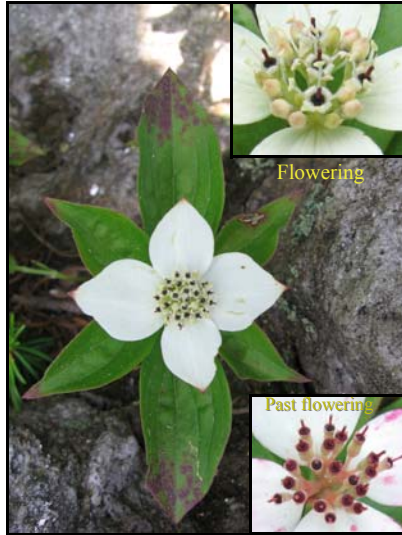


## Bunchberry

or Dwarf Cornel

(*Cornus canadensis*)

Bloom time: June - July



### Identification

- 1 to 6 inches tall.
- 6 leaves ring the stem in flowering plants (4 in non-flowering plants).
- Smooth-edged, oval leaves with parallel, arcing veins.
- 4 white false petals frame a cluster of tiny green to cream-colored flowers. The large false petals are NOT the flower.

### Determining Flowering Stages

Note: Make sure to observe the cluster of tiny flowers, not the surrounding 4 large white petals.

**Before flowering** - Some of the tiny green to white flowers are unopened (upper inset shows a few open flowers, but most are still unopened).

**Flowering** - Some of the flowers have opened to reveal a tiny dark dot (ovary), surrounded by 4 tiny white petals (main image).

**Past flowering** - Some of the tiny petals have fallen off the open flowers (lower inset). Soon the ovaries will begin to swell, turning green, and eventually develop into orange-red berries in late summer.

Mark all stages that apply and circle the dominant stage on your data sheet.

### Habitat

All mountain elevations, from deciduous forest to krummholz and protected areas in the alpine zone.

### Interesting Fact

*Tiny insects can trigger bunchberry flower buds to explode open, showering the insect with pollen as it flies away.*



# MOUNTAIN WATCH

Hikers Tracking Environmental Trends



# FOREST FLOWER GUIDE

### The Mountains Need Hikers Like You

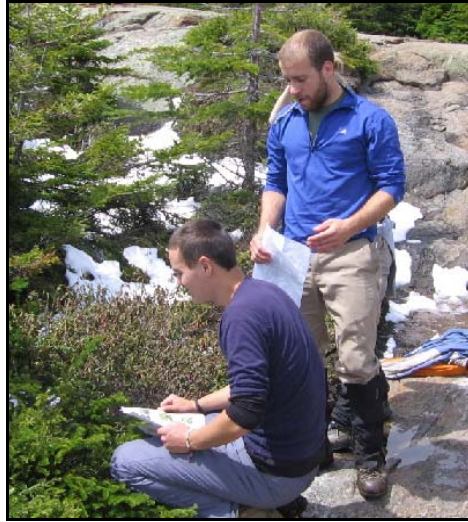
Your data counts! Long-term studies of flowering times, correlated to climate data, will help us understand how mountain ecosystems respond to climate change.

With this guide, you can learn more about the local flora, while contributing to our understanding of these plant communities. Hikers like you are a great resource in sampling remote areas. Just follow the directions on the next page and you can be a Mountain Watcher!

[www.outdoors.org/mountainwatch](http://www.outdoors.org/mountainwatch)

## Why Monitor Flowering in our Mountains?

The mountains of the Northeast contain a diverse set of plants, from tundra species that are usually found much further north, to forest flower species that are found further south along the entire Appalachian Mountain chain. Here, warmth is a major trigger for many species



flowering in the spring and early summer. Observations from researchers, amateur botanists and hikers report that plants are flowering earlier than they were 100 years ago. Citizen research shows spring garden plants like lilacs are blooming weeks earlier too. Scientists believe a warmer climate will cause communities to shift northward, or in the mountains, upward. As they move up-slope, available habitat shrinks. Species currently found in the uppermost reaches could disappear completely.

## Monitoring Instructions

- **Stop** at locations you can find on a map, like summits, trail intersections and large stream crossings.
- **Look** for one or more of the target plant species in this guide book a few feet from the trail.
- **Record** your location, the date, which flowering stage(s) you observed for each of the target plant(s): “before flowering”, “flowering”, and “past flowering” and your certainty of plant identification on your data sheet.
- **Return** your data sheet to a NH AMC destination, or mail it to *AMC, Mountain Watch, PO 298, Gorham, NH 03851*.
- **Visit** [www.outdoors.org/mountainwatch](http://www.outdoors.org/mountainwatch) to see results, or to download a data sheet for your next hike.

