Seedless Plants

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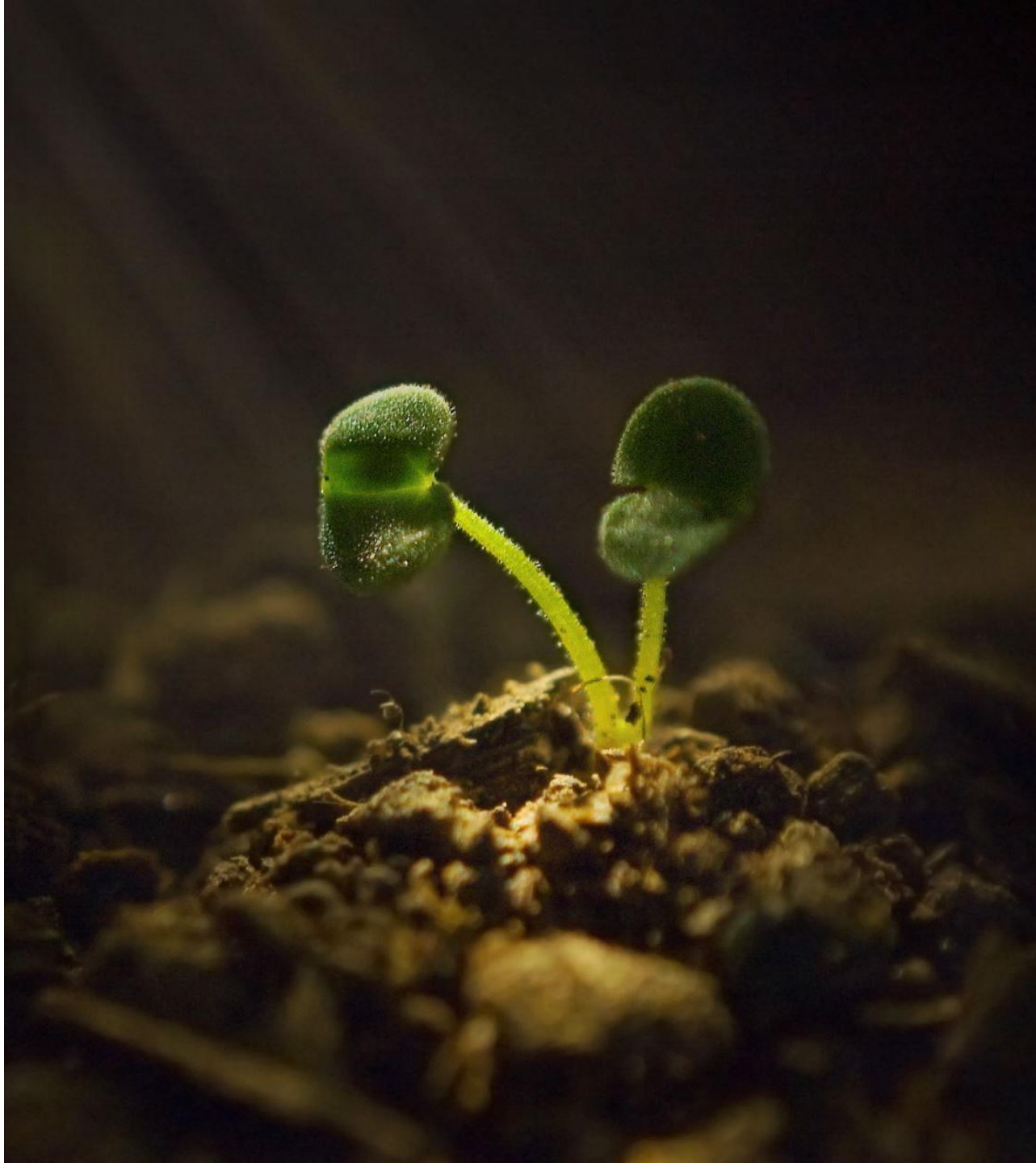
Objectives

- Distinguish between characteristics of **seedless nonvascular plants** and **seedless vascular plants**.
- Identify the importance of some nonvascular and vascular plants.
- **Why it's important? -** Seedless plants are among the first to grow in damaged or disturbed environments and help build soil for the growth of other plants.

