Phenology in Nature

By Kathy Wolfe
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"To everything there is a season, and a time for every purpose, under Heaven." *Ecclesiastes 3:1*

Birds migrate, plants and flowers bloom, certain insects appear, frost arrives, leaves bud or fall all as part of our seasonal year. The garden does not pace itself to our calendar. Spring may come early one year and late another. By being able to read certain biological phenomena, we can fairly accurately predict when to plant particular plants, when to worry about the arrival of unwanted weeds and insects and when to protect our plants from frost.

Phenology is the use of natural indicators to read the progress of climatic cycles. It is an ancient craft used by our ancestors to successfully manage their lives and their crops. Without the ability to learn from, and act upon clues taken from seasonal changes, survival could be jeopardized. The word comes from the Greek "plaino" meaning to show or appear. It is the study of timing of biological events in plants and animals such as flowering, leafing, hibernation, migration and reproduction. The Chinese are thought to have kept the first written records dating back to 974 B.C.



Above left: Allowed to naturalize under a deciduous tree in your garden, snowdrops will emerge in February as an early sign of spring. **Above center:** Returning hummingbirds seek out our native red flowering currant *(Ribes sanguineum*) blossoms filled with sweet nectar. **Above right:** Our native red flowering currant is filled with the sweet nectar that can be hard to find in March. *Photos by Christine Farrow / Master Gardener.*

Three main non-biological factors affect phenology: sunlight, temperature and precipitation. Plants and animals use a combination of these to determine breeding, migration and bloom. If two species have the same requirements of these factors, they will activate at the same time. They could arrive later in a cool spring year and earlier in a warm one but they will always

appear together. When a caterpillar emerges, it needs leaves to eat. When chicks hatch, they need caterpillars and other food to survive. A balance is established. The cycle begins.

Farmers and gardeners need to know when to plant to avoid frosts, and they need to know the schedule of plant and insect development to decide when to apply fertilizers or pesticides. By trial and error, early farmers determined which pairings consistently followed the pattern. Fishermen also use phenology to determine annual spawning and feeding patterns in fish based on bloom times of various plants, which often correlates with hatch time of specific insects. Ask fly fishermen how important knowing these patterns is to their success catching fish.



Above left: The male Pacific chorus frog (*Pseudarcris regilla*) can sing his croaky chorus at any time of the year, but you are most likely to hear him calling during breeding season in the spring and early summer. **Above center:** The knowledge of when to plant each crop comes with experience and a scientific understanding of soil temperature, soil analysis, hours of sunlight and meteorological forecasts. **Above right:** The bright scarlet of the salmonberry blossom survives a late spring snowfall. The berries become one of the first to ripen in early summer when many migrating birds are feeding their young. *Photos by Christine Farrow / Master Gardener.*

Early North American Indians determined that corn should be planted when the oak tree leaves were the size of a squirrel's ear. Kentuckians noted that green peas should be put in the ground at apple blossom time. Northern farmers found that Irish potato yields were best planted when the dandelions began blooming in open, sunny spots. Dandelion blooms also indicated planting time for beets and carrots. Some say the unique call of the whippoorwill is saying, "Plant your peas! Plant your peas!" Other time-honored correlations include planting hardy crops such as asparagus, rhubarb, horseradish and strawberries when peach and plum trees bloom; planting perennials when maple leaves emerge from buds; watching for lilac bloom to plant squash and beans; and pruning roses when forsythia blooms.

Many famous historical figures recorded phenology observations, including Thomas Jefferson, Aldo Leopold, and Henry David Thoreau. There are many national organizations, including universities, that track and record nature in this way. Try checking them out on the Internet.

It is simple to start your own adventure into phenology. Begin by observing, taking notes, and keeping track of events in your garden or yard from year to year. Common examples might include the date the migrating birds return, the first flower dates for plants, and the date on which a lake freezes in the autumn or thaws in the spring. Notice the duration of events and try to connect them by using simple knowledge. Use the information you gather to plan your garden using natural cycles. You will learn more about your world and the beautiful intricacies of nature than you could ever imagine. To be interested in the changing of all seasons is a happier state of mind than to be hopelessly in love with spring.

RESOURCES:

- National Wildlife Federation, http://www.nwf.org/wildlife/Wildlife-Conservation/Understanding-Wildlife-Conservation/Phenology.aspx
- Ohio State University Phenology Garden Network, http://phenology.osu.edu/
- USA National Phenology Network, http://www.usanpn.org/about/phenology
- Cofrin Center for Biodiversity, University of Wisconsin – Green Bay, http://www.uwgb.edu/biodiversity/phenology/
- Project Bud Burst, http://neoninc.org/budburst/phenology.php