## Canada Mayflower

(*Maianthemum canadense*)

Bloom time: May - July

### Identification

- 2 to 6 inches tall.
- Flowering plants have 2 or 3 leaves growing on a single stem (1 leaf in non-flowering plants).
- Leaves are smooth with parallel veins. Oval or heart-shaped.
- Many tiny white, fragrant, 4-petaled flowers grow on a spike.
- Flowers and fruits grow on the same stem as leaves.
- Small clusters of green speckled berries turn tan, then red.



### Determining Flowering Stages

**Before flowering** - Some of the tiny round flower buds are unopened (lower left inset).

**Flowering** - Some of the flowers are opened and 4 tiny white petals appear (upper image). Flowers at bottom of stalk open first.

**Past flowering** - Some of the opened flowers are beginning to lose their petals, or the ovary is beginning to swell and develop into a spotted green fruit (lower right inset). The fruits eventually turn tan, then red before falling off stem.

**Mark all stages that apply and circle the dominant stage on your data sheet.**

### Habitat

Common to all mountain elevations including protected alpine areas.

### Interesting Fact

*In the fall, grouse favor these berries. Indians used the plant for headaches and sore throats.*

## Hobblebush

or Witch Hobble

(*Viburnum alnifolium*)

Bloom time: May - June



### Identification

- Sprawling shrub, 3 to 8 feet.
- Leaves large (4 to 8 inches), opposite, heart-shaped, rough surface, finely toothed edge.
- Saucer-sized clusters of many white flowers.
- Large flowers (sterile) surround tiny inner flowers (fertile).
- Clusters of red to deep-blue berries form in Aug-Oct.

### Determining Flowering Stages

Note: Make sure to observe the tiny fertile flowers, not the surrounding large sterile flowers (upper image).

**Before flowering** - Some of the tiny white flowers are not yet open (lower left inset - see round unopened flower buds).

**Flowering** - Some of the tiny white flowers are open enough to allow access to a pollinator, but the petals are not wilted (lower left inset - see open white flowers with 5 petals).

**Past flowering** - Some petals have wilted or dropped. The remaining small whitish-yellow ovaries will begin to swell, forming berries that turn red or deep-blue (lower right inset).

**Mark all stages that apply and circle the dominant stage on your data sheet.**

### Habitat

Moist deciduous or mixed coniferous woodlands at low to medium elevations.

### Interesting Fact

*This scraggly shrub has bronze-red or purple autumn coloration and is used by wildlife for food and cover.*

Sources: Canada Plant Watch, USDA      Photos: L. Landry, R. Moran

## Wood Sorrel

or Oxalis

(*Oxalis montana*)

Bloom time: May - July



### Identification

- 3 to 4 inches tall.
- Clover-like leaf has 3 heart-shaped leaflets.
- Usually forms creeping mats.
- Dime-sized flowers.
- 5 white petals with pink stripes and yellow anthers.
- Individual flowers rise above leaves on separate stems.

### Determining Flowering Stages

**Before flowering** - Some flowers have not yet opened. Flower stalks will grow above the leaves, with an unopened flower bud at the tip. The petals will begin to open (lower left inset).

**Flowering** - Some flowers are open enough to allow access to a pollinator, but petals have not fallen (main image).

**Past flowering** - Some of the petals have begun to fall. The ovary will begin to swell, and eventually form a pointed green seed pod (lower right inset).

**Mark all stages that apply and circle the dominant stage on your data sheet.**

### Habitat

Common in moist, dark woods at middle to higher elevations.

### Interesting Fact

*The lemony taste of wood sorrel comes from oxalic acid. This compound helps protect the plant from herbivores by causing digestive problems when eaten in large quantities.*

Sources: UK Phenology Network

Photos / images: D. Wehrauch, Thomé & Wilhelm

## Painted Trillium

(*Trillium undulatum*)

Bloom time: May - June



### Identification

- Solitary stalk 8 to 20 inches tall.
- Three spade-shaped leaves each taper to a sharp point.
- Leaves are bluish green and waxy with a smooth edge.
- 3 white petals with pink at base. 3 green sepals (small leaves beneath petals). Flower is 2 to 3 inches across.
- Fruit is a single, large, shiny red capsule.

### Determining Flowering Stages

**Before flowering** - The plant emerges from the ground and the 3 leaves unfurl. The flower stalk and bud appear and the flower begins to open, but petals are not yet fully open.

**Flowering** - The petals are open enough to allow access to a pollinator, but not wilted (main image).

**Past flowering** - The petals wilt and fall off, leaving the green sepals and a yellow ovary, which eventually develops into a red fruit (inset).

**Mark all stages that apply and circle the dominant stage on your data sheet.**

### Habitat

Moist deciduous or mixed coniferous woodlands with acidic soil.  
Low to middle elevations.

