NATURE'S CALENDAR

Observing and Recording Nature Through the Seasons

ACTIVITY

Students create their own local phenology wheel; they'll observe and record seasonal changes throughout the school year. Use this activity to incorporate regular and repeated visits to nearby nature and to connect science, art, literacy and Indigenous knowledge.

PURPOSE

- increase awareness of seasonal changes, life cycles and biodiversity
- enhance students' observation skills
- build students' personal connections to an outdoor space
- introduce seasonal and long-term monitoring, and the role they play in environmental stewardship
- foster students' desire to care for the urban forest

BACKGROUND

We can learn a lot about the environment by looking at how plants and animals change and behave through the seasons. Phenology is the study of the timing of biological events in plants and animals. In other words, phenology is nature's calendar—it's when flowers bloom, when robins build their nests, and when leaves change colours.

Part of being an environmental steward is building awareness and knowledge of nearby nature; this baseline knowledge helps us tune in to expected and unexpected changes over time. For example, climate change scientists can refer back to years of data to compare rates and frequency of changes; citizen science projects provide an opportunity for all of us to contribute to these studies.

Phenology is a great way to highlight connections between environmental stewardship and Indigenous knowledge. Indigenous peoples have been stewards since time immemorial, and have long recognized connections between the phenological stages of different species. For example, salmonberries ripening is a sign that the spring salmon run will soon begin. These natural signs have let them know when to gather, fish and hunt—both in the past and in the present day. What phenological relationships can we find in our own environment?

SUGGESTED MATERIALS

- paper
- writing and colouring tools
- **Phenology Wheel**
- **Nature Through the Seasons**
- **Dig Deeper: Phenomenal Phenology**

STEPS

1. Introduce phenology as a way to get to know and study natural environments.
    - See **Dig Deeper: Phenomenal Phenology** for additional prompts and guiding questions.
2. Use the accompanying **Phenology Wheel** or create your own template.
    - Use **Nature Through the Seasons** as a reference for local nature happenings and ideas of plants to focus on each month.
3. Visit nearby nature. On your first visit, use your walk there to begin making observations. Have students list examples of local phenological changes that they notice. Expand the list to include changes that they might see in other seasons. Consider the timing of:
    - bugs emerging
    - animals breeding
    - flowering
    - allergy season
    - seed distribution
    - first buds
    - leafing out
    - hibernation, migration
    - growing season
    - ice melt or first frost
4. Each month, have students fill in a section of their phenology wheel to visually represent what is happening in nature around them.
    - For example, students can use their phenology wheel to track when specific plants first bloom, bud, and leaf out, or track their total flowering times. Noting the presence of specific birds also helps to tell the seasonal story.
5. Reflect. After multiple visits to nearby nature, reflect together on your observations, any highlights, and what you can learn from them.
    - Tuning in to seasonal and natural cycles helps us make better observations, celebrate local nature, and connect to place. By monitoring changes in Surrey's urban forest we become better at noticing shifts over time.
6. Go one step further! Connect to local and global citizen science projects. Phenology is very place-specific. Contributing your local observations can provide scientists with insights for current and future studies.
    - iNaturalist (e.g., City Nature Challenge)
    - NatureWatch (e.g., BloomWatch, PlantWatch)
    - Great Backyard Bird Count
    - Vancouver Christmas Bird Count
    - The Journey North
    - Project Noah

    If you're unable to find a suitable project, create an online dataset (e.g., EpiCollect) to compare observations each season.



DIFFERENTIATION

- Use words to describe what you observe. Use unique and themed fonts.
- Add a notes section for each month. Extend the lines of the wheel to the outer edges of the page or trace the wheel on the back of the page to give more space.
- Create a legend with symbols to represent observations.
- Glue printed photos onto a larger phenology wheel to create a monthly collage.
- Choose one thing to represent each month, and fill the space with a drawing of it.
- Draw patterns and colours observed each month.
- Choose 2–3 specific plants to monitor and share results.
- Use the wheel to gather personal reflections about a specific place.

EXTENSIONS

- Connect to an artist study. Learn about different techniques, then draw in a different style each month.
- Create a monthly wheel to document moon phases, sunrise, sunset, temperature and weather.
- Create multiple phenology wheels that each focus on a different theme (e.g., native plants or animals observed).
- Add details about the weather. Invite popcorn discussion of "it must be _____ degrees because I notice ____."
- Set goals for frequency of visits, special phenomena you hope to observe, or weather you hope to experience.
- Use *Native Plant Flowering Times for BC's Garry Oak Ecosystems* as a reference to create your own grid to monitor flowering times for plants in your neighbourhood.

ADDITIONAL RESOURCES

Seasonal Round Cross-curricular Unit openschool.bc.ca/elementary/my_seasonal_round/

Native Plant Flowering Times for BC's Garry Oak Ecosystems goert.ca

Phenology lesson plans by USA National Phenology Network usanpn.org/nn/educate/activities

Traditional Phenological Knowledge of Aboriginal Peoples in British Columbia, journal article by Trevor Lantz and Nancy Turner

Wheelscapes: Enhancing Sense of Place with Phenology Wheels, lesson plan by University of Wisconsin-Madison Arboretum