

# Nature's Calendar



Gray wolves grow a thick undercoat of winter fur.

*Are you excited to play in the first snowfall, see the first violets in spring, or hear crickets sing in summer? All are phenological events happening just outside your door.*

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Illustrations by Betsy Bowen

## W I N T E R

Winter snow covers the land in January. But if you listen carefully in the days ahead, you might hear a black-capped chickadee calling *fee-bee*. Walking on a warm day, you might get lucky and spot a woolly bear caterpillar. Both events are early signs of spring.

Winter's first snow, spring bird migrations, summer blooming flowers, fall acorns gathered by squirrels—all signal a change in the seasons. This amazing calendar of natural events happens year after year, like clockwork.

A branch of science called *phenology* (*fin-noll-uh-gee*) studies the cycles of plant and animal life. Phenology tells scientists when events such as bird migration are happening on their usual schedule—and when an event might be out of time or place, especially in relation to the climate and change of seasons.

### Natural Clock Watchers

People have been observing and keeping track of natural events as long as anyone can remember. Such observations helped early American Indians and European settlers to survive. For example, people watched fish spawning and learned

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Northern cardinals arrive at feeders before sunrise and leave after sunset.

### December, January, February

- \* Black bear cubs born in den. Nurse and snuggle by bare spot on mother bear's stomach.
- \* Bucks shed antlers.
- \* Lake ice cracks and booms as temperatures drop.
- \* Raccoons sleep but come out on warm days.
- \* White-tailed deer eat 6 to 8 pounds of shrub and tree twigs every day.



Spring peepers call like jingle bells.

the best time to catch fish. They watched daylight and felt temperature to know when to collect sap from maple trees. They figured out they could plant crops successfully when oak leaves were “as big as squirrel

ears” because the soil would be warm enough for seeds to sprout.

The first written phenology records came from China more than 2,000 years ago! The Chinese kept careful records of insect life cycles. When

### Look for spring and summer firsts—

- |                                |              |
|--------------------------------|--------------|
| red-winged blackbird           | thunderstorm |
| tree buds                      | mosquito     |
| salamander                     | wood tick    |
| butterfly                      | dragonfly    |
| cumulous clouds after snowmelt | fish caught  |
|                                | baby animal  |

hibernating insects awoke in spring, Chinese farmers knew it was time to plow the fields.

*Phenologists* observe and take notes on these events to try to discover nature’s patterns and rhythms. One famous phenologist named Aldo Leopold began keeping records of wild animal and plant life on his Wisconsin farm in the 1930s. His daughter Nina Leopold Bradley continues to record daily observations of nature. Now the Leopolds’ records are being studied to look for trends in bird migrations and weather.

Many scientists today are examining phenological records to look for any changes that might be connected with global warming. Scientists can note differences in such seasonal events as migration dates of birds and ice-out times on lakes. They can also look for changes in health of trees and other plants in the forest. The records provide clues to changes in patterns. For example, 75 years of records show that ice on Rainy Lake in northern Minnesota now melts away five days earlier in spring than it did in the 1930s.

### Wild Notes

You too can track the natural patterns of plants and animals right



Spawning time for yellow perch.



Great gray owls breed and nest in northern Minnesota.

### March, April, May

- \* Black bears leave dens.
- \* Marsh marigolds bloom sunny yellow.
- \* Pussy willows form furry catkins.
- \* Maple tree sap flows.
- \* Chipmunks come out.
- \* Blackflies hatch in Boundary Waters.

# S U M M E R



Yellow warblers build nests and hatch their eggs.

outside your door by creating a phenology notebook or calendar. By looking back at your nature calendar each year, you can begin to predict when to look for tadpoles, catch grasshoppers, or even pull out your snowboard or skis. For fun, you can have a contest with your friends to guess the date when the first oriole or other migratory bird will return to your neighborhood.

You could use a calendar with lots of space to write your daily nature notes throughout the year. Or use this simple way to set up a phenology

notebook. Find a three-ring binder and fill it with notebook paper. Add dividers for each month of the year. At the top of the first sheet of paper after each divider write the month and year. You are now ready to record phenology.

Keep your notebook and pen in an easy-to-reach place. When you see, hear, or smell something of interest—such as the call of the first frog or the sweet smell of wild grapes—turn to the current month, write the date, and describe what is happening and where. That's it!

## What to Observe

Take note of these and other natural curiosities. Watch for birds migrating south or north. Are there new birds visiting your feeder? Listen for wildlife calling. See if you can spot animals doing their courtship dances. Can you find animals building nests or houses? Which plants are budding? When does the lake ice melt? When does lake water freeze? When do

## What's Your Latitude?

If monarch butterflies show up in the Twin Cities at the end of May, they won't arrive in Duluth for another week, depending on the wind. The climate and the life cycles of plants and animals vary from place to place. For every degree of change in latitude—the distance measured north or south—a natural event usually happens four days later or earlier. For each degree of longitude—distance east or west—the event occurs 1½ days later or earlier. Changing altitude by 100 feet changes the event by one day. So when you find ripe raspberries in your neighborhood, the berries to the north, to the east, or up the hill probably won't be ripe yet.



Great spangled fritillaries visit thistles to sip nectar from the blossoms.



Skimmer dragonflies hunt for mosquitoes in marshes.

## June, July, August

- ❖ Deer flies appear.
- ❖ Ducks lose primary wing feathers and can't fly until new ones grow in three to five weeks.
- ❖ Wild grapes blossom, filling the air with sweet scent.
- ❖ Fireflies flash in the night.



While other birds migrate south in fall, hairy woodpeckers continue life as usual. They can be seen year-round.

plants lose leaves? When you observe nature, pay attention to the weather. Is the temperature rising or falling? What's happening along with the first frost, snowfall, or spring rain? Which way is the wind blowing?

**More Detective Tools**

The more closely you observe nature, the better you can predict what might happen next. A hand lens and binoculars can help you see more. Like a microscope, a hand lens

**Daily Example**

**Date:** March 26, 2006

**Time:** 9:00 a.m.

**Location:** My backyard in Stillwater, Minnesota.

I saw male and female bluebirds looking at my bluebird box. Many geese were moving into the marsh. I could also hear red-winged blackbirds calling. This morning it was cool and sunny with no wind.

magnifies your view of tiny plants and animals. With binoculars you can take a closer look at a bird on its nest or an animal in the distance.

At state parks and forests you'll find nature trails. Some parks have naturalists, birding kits, and other resources to help you discover more. The state park calendar and *Minnesota Weatherguide Environment Calendar* have phenological notes.

**Phenomenal Records**

Each January go through the month dividers in your binder and write the new year at the top of the next page. Make sure you keep all of the old records so you can flip back and compare the dates of past natural events, such as when the first frog called or the first chipmunk appeared. Your history of observations will help you make more accurate predictions every year.

During this time you can also look back over all the wonderful things that happened in nature during the past year. On a cold winter day, your phenology notebook can remind you of the sweet smell of blooming flowers and the summer buzz of cicadas. 📍

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Cedar waxwings feast on ripened high-bush cranberries.



Bull moose in rut search for mates amid the first snowfall up north.

**September, October, November**

- \* Orioles leave for Central America.
- \* Toads hibernate underground.
- \* Ruffed grouse grow hairlike pectinations on toes to use like snowshoes.
- \* Hawks fly over Hawk Ridge in Duluth by the hundreds.

**A NOTE TO TEACHERS**

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