

Haliburton Highlands Land Trust & Abbey Gardens

Event Package: Spring Ephemerals
Season: Spring



Abbey
GARDENS



Haliburton
Highlands
Land Trust

Spring Ephemerals in Ontario

Spring ephemerals are plant and herb species that grow quickly during a short period in early spring (Zhang and Baozhing 2009). These unique plants contribute widely to the biodiversity and beauty of forest ecosystems. Spring ephemerals can be found in deciduous and broad-leaf conifer forests throughout North America, Russia, and Japan (Zhang and Baozhing 2009). Most of the spring ephemerals present in North American deciduous forests are considered herbaceous perennials, living for over two years (McKenna and Houle 2000; Struick, 1965; Tamm, 1984). This could be due to the structure of the perennial plants themselves since their rhizomes, corms, and tubers allow them to persist throughout unfavorable growth conditions (McKenna and Houle 2000). In contrast, annual spring ephemerals, living for solely one year, are less common in North America due to their need to produce seeds for recurrent growth (McKenna and Houle 2000). Spring ephemerals are of particular interest to ecologists due to their unusual life cycle and growth period (Risser and Cottam 1967).

Spring ephemerals are adapted to be able to take advantage of the high light, water and nutrient availability during the early growing season (Lapointe, 2001; McKenna and Houle 2000). These plants appear scattered amongst the forest floor shortly after snow melt (Lapointe, 2001). Characterized by a short growing season, spring ephemerals complete their aboveground growth, including the production of fruit, after only two months or between 40 and 60 days (Lapointe, 2001). This moment when spring ephemerals cease to grow in the forest understory is termed the dormant stage (Risser and Cottam 1967). Dormancy usually coincides with the forest canopy development as leaf-out occurs (Lapointe, 2001; Vezina and Grandtner 1965). This canopy growth restricts the light, water, and nutrients from reaching the forest floor, and therefore spring ephemeral growth is halted (McKenna and Houle 2000).

In order to develop at this astonishing pace in early spring, these plants must be physiologically adapted to be able to sustain a high photosynthetic rate (Lapointe, 2001). Thus, spring ephemerals are able to absorb water extremely efficiently at low soil temperatures (Lapointe, 2001). In addition, spring ephemerals are unique in that they allocate a large portion of their nutrient intake to their shoots to promote rapid growth and compensate for their low nutrient absorption rates (Lapointe, 2001). These nutrients are primarily absorbed during the spring, however the root systems of spring ephemerals are developed in the fall (Lapointe, 2001). Ultimately, spring ephemerals' specific growth needs restrict their range to solely nutrient rich soils that are also moist in the spring (Lapointe, 2001).

It is also important to understand environmental threats that could affect the growth of spring ephemerals. Firstly, it is essential to study the growth patterns of spring ephemerals in order to predict how these species would respond to climactic changes in the coming years (Lapointe, 2001). Specifically, persistent low temperatures in early spring have been suggested to slow the development of

spring ephemerals due to these plants' reduced metabolism (McKenna and Houle 2000). Another threat to spring ephemerals is the increase in non-indigenous and invasive plants (Blossey, 1999). This invasion is considered one of the primary threats to terrestrial North American ecosystems (Blossey, 1999). Although the potential replacement of spring ephemerals with invasive plants has not yet been quantified, it is predicted that spring ephemeral populations could decrease dramatically following the introduction of non-indigenous plant species to a forest habitat (Blossey, 1999). Therefore it is essential to understand, identify, and maintain spring ephemeral populations to preserve this irreplaceable component of forest biodiversity.

Acknowledgements

We would like to acknowledge the generous funding from CFICE: Community First that supported the creation of this event package by Jenna Snelgrove. Thanks to Heather Reid of Abbey Gardens, Sheila Ziman of Haliburton Highlands Land Trust, and Marie Gage of U-Links for their guidance in this project, and also Trent University faculty Tom Whillans and Nadine Changfoot.



References

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Risser, P., Cottam, G. 1967. Influence of temperature on the dormancy of some spring ephemerals. *Ecology*, 48(3): 500-503.

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Tamm, C. 1948. Observations on reproduction and survival of some perennial herbs. *Botanical notes*, 3: 305-321.

Vezina, P., Grandtner, M. 1965. Phenological observations of spring geophytes in Quebec. *Ecology*, 46: 869-872.