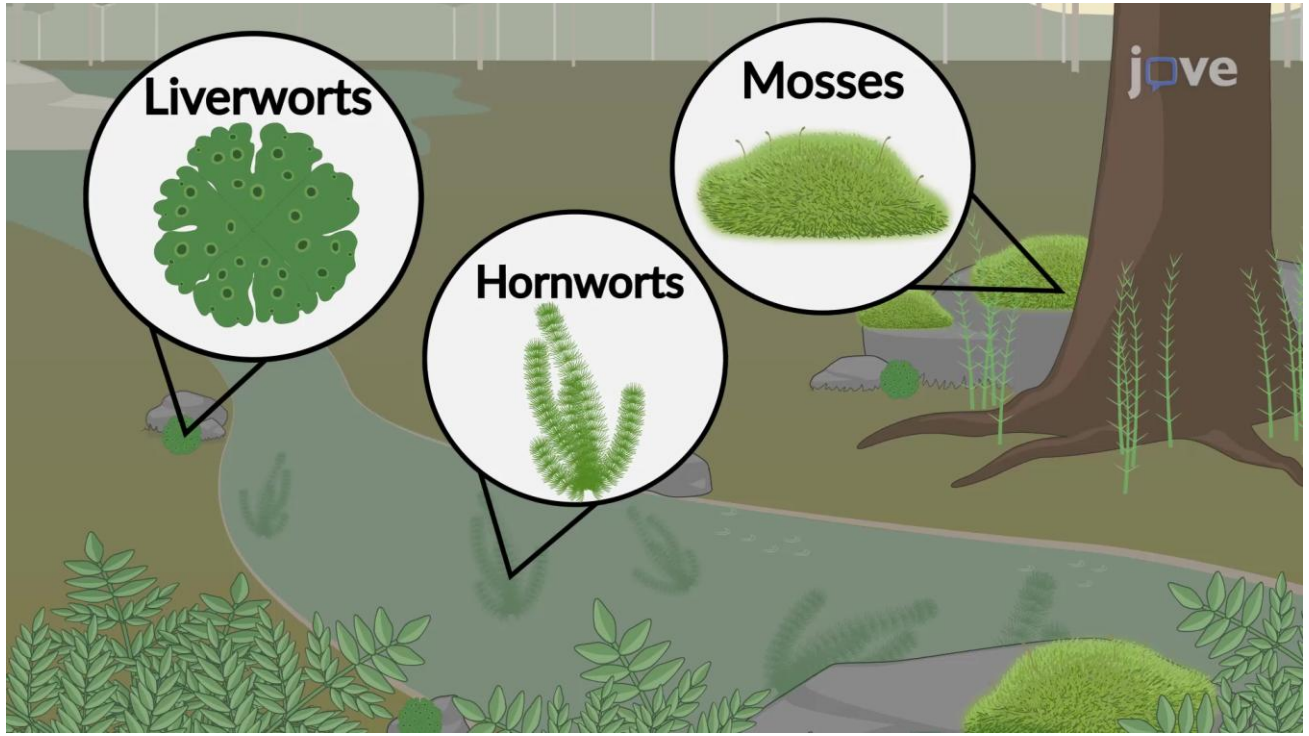
Seedless Plants

- 1. Seedless Nonvascular Plants
- 2. Seedless Vascular Plants



1. Seedless Nonvascular Plants

- Usually just a few cells thick and only 2 cm to 5 cm in height.
- Instead of roots -> rhizoids (thread-like structures)
- Grow in places that are damp.
- Water is absorbed directly through their cell membranes and cell walls.
- They don’t produce seed; they reproduce by spores.
- Mosses, liverworts, and hornworts are examples of nonvascular plants.



