

Climate-Community Connections

Seasonal Patterns and Phenology

Spring flowers, summer picnics, fall colors, winter holidays. We define so much of our communities—and ourselves—by the changes in the seasons.

People have always marked the year by changes observed in the plants, animals, and climate around them. Farmers used to expect a good harvest if the corn was “knee high by fourth of July,” and gardeners have said, “When elm leaves are big as a penny, you must plant kidney beans if you mean to have any.” Beyond the field and garden, we see symbols of community life that reflect the season; think about spring flowers as symbols of renewal after a long dark winter, Labor Day marking the end of summer, the ideal of snow over the winter holidays, and the arrival of robins as a harbinger of spring. Different cultures celebrate seasonal change in different ways, many of which can be seen throughout the diverse communities of the Midwest.

Aside from the cultural importance of seasonal changes, seasonal patterns play a key role in understanding climate change. Scientists, farmers, and gardeners are concerned about changes in phenology—that is, the seasonal timing of natural events. Collecting information about seasonal patterns can help communities and scientists understand the scope and pace of climate change. For example, scientists looking at historical records collected by many different observers have determined that songbirds are migrating northward earlier in the spring— some species are arriving in Chicago two weeks earlier than they used to. Trends like this can be difficult to identify when we’re busy with other things, but by keeping and sharing data, we can pick out these trends amid the busyness of life.

We can all learn to appreciate the subtle and not-so-subtle changes in seasonal timing by paying careful attention to the changes around us from day to day. Consider engaging your community in a climate action project related to seasonal patterns to better our understanding of the world and to recognize the ways in which the cycles of our lives are connected to seasonal changes in the natural world.

Community climate action projects have many co-benefits for the community—so people can see the value of these activities in their own lives, even if they aren’t focused on climate action. For example, by gathering community stories about the seasons, people can learn about cultural traditions, meet others with similar interests, and find new opportunities to connect older and younger generations. By collecting data, people can get hands-on experience in STEM (Science, Technology,



Children dance around the Maypole in the annual Polish Constitution Day Parade in Chicago.

Photo courtesy of The Field Museum.

Objective: Discover how climate change relates to seasonal patterns in your community and how to take climate action

Audience: High school and up

Materials: Computer with Internet access (optional)

Time Needed: 15-20 minutes to read closely; additional time to explore linked content

Spring comes sooner these days, arriving an average of 2.3 to 5.2 days earlier per decade over the last 30 years.

Engineering and Math) fields, develop a better understanding of the effects of climate change, and learn more about natural history and the scientific method. And, by engaging in art projects, people can develop artistic talent or immerse themselves in new opportunities for visual arts, writing, and other creative expressions.

Take Action

Document the Seasons

Keeping track of the changing of the seasons and its effects on the community are important for understanding and addressing the impacts of climate change. Over time, these observations allow us to track larger changes in climate and make predictions about the future.

- Gather community stories of seasonal change. Everyone loves to talk about the weather and “how things used to be.” Invite people to share their recollections and observations—and to compare the past with the present. This creates opportunities to talk about the accelerating pace of climate change. Here are some tools to help you gather stories:
 - [Climate-Friendly Communities: A Guide to Using Video Stories for Climate Action](#)
 - [Make It Personal: Climate Change Conversations and Posters](#)
- Create a seasonal “time machine.” Describe the seasons now and make plans to open the time machine at an important event in five, ten, or twenty years.
- Make a seasonal calendar for the community. Make it easy for people to pay attention to the seasons by creating a document or a physical space that draws attention to seasonal events. It should include cultural events and corresponding ecological events in your region. Record major weather events. Here are some helpful tools:
 - [The Seasonal Round \(Local Learning\)](#)
 - [Farmer's Almanac](#)



Students at Marathon Venture Academy learn about and create their own phenology wheels as part of a final project for their semester-long climate change expedition.

Community Action

During their semester-long climate change expedition, students at the Marathon Venture Academy (Marathon City, WI) tracked individual plants in a garden adjacent to the school through drawings and written observations in their phenology journals. Students also recorded weather data, allowing them to investigate the relationship between temperature, precipitation, and plant phenology.