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Summary Points

- Spring ephemerals are considered plants and herbs
- They can only be found in North America, Russia, and Japan
- Their habitat consists of the understory of deciduous and mixed broad-leaf conifer forests
- Most spring ephemerals are perennials (surviving over two years), however they are dormant for most of the year
- Spring ephemerals require high light, water, and nutrient conditions to grow
- They grow and fruit during the period between snow melt and the forest trees' canopy growth (between 40-60 days)
- These plants are well adapted to efficiently absorb water and nutrients to promote quick growth
- Spring ephemerals require moist and nutrient-rich soils
- The growth of spring ephemerals may be delayed with persistent cold temperatures in the spring

- Invasive plant species (i.e. garlic mustard) can threaten spring ephemeral populations by out-competing them for nutrients
- Spring ephemerals contribute greatly to forest biodiversity even though they only grow for only a short period of the year

Proposed Event Logistics

Duration of Event

Time	Activity
	Abbey Gardens*
10:00 am	-Meet Group at Abbey Gardens Food Hub (or tent if used for a large group) -Register and sign in and receive name tag
10:15 am	-Learn safety protocols and discuss spring ephemeral identification key talking points
10:30 am	-Begin hike through Abbey Gardens, whilst following the map highlighting the proper route -Gather at stops 1-5 to discuss talking points at designated areas
11:30 pm	-Continue loop and begin hiking back towards the Abbey Gardens main office
12:00 pm	-Serve leek soup to event participants at the Food Hub -Compare field notes, photos, and sightings for the day -Fill out a feedback card about today's event**

*It is suggested that this event be conducted together by Haliburton Highlands Land Trust and Abbey Gardens at one location (Abbey Gardens) due to the serving of leek soup to visitors at the Food Hub

**Feedback cards should be printed in advance and are found on the last page

Date Range

This event will be conducted during the spring season. This event should be scheduled during a time when spring ephemerals are growing, and wild leeks can be harvested in advance (late April most likely). This usually coincides with the first few weeks of 10-15 degree Celsius weather. Therefore early May is suggested as an approximate date range for this event.

Length of Walk

The hike is suggested to take approximately two hours cumulatively. At Abbey Gardens, the walk will follow the extended loop trail, which is approximately 3.6 kilometers. It is recommended that event leaders hike the designated trails prior to the event to mark the stopping points and any spring ephemerals observed along the way to show visitors.

