

The Outside Story

Hepatica: Ephemeral or Evergreen?

By Catherine Wessel

As the days get longer and the sun warms the forest floor, hepatica flowers start emerging. These charming early bloomers captivated the writer and naturalist John Burroughs, who extolled their “winsome grace” in his poem “Hepatica.”

Hepatica flowers close on cloudy days and when night falls to preserve their pollen for times when pollinators are most likely to be on wing. But when they’re open, the flowers are easy to spot amid the brown leaf litter of the past fall. Hepaticas vary in color from white and pale pinks to deep purples and, as Burroughs put it, “every shade of azure.” Like many plants in the buttercup family, their number of sepals (modified leaves, and in this case, petal lookalikes) ranges, with many flowers displaying 5 to 7 sepals. Their stems and new leaves are covered in long, silky hairs, which are important for protecting the plant from the lingering cold.



Spring ephemerals, in the strictest sense, are plants that emerge in early spring and disappear from sight by the time the canopy closes, completing their whole life cycle before the leafed-out trees block sunlight from reaching the ground. However, the term is also used more loosely to describe flowers that bloom within this time frame but may bear leaves throughout the season – and sometimes beyond. “The definition is not always consistent,” said Abby Yancy, who studied the biogeography and phenology of spring ephemerals at the Carnegie Museum of Natural History and is now completing her PhD at University of Pittsburgh.

Though hepaticas bloom early, their leaves last until the following spring, turning a reddish or purplish brown and becoming leathery as the months go by. By hanging onto these older leaves, the plant can jump start photosynthesis the following spring, providing the resources it needs to bloom as soon as things start to warm up. “Although they flower in early spring, the presence of overwintering leaves actually makes them evergreen,” said Yancy.

The three-lobed leaves are the key to their name, which comes from the Latin *hepaticus*, or liver. The “doctrine of signatures,” an idea that became popular in the 16th century, postulated that the healing properties of plants were divinely communicated through their appearance. In other words: if it looks like a

liver, it must be good for the liver. Though some plants have been critical in the development of effective medicines, scientists have found hepatica to be toxic in large quantities.

Hepaticas were once in their own genus, though botanists now place them in the *Anemone* genus, with wood anemone and other windflower species. In the Northeast, we have two species of hepatica, which are delightfully easy to tell apart. Sharp-lobed hepatica (*Anemone acutiloba*) has, you guessed it, sharp lobes. Each of the three lobes on a leaf ends in a pointy tip, while blunt-lobed hepatica (*Anemone americana*) has rounded lobes. Because the leaves last year-round, both species can be identified in any season. Beyond morphology, the two species also have slightly different ecological niches. Sharp-lobed hepatica grows in deciduous and often rocky forests, where there is some enrichment in the soil, while blunt-lobed hepatica favors drier, less rich sites.

When hepaticas bloom in early spring, pollinators can be scarce. One theory for their color variety is that different colors attract different pollinators. Because resources are limited for pollinators at this time of year, hepaticas don't need to put any energy towards nectar production – when a pollinator finds a flower in a shade it likes, no extra incentives are needed. Hepaticas are also perfect flowers, meaning they contain both male and female parts, and are capable of self-pollination.

When hepaticas fruit, they bend under the weight of their achenes, dry, one-seeded fruits. Each achene has an elaiosome, an attached deposit rich in protein and fat, which makes it an appealing meal for an insect. Hepaticas rely on ant-dispersal (myrmecochory). An ant brings the achene back to its nest, consumes the elaiosome, and then discards the achene with other nutrient-rich waste – meaning it's in an ideal location to grow next year.

These achenes must be exposed to cold to successfully germinate, so we have our winters to thank for their success. While you search the forest floor to for hepatica flowers this spring and enjoy what Burroughs called a “concert sweet without sound,” remember that their namesake leaves will be here to remind us of the delights of this brief flowering season all year round.

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