

The Lakeshore Guardian, 2010 June
Thumb Habitats
Spring Woodland Wildflowers
by Bill Collins

If you have taken a walk in a mature woods during the past month or so, you probably saw some of our spring woodland wildflowers. Many who know the woods have long treasured the annual spring ritual of seeking out these plants when in-bloom. Some of the more familiar wildflowers include White Trillium, Red Trillium, Yellow Trout-lily, Mayapple, and Jack-in-the-pulpit. These are characteristic of mature, relatively undisturbed forest in our region. Many of these woodland wildflowers are described as “spring ephemerals” or just “ephemeral,” meaning they are present for only a short time in spring. These include Trout-lily, Dutchman’s-breeches, Spring Beauty and many others. Ephemerals tend to drop their leaves after flowering or as seed ripening begins. Plants that emerge in spring but retain their leaves through summer are sometimes differentiated from the ephemerals and are called “aestival” or summer plants. These include Trillium, Mayapple, Jack-in-the-pulpit, Hepatica, Bloodroot and many more. Usually “ephemeral” is used, right or wrong, to refer to all spring woodland wildflowers because they appear early in spring but are mostly gone or have set seed by mid-summer, unlike other vegetation present throughout the growing season.



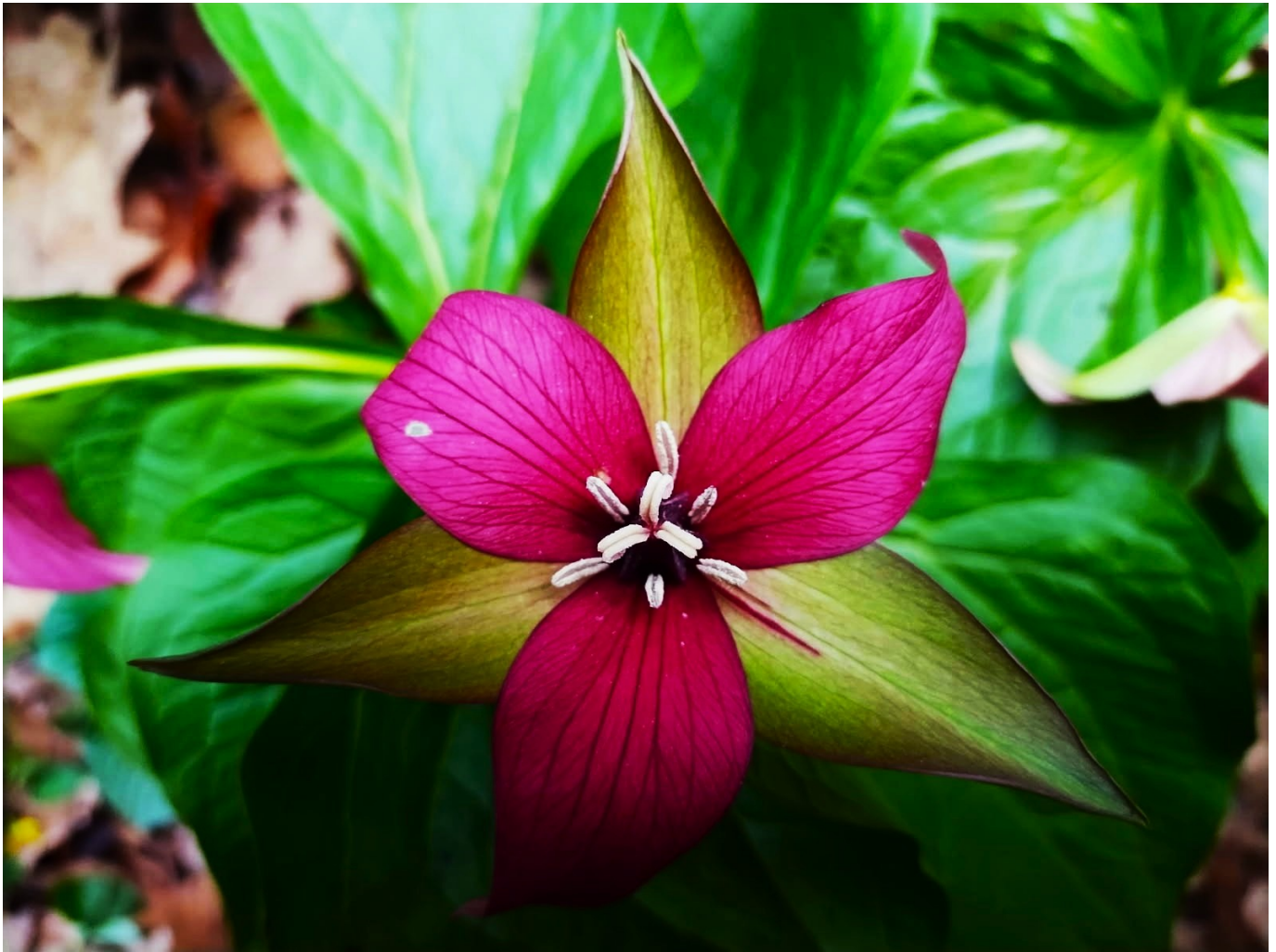
Yellow Trout-lily - *Erythronium americanum*. Photograph by Bill Collins