Mosses

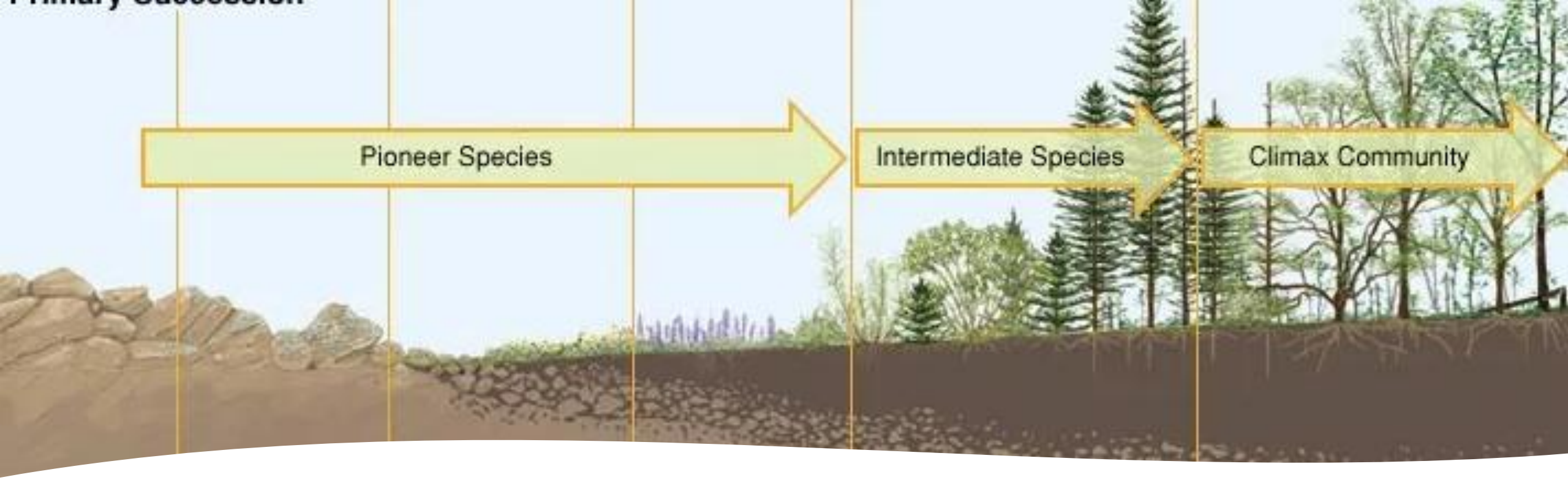
- They have green; leaflike growths arranged around a central stalk.
- They have rhizoids.
- Sometimes stalks with caps grow from moss plants.
- Reproductive cells (spores) are produced in the caps of these stalks.
- Often, they grow on tree trunks and rocks or the ground.

Liverworts

- Wort means herb.
- The word liverwort means “herb for the liver”.
- In the ninth century, liverworts were thought to be useful in treating diseases of the liver.
- They have flattened, leaflike bodies.

Hornworts

- Less than 2.5 cm in diameter.
- Flattened body.



Nonvascular Plants and the Environment

- Spores of mosses and liverworts are carried by the wind.
- Together with lichens, they are among the first plants to grow in new environments, such as lava fields or after a forest fire.
- Organisms that are the first to grow in new or disturbed areas are called pioneer species.
- As pioneer plants grow and die, decaying material builds up. This, along with the slow breakdown of rocks, builds soil.

2. Seedless Vascular Plants

- They are composed of vascular, tubule-like structures, through which they can transport water and nutrients.
- **Nonvascular plants like the moss are usually only a few cells thick. Each cell absorbs water directly from its environment. As a result, these plants cannot grow large.**
- **Vascular plants, on the other hand, can grow bigger and thicker because the vascular tissue distributes water and nutrients to all plant cells.**
- Ferns, Club Mosses and Horsetails are examples of Seedless Vascular Plants.

Ferns

- They have stems, leaves and roots.
- Their leaves are called fronds.
- They produce spores. Spores are found under the fronds.
- 3 m to 5 m in height.
- Tropical regions of the world.

Club Mosses

They have needle-like leaves.

Spores are produced at the end of the stem.

They look like tiny pine cones.

One species of spike moss, the resurrection plant, is adapted to desert conditions. When water is scarce, the plant curls up and seems dead. When water becomes available, the resurrection plant unfurls its green leaves and begins making food again.

