

*APPENDIX 7*

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*Botanical Survey*

Spring Botanical Survey of the Waste  
Management Yarmouth Compost  
Facility - Waste Management Service  
(1936 Hardscratch Road, South Ohio,  
NS)

Ruth E. Newell B.Sc. (Hons.), M.Sc.  
June 04, 2018

# Spring Botanical Survey of the Waste Management Yarmouth Compost Facility - Waste Management Service (1936 Hardscratch Road, South Ohio, NS)

## INTRODUCTION

A spring botanical survey of vascular plants was conducted by botanist, Ruth E. Newell, B.Sc. (Hons.), M.Sc., on May 31<sup>st</sup>, 2018 for a proposed expansion at the Yarmouth Waste Management Facility located off the Hardscratch Road in South Ohio, Yarmouth County, Nova Scotia.

The survey was carried out on foot by conducting a number of meandering transects throughout the study areas.

The specific area surveyed is enclosed by the orange dashed line in Figure 1. There is an access road (in white letters on the figure) slightly separating the upper section of the study area from the lower section. The areas surveyed are primarily made up of woodland with the exception of a small pond, a stream and an open shrubby area which are present in the lower section of study area (below the access road). The stream, pond and open shrubby area all appear to have been created and/or at least significantly modified by human activity in the past.

Some later flowering and/or fruiting species could not be identified at the time of this survey due to the immaturity or absence of necessary structures required for accurate identification.

Any populations of species of conservation concern if encountered were to be given an estimate of population size, photographed and their precise location documented with GPS coordinates.

All vascular plant species observed and identified during this survey, the habitats in which they occur, their provincial (subnational) status rank and their provincial general status rank as sourced from the Atlantic Canada Conservation Data Center website (<http://www.accdc.com/en/rank-definitions.html>) and The General Status of Wild Species in Canada website (<https://www.wildspecies.ca/home>) respectively are provided in TABLE 1 at the end of this report.

Information on the various status ranks used in this report including status rank definitions can be found at these websites as well as in TABLE 1.

The presence or absence of species of conservation concern for this site is discussed in the **Discussion** section of this report.



Figure 1. Satellite image of the facility where this botanical survey was conducted. The specific area surveyed is the STUDY AREA, indicated in yellow letters and enclosed within the orange dashed line.

## HABITAT DESCRIPTIONS

### Habitat North of Access Road

#### Woodland

The section of the study area north of the access road is completely wooded. The woodland here is approximately one-third coniferous woodland (Figs. 2 & 3) and two-thirds mixed forest (Figs. 4 & 5). The coniferous woodland is located on the east side of this section and also includes a narrow section along the bottom edge (adjacent to the access road). The ground in both woodland types is slightly uneven (undulating) with shallow, damp, sphagnous depressions intermixed with gentle more mesic hummocks. The sphagnous areas, i.e., areas with a substrate of Sphagnum moss (*Sphagnum* spp.), tend to be more common in the coniferous woodland than in the mixed woodland.

The substrate or ground cover, in both woodland types includes deciduous leaf litter (primarily in mixed woodland), coniferous needles (primarily in coniferous woodland), Red-stemmed Feather Moss (*Pleurozium schreberi*) and Sphagnum moss (*Sphagnum* spp.).

The main tree species present in the coniferous woodland include Balsam Fir (*Abies balsamea*), Larch (*Larix laricina*), White Spruce (*Picea glauca*) and Black Spruce (*Picea mariana*). Red Maple (*Acer rubrum*) and Showy Mountain Ash (*Sorbus decora*) are present but are uncommon in this woodland type. Shrub

species present include Black Huckleberry (*Gaylussacia baccata*) Sheep Laurel (*Kalmia angustifolia*) and Velvet-leaved Blueberry (*Vaccinium myrtilloides*).

The main tree species in the mixed woodland include Red Maple (*Acer rubrum*), White Birch (*Betula papyrifera*), Showy Mountain Ash (*Sorbus decora*) and similar coniferous tree species to those occurring in the coniferous woodland. Sphagnum depressions decrease in abundance from east to west in this section of the study area.

Common herbaceous species present in both woodland types include Bunchberry (*Cornus canadensis*), Twinflower (*Linnaea borealis*), Starflower (*Trientalis borealis*), Wild Lily-of-the-valley (*Maianthemum canadense*), Cinnamon Fern (*Osmunda cinnamomea*) and Wood Ferns (*Dryopteris* spp.). Hay-scented Fern (*Dennstaedtia punctilobula*) is most common in the mixed woodland particularly as one approaches the west edge of the property.



Figure 2. Coniferous woodland in the study area north of the access road (with Red-stemmed Feather Moss (*Pleurozium schreberi*) as ground cover).



Figure 3. A sphagnum damp depression in coniferous woodland in the study area north of the access road.



Figure 4. Mixed woodland in the study area occurring north of the access road. A variety of small woodland herbs are present on the forest floor. Red-stemmed Feather Moss (*Pleurozium schreberi*) is carpeting the ground in some areas. Deciduous leaf litter is present in other areas.



**Figure 5. Mixed woodland showing a variety of ferns on the forest floor.**

### Habitat South of Access Road

As noted previously, the habitat north of the access road is all woodland. South of the access road there is more variety in terms of habitat. In addition to extensive mixed woodland, there is a small, possibly manmade or at least somewhat altered pond plus a small stream flowing into the pond from the northwest which also has the appearance of having been manmade or at least altered in the past. In addition to these three habitats, there is a small, raised, level open area in the upper left corner of this lower study area (Fig. 1) that appears to have been created for a specific purpose at one time but has now filled in with herbaceous vegetation and shrubs.