Spring woodland wildflowers occupy a unique niche in the forest community. In our region, most of the spring herbs (non-woody plants) emerge from the ground in mid to late April as the soil warms up. This year, we had a relative heat wave in April, so most of the spring wildflowers were up and blooming by about the second week of April, somewhat earlier than usual. Plants emerge from bulbs, tubers, corms and other forms of large underground “root” structures that store energy from last year. Most flower within just a few days or a week of emergence, are pollinated, and begin seed ripening shortly after. In the case of Painted Trillium, the plant and flower emerge pre-formed from the ground and is in full bloom within a day or two.



Painted Trillium – *Trillium undulatum*. Photograph by Bill Collins.

Why the quick progression from emergence to flower to seed in just a few weeks? Why don't all of these plants hang around and stay green all summer like others? The spring woodland herbs are adapted to growing in largely deciduous forests, dominated by trees that drop their leaves in fall. They need to get out fast in the spring and collect light before the forest canopy fills-in, usually by mid to late May. Some species require the nearly full spring light to develop seed. Others, like Trillium or Mayapple, get an early jump but ripen their seed in the summer shade. On a sunny spring day, the temperature within the leaf litter on the forest floor can rise to 130 degrees Fahrenheit, helping to break the dormancy of the underground plant buds.



Red Trillium – *Trillium erectum*. Photograph by Bill Collins.

Spring herbs are generally short and tend to leaf out near the ground where cold spring air is moderated by heat from the moist forest soil. Their leaves tend to envelop the flower stem, helping to trap warm air. Many species contain natural compounds that protect the young leaves from freezing and from excessive ultraviolet light. Once the leaves emerge, they maintain high rates of photosynthesis, the process of combining carbon dioxide (CO₂) and water in the leaves with light energy to create sugars and release oxygen. The sugar powers plant growth and is stored as carbohydrates in the root system to over-winter, providing energy for a repeat next spring. Many spring woodland herbs have been found to contain about twice as much chlorophyll, the green photosynthetic pigment in leaves, than plants of open, non-forested habitats. Most plants have shifted to seed development by late May, before the shade of the forest canopy mostly shuts down their sugar production.



Jack-in-the-pulpit – *Arisaema triphyllum*. Photograph by Scott Ferguson.



White Trout-lily - *Erythronium albidum*. Photograph by Bill Collins, April 11, 2010.

Spring woodland herbs have other advantages in getting out early in the season. Not only do they get nearly full sunlight before the trees leaf-out, but they encounter less competition from other dormant vegetation. Water and nutrients are in less demand. The decomposed leaf litter of last year's forest provides an abundant source of nutrients, decreasingly available as other vegetation becomes active. Insect pollinators concentrate on the spring flowers before being attracted to other plants.



Miner bee on a flower of Wild Geranium – *Geranium maculatum*. Photograph by Blake Short.

By setting seed early, spring herbs attract ants looking for rather sparse food sources in spring. Ants disperse the seeds by carrying them back to their nests for storage. Some seeds have special structures called “elaiosomes,” a small whitish projection full of oils and sugars. Ants are so attracted to the elaiosomes that they often eat just those structures and discard the seeds. Many seeds have a better chance of germinating in the ant tunnels because they are underground sooner.



Ants on trillium seeds showing whitish elaiosomes.

As delicate, ornate and sometimes complex as the spring wildflowers of our forests appear, equally so is the balance of their life cycle in the forest community. Even more reason to appreciate these ephemeral treasures of the woods.