

## Virtual Monarch and Meadow Month Lesson: What Makes a Meadow a Meadow?

*In this lesson, participants will be able to identify and explore what a meadow is.*



*Sunbeams on a Duke Farms meadow.*

There are few sights as breathtaking as a meadow of blooming wildflowers and tall, swaying grasses, all glowing in the setting sun as it breaks through the trees at the meadow's edges. But what is a meadow? Why does the tree line stop and open to a field of delicate grass and flowers?

A **meadow** is an area of open land, dominated by grasses and flowering plants, but nearly empty of woody vegetation such as trees or shrubs; they can form from a number of different causes and are part

of what we call [ecological succession](#). This process typically began millennia ago, when organic matter finally began to collect on the bottom of barren bodies of water, which then lead to small plants being able to take root in the decaying matter. Over time, the organic matter accumulated enough to fill in that body of water and create a wetland. This process continued until the soil was drier and could sustain grasses and flowers. At this point, we have a meadow - a vital habitat for insects and other small animals that form the base of the Earth's food web.

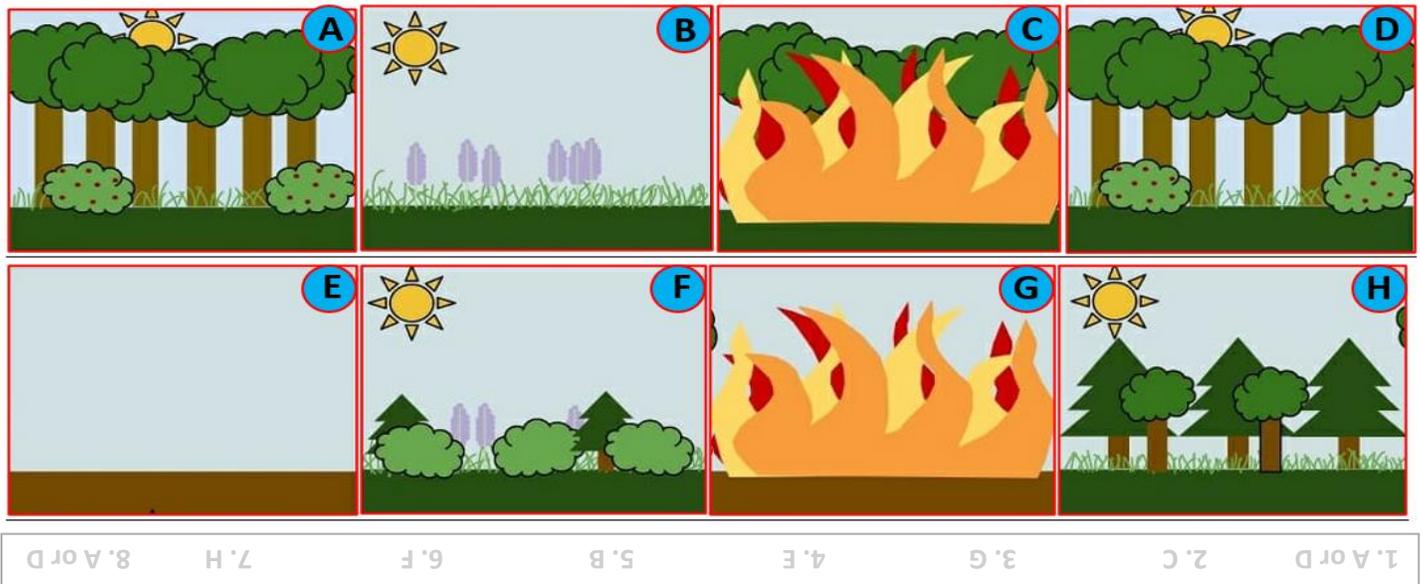
However, these plants can be overtaken by tree saplings and young shrubs that take root in the fertile soil and eventually shade out the sun; this leads to the formation of a forest. Meadows can be naturally

restored from becoming forests and kept in check by events such as lightning strikes, which can cause fires that clear out encroaching woody plants and dead grasses, the ashes of which infuse nutrients back into the soil. These events are mimicked by humans who use [controlled burns](#) as part of *meadow management* in an effort to maintain meadow habitats and the various ecological roles they play, such as erosion control, carbon sinking from the atmosphere, and water filtration. At Duke Farms, [scheduled mowing and/or burning is used to maintain the nearly 600 acres of meadows](#) throughout the park and research areas in an effort to return the once manicured expanses of lawn back to their native state as homes for rare songbirds and other vulnerable members of the ecosystem. The next time you walk past a swaying field of grasses, take a moment to appreciate the life that teems throughout the stalks and amongst the flowers!



*A Duke Farms meadow during a controlled burn.*

**Can you put these ecological succession steps in order? Start with a fully grown forest. Check your answers at the bottom of the page and then continue to Page 2 for more resources and activities!**



### Extensions

#### Experiencing Observations with Phenomenology

Known for his poetry and plays of the 17<sup>th</sup> and 18<sup>th</sup> Centuries, Johann Wolfgang von Goethe was also a prolific scientist in a distinct fashion that directly contradicted the accepted scientific method of mechanical study and observation; *Phenomenology*, also called “Goethean Science”, was not meant to replace normal observation practices, but instead to enhance them by looking at the natural world from as many perspectives as possible. His method focused on observing the natural world as if the observer is an active part of the entire system, using their own feelings and thoughts to make connections between the natural occurrences they were studying. The Nature Institute published [a beautiful observation of a meadow](#) written in Goethean style:



“In July the bloom of the meadow bursts forth as a habitat bouquet. The yellows, whites, and purples of the wildflowers illuminate the meadow. Many of these plants belong to the daisy/aster family (composites) whose “flowers” are a head of hundreds of individual flowers that join together to form a “superflower”—the plant world’s most intense manifestation of flowering. Similarly, the members of the legume family, such as the clovers, form more or less compact heads of many individual flowers. Neither of these families is strongly represented in the forest. So the meadow is characterized by intense flowering—in form and color—soon after the summer solstice.”

**Activity:** Try your hand at using this style of scientific observation to study the world around you. Whether you are in an urban, suburban, or rural area, there are always natural phenomena to watch unfold. Do you have a [nature journal](#)? Use it and take your time to observe the specific activities or behaviors you are witnessing. Try to add your own perspective to better express not just what you see, but what you can assume about its purpose in the natural world.