are many fallen yellow leaves, likely from deciduous trees, scattered across a bed of brown pine needles and some green grass. In the background, several tree trunks are visible, some with light-colored bark and others with darker, more textured bark. The overall scene suggests an autumn setting in a forest.

A glacier has scraped all soil from a rocky area. As it slowly retreats, some of the rock is broken down by weathering. Some moss begins to grow.

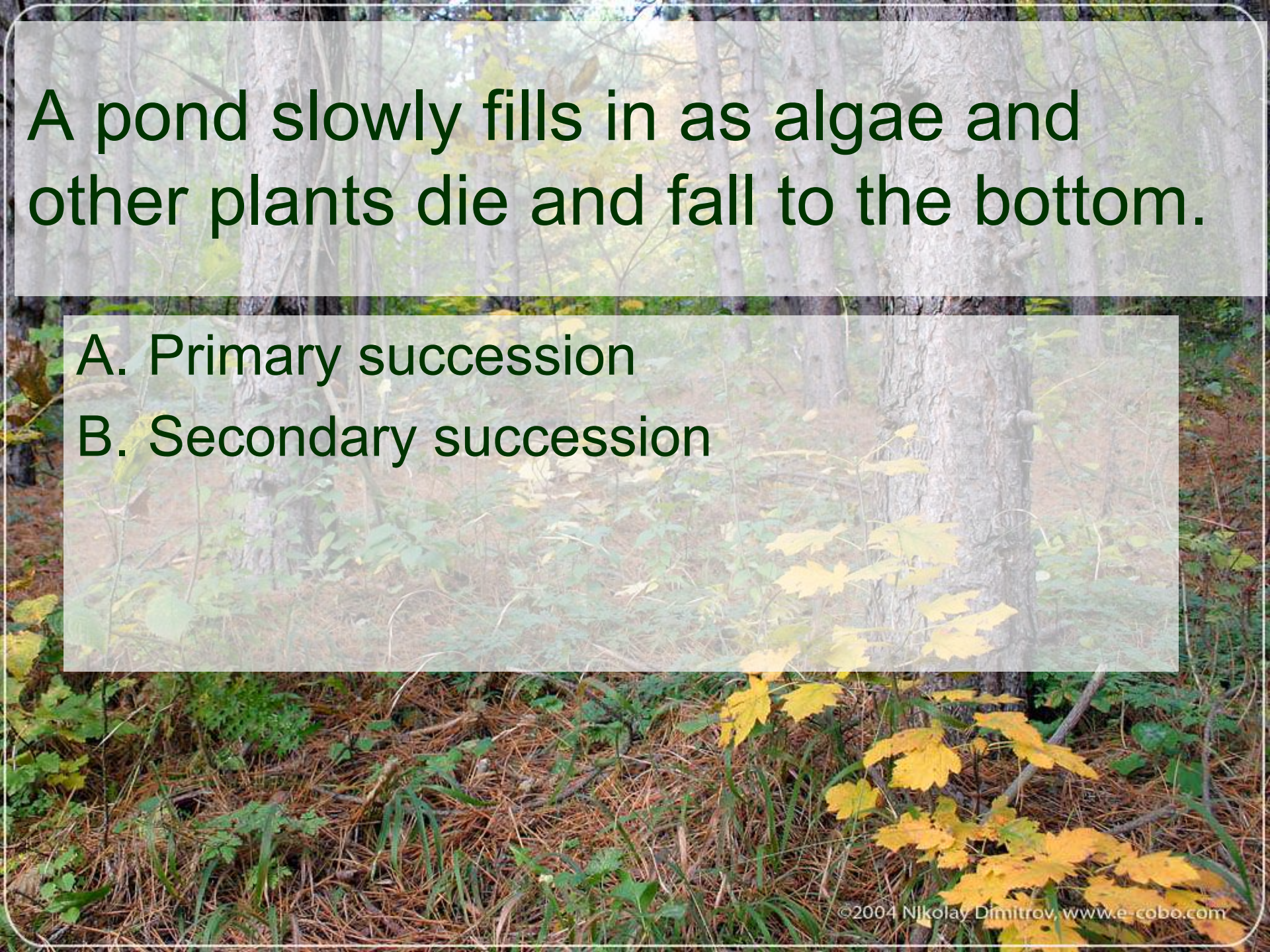
A. Primary succession

B. Secondary succession

This is an example of:

- A. Primary succession
- B. Secondary succession



The background of the slide is a photograph of a forest floor. In the foreground, there is a dense layer of brown pine needles and some green plants. In the middle ground, there are several trees with light-colored bark and some yellowing leaves. The background is a soft-focus view of a forest with more trees and foliage.

A pond slowly fills in as algae and other plants die and fall to the bottom.

A. Primary succession

B. Secondary succession