Spring is here! This fact might be obvious to many people—a quick glance at a calendar tells us that we are well past March 20, the date that officially marks the beginning of spring. But for those of us who are native plant lovers, the beginning of spring is generally marked by the emergence of our favorite early-spring blooms and the bright yellow-green color of oak trees putting on their new leaves. For us, the season changes aren’t dictated by the date on the calendar, but rather the phenology of the ecosystems around us.

Phenology is the term that scientists use to describe nature’s calendar. It is the study of re-occurring and seasonal natural phenomena, especially in relation to plants and animals. From its formal beginnings in the early 18th century, phenology was primarily concerned with the “firsts.” When the “first” migratory bird appeared for the summer, when the “first” flower of a particular type bloomed. The modern meaning of phenology is more encompassing, however, and is used to talk generally about the timeframes for all seasonal biological phenomena. In modern phenology, we are interested in not only the “firsts” but also the last day that a certain flower blooms or the number of days that a certain bird remains in the area. While in and of themselves these dates and timeframes are interesting, the real power of phenology comes when we are able to compare these phenological occurrences throughout years, decades, and even centuries. These comparisons and trends through time allow us to better understand ecosystems and how climate change is occurring throughout the world.

Different phenological occurrences happen throughout the year, but spring is particularly dense with milestones. Trees are growing new leaves, flowers are blooming, seeds are being produced, birds are arriving for the summer, and insects are emerging. For plant lovers, there is a predictable succession of the early to late blooms and we can measure our progress.
through the spring and summer by what we see going on around us. As a transplant to this area, I am still learning the local progression myself, but half the fun is noticing something new every season. This year, the first signs of spring were shooting stars—they bloomed while it still seemed like winter! But their presence reassured me that spring was just around the corner. After that, I was on the lookout for fawn lilies to make an appearance on the forest floors. Once I saw those, I knew spring had really sprung. Then came the giant swathes of goldfields and other happy yellow flowers that are currently carpeting the edges of seasonal ponds as they dry. I am excited to see what comes next in this phenological procession into the summer.

One thing to note, however, is that plant and animal phenology is often highly dependent on where the plant or animal is located. Scientists and observers of phenology like to think of phenological events occurring along various gradients, particularly from south to north, and from low elevations to high elevations. This makes intuitive sense on a large scale—we all know that flowers in California will bloom a lot earlier than flowers in Alaska (south to north gradient), or that flowers in Redding are blooming while Lassen National Volcanic Park is still under snow (low elevation to high elevation gradient). These gradients can lead to fun and surprising experiences: traveling up in elevation can seem like traveling back in time, and traveling south can seem like a jump into the future.

Monitoring the change of seasons through plant phenology is something that many people do subconsciously already. In fact, those of us who suffer from seasonal allergies are often physically reminded of phenological shifts in our environments! However, I would encourage everyone to take some time to purposefully notice the phenological changes around you. Many people assume that phenological events...
can only be noticed in “nature,” and that “nature” is out along a hiking trail or in a remote campground. But actually, these changes take place all around us in our everyday life as well: in our gardens, outside our window at work, along the drive to the grocery store, and at the neighborhood park. There is no need to venture far and wide to take part in phenological monitoring. In fact, phenological monitoring is best accomplished in areas that you often frequent.

Phenology actually has a long history of citizen science. Citizen science is the concept that everyone, regardless of professional training, has the ability to contribute to scientific advancement. The field of phenology embraced this from the beginning, with the best early records of seasonal occurrences often kept by landowners and farmers rather than scientists. Nowadays, however, such tools as the power of the Internet, Smartphone apps, and large dataset processing are accessible to the general public and encourage us to take part in phenological monitoring. When citizen scientists participate in phenological monitoring by recording local observations, researchers can compile all that data and perform interesting and informative analyses. The USA National Phenology Network, a citizen science organization, notes that citizen-collected data is used by scientists in groundbreaking research, by land managers to make better-informed decisions about natural resources, and by decision-makers to determine policy. Nature’s Notebook is a great program by the National Phenology Network that empowers individuals, families, and organizations to observe phenology around them. Several Smartphone apps such as Calflora, iNaturalist, and eBird have phenological monitoring capabilities as well. More information about each of these programs can be found on their respective websites.

Besides the large-scale benefits of contributing to science and decision-making, embarking on the mission to observe phenological changes around us encourages connection with local ecosystems and the changing seasons. It gives us a reason to get outside. And it helps us notice the small things in life. So instead of just knowing that spring is occurring because of the date on the calendar, we can feel and observe the change of seasons ourselves in nature’s calendar.

An observer of phenology has to be careful not to miss blooming Sierra fawn lilies. They only bloom in March and April and their blooms are a sure sign that spring is in full swing. Photo by Steve Laymon.