### Interesting Facts

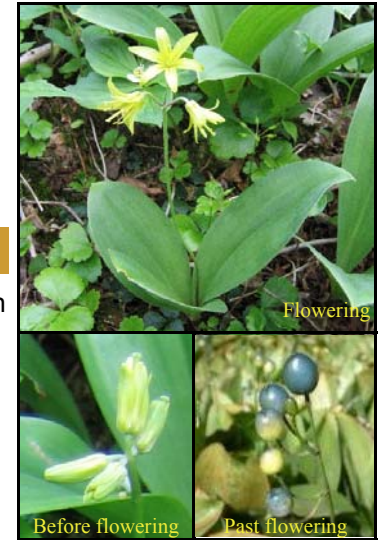
*It takes a trillium 4 to 5 years to produce a single flower. If that flower is picked or eaten, the whole plant may die.*

## Blue-bead Lily

or Clintonia

(*Clintonia borealis*)

Bloom time: June - July



### Identification

- Flower stem up to 12 inches tall, with 2-5 leaves at base.
- Shiny, thick, oval leaves, 6 to 12 inches long; NOT mottled.
- 3-6 flowers at top of single stem.
- Yellowish-green, star-shaped, nodding flowers, with 6 petals.
- Shiny blue fruits appear in late summer.

### Determining Flowering Stages

**Before flowering** - The plant emerges from the ground and leaves unfurl. The flower stalk and buds begin to emerge and the flowers begin, but the petals are not yet fully open (lower left inset).

**Flowering** - Some flowers are open enough to allow access to a pollinator, but petals are not wilted (upper image).

**Past flowering** - Some of the petals have dropped or wilted, leaving a yellow ovary, which will swell and develop into a shiny blue fruit (lower right inset).

**Mark all stages that apply and circle the dominant stage on your data sheet.**

### Habitat

All mountain elevations, from the deciduous understory to alpine snowbank communities.

### Interesting Fact

*The fruit of the blue-bead lily is poisonous to humans, but edible to chipmunks.*

**PLEASE MAKE ALL OBSERVATIONS FROM THE TRAIL**

**FOREST FLOWER DATA SHEET**

Date: \_\_\_\_\_

Name: \_\_\_\_\_

No of people on hike: \_\_\_\_\_

To receive updates  
provide email address: \_\_\_\_\_

- 1- **Stop** at a place you can find on a map, like trail junctions, summits or large stream crossings and **look** to see if there is one or more target species growing near that spot. It is unlikely to find all 6 target species at one site but many occur together.
- 2- **Record** your location by describing and marking stop # on a map (see reverse side), estimate stop elevation, and record flowering status of the target plant(s) and your certainty of identification (ID) on a scale of 1-3 (1 = uncertain, 2 = somewhat certain, and 3 = most certain). The target plant(s) at your stop may exhibit more than one flowering stage; use the field guide for guidance. Mark ALL stages that apply with an "X" and CIRCLE the stage that appears to be dominant.
- 3- **Return** this sheet to a NH AMC destination, or mail it to: *AMC, Mtn. Watch, P.O. 298, Gorham NH 03581*



**Where are you?** We need to know to validate your data! Fill in below & follow directions describing each stop along trail.

Nearest Major Highway: \_\_\_\_\_ Nearest Township, State: \_\_\_\_\_

Route: \_\_\_\_\_  
 Starting Trailhead location.....Summit Peak or Destination..... Finishing Trailhead location

	Species	Before Flowering	Flowering	After Flowering	Certainty of ID (1-3)		Species	Before Flowering	Flowering	After Flowering	Certainty of ID (1-3)
<b>Stop 1.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower					<b>Stop 4.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower				
	Bunchberry						Bunchberry				
	Blue-bead lily						Blue-bead lily				
	Hobblebush						Hobblebush				
	Wood sorrel						Wood sorrel				
	Painted trillium						Painted trillium				
<b>Stop 2.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower					<b>Stop 5.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower				
	Bunchberry						Bunchberry				
	Blue-bead lily						Blue-bead lily				
	Hobblebush						Hobblebush				
	Wood sorrel						Wood sorrel				
	Painted trillium						Painted trillium				
<b>Stop 3.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower					<b>Stop 6.</b>    <b>Estimated Elevation</b> _____ ft.	Canada mayflower				
	Bunchberry						Bunchberry				
	Blue-bead lily						Blue-bead lily				
	Hobblebush						Hobblebush				
	Wood sorrel						Wood sorrel				
	Painted trillium						Painted trillium				

**Please describe your location for each stop** using the nearest trail intersections, summit, or other feature identifiable from a map. **MARK** the location using the corresponding stop number on the map.

**1**

**2**

**3**

**4**

**5**

**6**

**Sketch a map** here of hiking route or include a copy of a trail map with data. Draw North arrow on map.  
**Mark observation stops** (from 1 up to 6) on map.