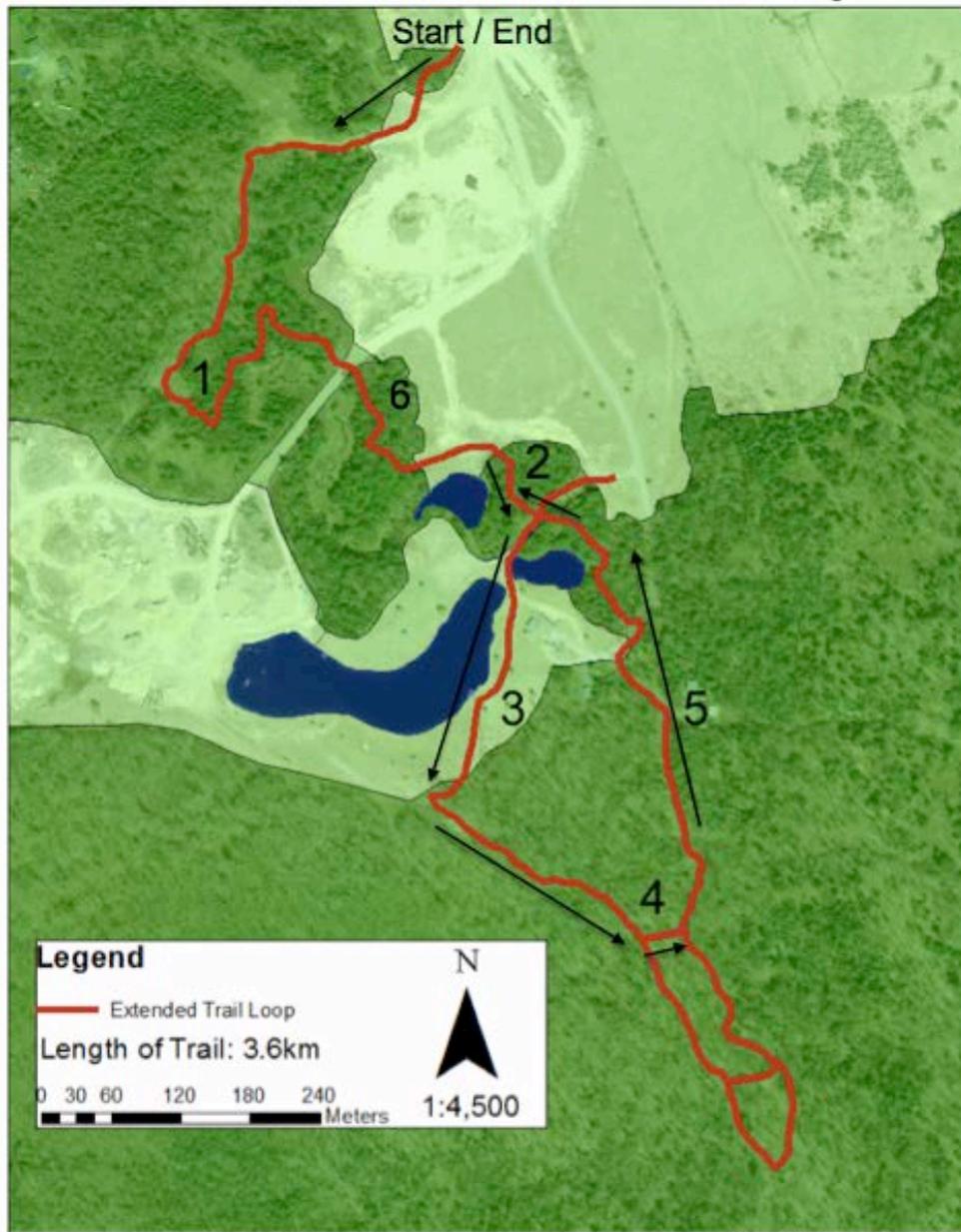
What to Bring

- Field notebook and pencil
- A means to tell the time
- Proper footwear (i.e. hiking boots)
- Appropriate clothing for the weather (i.e. rain gear, hats, sunscreen, bugspray)
- Water/drink
- Camera (optional)
- GPS or compass (optional)
- Binoculars (optional)
- Personal spring ephemeral identification guides (optional)

Suggested Walking Loops*

*Note: Event leaders should tour the property prior to the event to ensure that designated spring ephemerals are present at each of the stop locations. Stop locations may be adjusted so that visitors can discuss specific spring ephemerals within their location on the property.

Extended Trail Loop



Spring Ephemerals Props

1. Wild Leek (*Allium tricoccum*)

- Distinctive features: grow from onion-like bulbs, among the first to grow in spring
- Flowers: white, six petals, bloom after leaves die
- Leaves: oval, waxy, appear before the flowers

-Height: 30-45 cm





2. Trout Lily (*Erythronium americanum*)

- Distinctive features: flowers are among the first to bloom in the spring
- Flowers: bright yellow, six petals, solitary
- Leaves: one or two per plant, stiff and upright, mottled (like a trout fish)
- Height: 7-20 cm



3. Squirrel Corn (*Dicentra canadensis*)

- Distinctive features: very similar to Dutchman's Breeches, named for small corn-like tubers just below ground surface
- Flowers: white, irregular, heart-shaped
- Leaves: somewhat fern-like, finely divided
- Height: ~10 cm





4. Dutchman's Breeches (*Dicentra cucullaria*)

- Distinctive features: very similar to Squirrel Corn
- Flowers: white and slightly yellow, spreading wings/pant-like shape
- Leaves: somewhat fern-like, very finely divided
- Height: ~10 cm



5. Spring Beauty (*Claytonia virginica*)

- Distinctive features: Very narrow leaves, often found at the base of large trees
- Flowers: white and veined with pink, five petals
- Leaves: long, slender, strap-like leaves
- Height: 5-12 cm



6. Blue Cohosh (*Caulophyllum giganteum*)

- Distinctive features: dark stems and leaves during first growth, blue berries
- Flowers: red/dark pink, six petals, blooms before leaves unfurl
- Leaves: dark green as they unfurl, green later in season, three to five sets, each sets contained three irregular leaflets
- Height: 40-65 cm





Useful Resources

1. <http://www.ontariowildflowers.com>
2. <http://www.creditvalleyca.ca/wp-content/uploads/2012/10/nativewoodland-booklet-web.pdf>
3. <http://www.ofnc.ca/fletcher/flora-fauna/wildflowers/database/Wildflowers.php>

Optional Additional Components

1. As has been conducted in the past, leek soup can be prepared for visitors to serve at the Food Hub once they return from the hike. The leeks should be harvested approximately in late April and can be stored frozen until use. Links to example recipes are included below, which can be adjusted to serve the number of visitors in attendance.



<http://www.epicurious.com/recipes/food/views/creamy-leek-soup-238442>

<http://www.onceuponachef.com/2011/11/potato-leek-soup.html>

<http://www.foodnetwork.com/recipes/alton-brown/leek-potato-soup-recipe.html>

2. Event attendees could be encouraged to plant native spring ephemerals in their own backyards. Prior to the event, seedpods, berries, or bulbs could be collected from a variety of the spring ephemerals on site and then labeled and packaged in bags for visitors to bring home with them. This component would depend on the number of attendees since it could be time-consuming and only a limited number of plants should be harvested to preserve the present populations.

Feedback from Today's Event

What did you enjoy?

What would you change in the future?