Become a Naturalist

We can all contribute data to local, regional, and global studies—by reporting what we see in our backyards, school lots, towns, gardens, and nature preserves. When we collect data, we pay more attention to the world around us. With more data, scientists can look at broader trends over time and distance. Citizen scientists can help build the databases that help us understand the impact of climate change.

- **Observe phenology.** While on your morning commute, a walk during lunch, or simply gazing out the window, take a moment to consider how the living landscape is constantly changing around you, and how those changes impact your life and your community.
- **Gather phenology data.** Work with a student or local community group to record phenological observations. Data can be recorded in phenology journals, documented using photography and/or drawings, and/or logged using apps. Here are some helpful tools:
 - [Nature's Notebook Curriculum & Activities](#) (National Phenology Network) and [mobile apps](#)
- **Contribute data to citizen science projects.** By getting involved in a local or national project, you can provide scientists valuable information on climate, as well as plant and animal, communities. There's a project to fit every interest and level of commitment.
 - The [Animalia Project](#) provides a good introduction to citizen science, as well as a directory of regional and national projects.
 - Project BudBurst focuses on tracking plant response to climate, such as timing of leafing out, flowering, and fruiting. Use the tools below to get started:
 - [Project BudBurst Activity Guide](#)
 - [Create a BudBurst Website](#)
 - [Journey North](#) compiles observations on wildlife migrations in response to seasonal change throughout North America. Animals studied include Monarch butterflies, hummingbirds, eagles, and robins. A mobile app is available, as well as resources for teachers.



A citizen scientist records her observations for Project BudBurst.

Photo courtesy of Project BudBurst and NEON.

Community Action

Mequon Nature Preserve (MNP), outside Milwaukee, WI, connects more than 6,000 school-aged children with nature each year. To expose visitors to the effects of climate on plant communities, MNP has created a Community BudBurst page where visitors can learn about important plant species at the preserve and upload their own phenological observations.

Millions of volunteers participate in citizen science projects annually, producing datasets that exceed most federally funded studies in temporal and spatial extent.

Make Art Inspired by the Seasons

Collecting data is one way to record events; making art is another. Illustrations, photographs, poems, and stories are prized methods of capturing an instant in time. By creating seasonally rooted art, participants become more familiar with the effect of seasonal change on the landscape and the impact climate change may have. Displaying these art pieces in public spaces such as libraries or nature centers can help initiate climate change conversations.

- Document the seasons through art. Lead seasonal drawing and/or journaling excursions to observe and record nature.
 - [G-WOW Phenology Wheels Lesson Plan](#)
- Make art from found natural materials. By working with leaves, sticks, flowers, and fruits, your creations inherently reflect the seasonal changes of the landscape surrounding you. Leave these pieces of earth art in place for all to enjoy, but consider taking a picture or video to document your work.



A Chicago Botanic Garden visitor draws a butterfly while learning about the relationship between milkweeds and the annual Monarch migration.

Photo courtesy of the Chicago Botanic Garden.

Web Addresses

Document the seasons:

- The Seasonal Round (Local Learning) (<http://locallearningnetwork.org/the-seasonal-round>)
- The Farmer's Almanac (<http://www.almanac.com/content/first-day-seasons>)

Become a naturalist:

- Nature's Notebook Curriculum & Activities (https://www.usanpn.org/educate/nn_curriculum) and mobile apps (<https://www.usanpn.org/nn/mobile-apps>)
- Animalia Project, Citizen Science and Project Opportunities (<http://animaliaproject.org/citizen-science/>)
- Project Budburst (<http://budburst.org>) and Community Budburst (<http://budburst.org/community>)

Make art inspired by the seasons:

- G-WOW Phenology Wheels Lesson Plan (http://www.g-wow.org/App_Uploads_Docs/Submissions/GWOW%20Phenology%20Wheels%20of%20Time%20Lesson%20Plan.pdf)