https://www.youtube.com/watch?v=f62d5THXr7A&t=56s

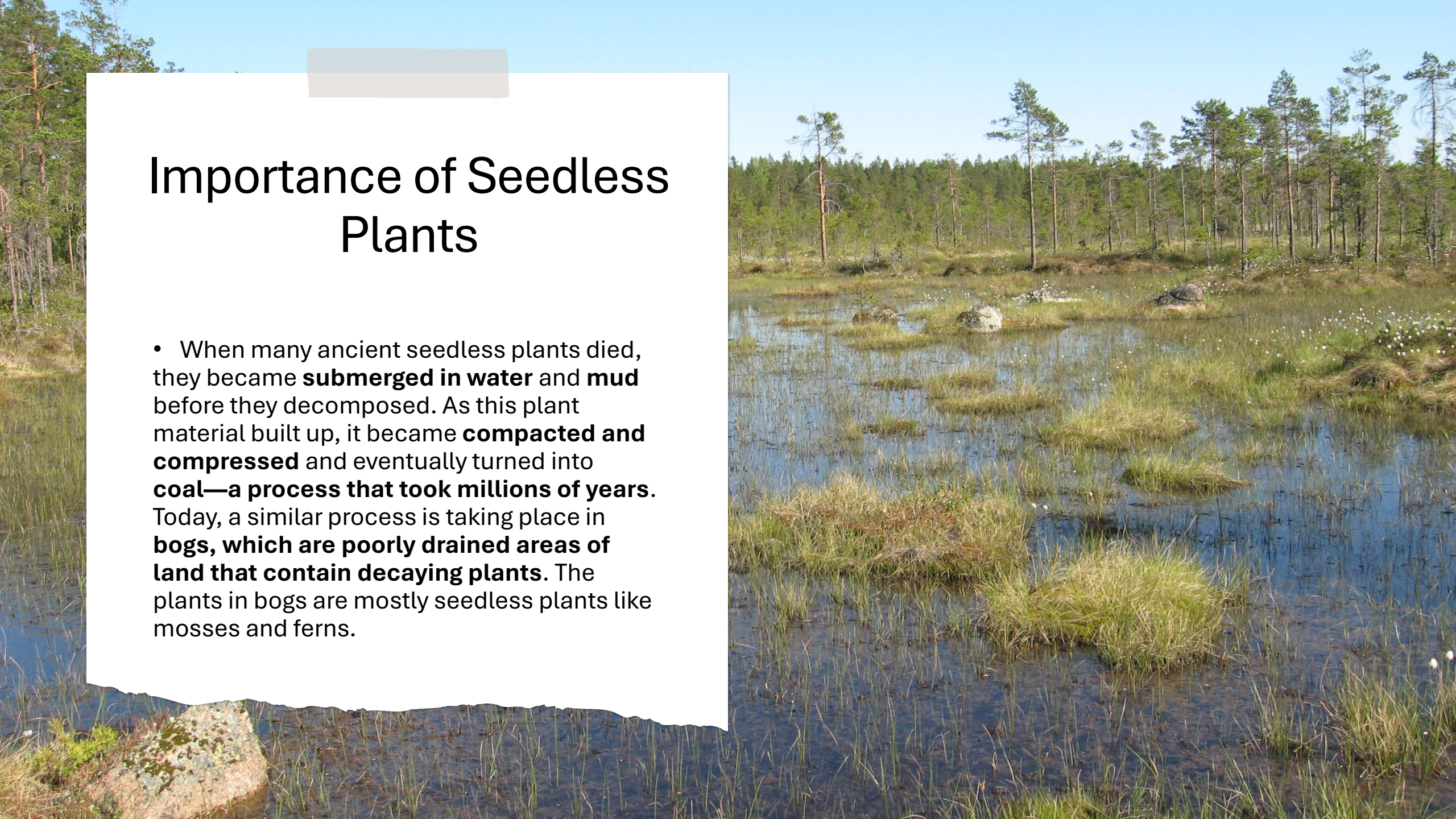
https://www.youtube.com/watch?v=0sMVeRSnHi0

Horsetails

- The stem is jointed.
- Leaves grow at each joint around the stem.
- Spores are produced at the tip of the stem.

Importance of Seedless Plants

- When many ancient seedless plants died, they became **submerged in water** and **mud** before they decomposed. As this plant material built up, it became **compacted and compressed** and eventually turned into **coal—a process that took millions of years**. Today, a similar process is taking place in **bogs, which are poorly drained areas of land that contain decaying plants**. The plants in bogs are mostly seedless plants like mosses and ferns.



Peat

- When bog plants die, the waterlogged soil slows the decay process. Over time, these decaying plants are compressed into a substance called peat. Peat, which forms from the remains of sphagnum moss, is mined from bogs to use as a low-cost fuel in places such as Ireland and Russia.
- Peat supplies about one-third of Ireland’s energy requirements.