

# Nature's Notebook Phenophase Photo Guide



Viburnum dentatum southern arrowwood



### Why Observe?

Your observations will help us quantify the extent to which invasive shrubs exhibit extended leaf phenology (having leaves for a longer period of time than natives in the same location). The Shady Invaders campaign compares the leaf phenology of native (southern arrowwood) and invasive shrubs across the eastern U.S. in order to improve the timing/planning of land management activities, to predict how research on the impacts of extended leaf phenology (ELP) at one location applies across the range, and to examine how climate change may influence ELP.



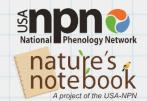
This shrub can reach a height of 9 feet. Leaves are shiny and dark on top and have tiny hairs in star-like shapes underneath. Small, white flowers are in clusters; they bloom May to June. Fruits appear August to November.

## **Tips for Identification**

The leaf margin is sharper and more evenly toothed than that of other viburnum species.

Be aware there is variation from individual to individual within a species, so your plant may not look exactly like the one pictured. If you are uncertain whether or not a phenophase is occurring, report a "?" for its status until it becomes clear what you are observing after subsequent visits.





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#### **Breaking leaf buds**

One or more breaking leaf buds are visible on the plant. A leaf bud is considered "breaking" once a green leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base.



#### Leaves

One or more live, unfolded leaves are visible on the plant. A leaf is considered "unfolded" once its entire length has emerged from a breaking bud, stem node or growing stem tip, so that the leaf stalk (petiole) or leaf base is visible at its point of attachment to the stem. Do not include fully dried or dead leaves.



#### Increasing leaf size

A majority of leaves on the plant have not yet reached their full size and are still growing larger. Do not include new leaves that continue to emerge at the ends of elongating stems throughout the growing season.



#### **Colored leaves**

One or more leaves show some of their typical late-season color, or yellow or brown due to drought or other stresses. Do not include small spots of color due to minor leaf damage, or dieback on branches that have broken. Do not include fully dried or dead leaves that remain on the plant.



#### Flowers or flower buds

One or more fresh open or unopened flowers or flower buds are visible on the plant. Include flower buds or inflorescences that are swelling or expanding, but do not include those that are tightly closed and not actively growing (dormant). Also do not include wilted or dried flowers.



#### **Open flowers**

One or more open, fresh flowers are visible on the plant. Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or open flower parts (petals, floral tubes or sepals). Do not include wilted or dried flowers.



#### **Fruits**

One or more fruits are visible on the plant. For *Viburnum dentatum*, the fruit is fleshy and berry-like and changes from green to dark blue, blue-purple, or blue-black.



#### **Ripe fruits**

One or more ripe fruits are visible on the plant. For *Viburnum dentatum*, a fruit is considered ripe when it has turned dark blue, blue-purple, or blue-black.

Phenophases not pictured: Falling leaves, Recent fruit or seed drop