## Stream

There is a small stream in the study area south of the access road, which runs from the highway in a southeasterly direction to a small pond (Fig. 1). At the time of this survey there was little to no active water flowage in the stream. Any water that was present was generally stagnant (Fig. 6). Extending the length of the stream on both sides are high berms. These were vegetated and flat on top (Fig. 7). The berms did not look natural and had the appearance of having been constructed. The stream has sphagnous edges, i.e., they are edged in sphagnum moss (*Sphagnum* sp.), with occasional vascular plants such as Starflower (*Trientalis borealis*), Tall White Aster (*Doellingeria umbellata*), Bristly Dewberry (*Rubus hispidus*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Speckled Alder (*Alnus incana*), Swamp Candle (*Lysimachia terrestris*), Cinnamon Fern (*Osmunda cinnamomea*) and New York Fern (*Thelypteris noveboracensis*) present.

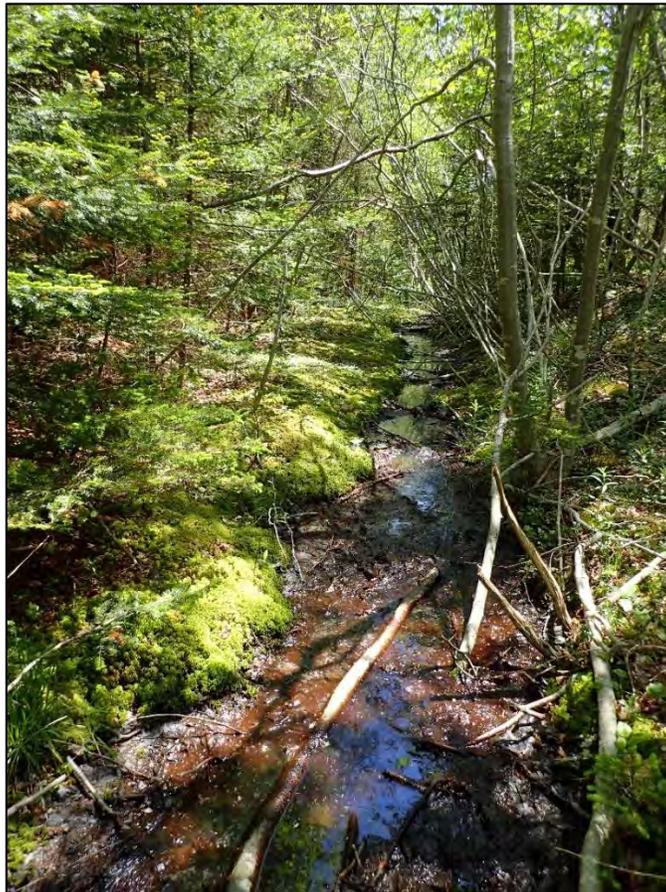


Figure 6. A stream in mixed woodland south of the access road.



Figure 7. One of the two berms located along the stream. Hay-scented Fern (*Dennstaedtia punctilobula*) is prominent along the top of the berm in the photo.

## Pond

The stream described above flows into a small pond (Figs. 8 & 9) which like the stream was associated with a berm. This berm surrounds the pond with the exception of a narrow gap at both the inlet and the outlet. The presence of the berm suggests that this may be a manmade pond.

The pond was edged with a bed of sphagnum moss and primarily Speckled Alder (*Alnus incana*) although other shrub species were present as well including Downy Alder (*Alnus viride*), Meadowsweet (*Spiraea alba* var. *latifolia*) and Northern Bayberry (*Morella pensylvanica*). Young Balsam Fir trees (*Abies balsamea*) was also present. There was very little aquatic vegetation present with the exception of Twin-stemmed Bladderwort (*Utricularia geminiscapa*). Herbaceous vascular plants observed along the sphagnum edges included Rough Goldenrod (*Solidago rugosa*), Soft Rush (*Juncus effusus* s.l.), Cinnamon Fern (*Osmunda cinnamomea*), Spinulose Wood Fern (*Dryopteris carthusiana*), New England Sedge (*Carex novae-angliae*), Swamp Candle (*Lysimachia terrestris*), Hay-scented Fern (*Dennstaedtia punctilobula*), Bristly Blackberry (*Rubus hispidus*) and a variety of grasses. A burreed (*Sparganium* sp.) and a bedstraw (*Galium* sp.) were the only two emergent species observed in the pond. These were both observed near the outlet.

The berm (Fig. 10) surrounding the pond was heavily vegetated with both herbaceous and woody growth, including Larch (*Larix laricina*), Bladder Sedge (*Carex intumescens*), Witherod (*Viburnum nudum* var. *cassinoides*) and White Spruce (*Picea glauca*).



Figure 8. Pond with alders (*Alnus* spp.) in the foreground.



Figure 9. Pond (near outlet) with emergent herbaceous vegetation, a burreed (*Sparganium* sp.) visible in the foreground.



Figure 10. Outer, side view of berm surrounding the pond.

#### **Raised shrub area (likely manmade) (Fig. 11)**

This approximately 20 m<sup>2</sup>, raised, level area (evident in Figure 1 in the upper northwest corner of the study area located below the access road) appears to have been created for a specific purpose which is unknown to the author. It is however obvious that it has not been used for some time as it is currently completely grown in with a mix of Downy Alder (*Alnus viride*) and Blackberry brambles (*Rubus* sp.). There is no sign of recent usage or disturbance. Hay-scented Fern (*Dennstaedtia punctilobula*) and a variety of grasses are abundant in this area. Other herbaceous species present include Tall White Aster (*Doellingeria umbellata*), Sensitive Fern (*Onoclea sensibilis*), Rough Goldenrod (*Solidago rugosa*), