

Pictou County Forest School - Grade 11 Lesson Plans
Biology 11 - Photosynthesis and Respiration

Activity: Wood Cookies!! (suggested time: 90 minutes)

Specific Curriculum Outcomes:

Photosynthesis and Respiration: design, perform, and report on experiments that investigate the basic and critical processes of photosynthesis and respiration

Materials:

- Large variety of cross-cut sections of various tree species
- whiteboards
- Organizer chart
- Tree ring diagram

Intro/Activation:

Present the giant hemlock cross-cut and talk about the story of that tree. If this tree could talk, what story would it share!?

Ask students: "Why don't trees grow in perfect circles?"

- Facilitate the idea that trees are dynamic living things that are innately responding and adapting to the world around them. Factors such as light exposure, competition, moisture, soil type, nutrient/mineral uptake all play a role in a tree's development.

Students are asked to think about the growth rates of various living things. The activities and discussions to follow throughout the day are intended to highlight the idea that our lived experience is fundamental to our growth and development as living beings. The following questions could be asked:

- Do all humans grow at the same rate?
- Do all trees or plants grow at the same rate?
- Do all trees of the same species grow at the same rate?

Briefly discuss the myriad factors and conditions associated with the healthy development of living things (e.g., access to: nutrition, sunlight, exercise, movement, healthy relationships etc).

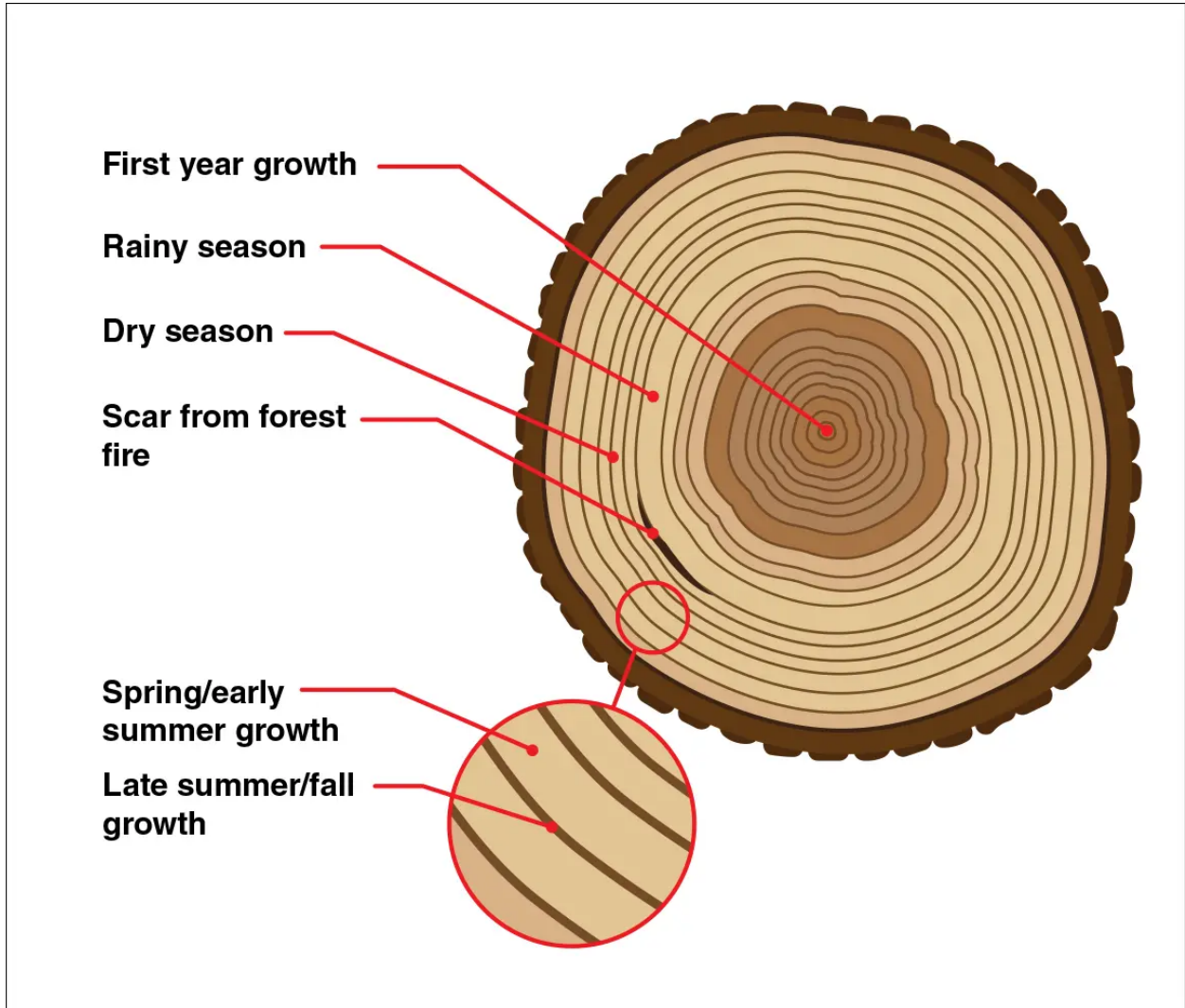
Show a tree cookie that has obvious uneven growth patterns (e.g., a hemlock grown in a location with one shaded side and one side exposed to more light).

Activity:

Students are presented with an assortment of tree cross-cuts from various tree species. For example, the growth rings on both a 20 year old poplar and a 20 year old ironwood would look completely different.

1. Have students explore the differences in growth patterns. Help students make inferences as to what each tree cookie says about its species, age, growing conditions, special life events. Organizer attached below.

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<https://climate.nasa.gov/news/2540/tree-rings-provide-snapshots-of-earths-past-climate/#:~:text=These%20rings%20can%20tell%20us,the%20late%20summer%20and%20fall.>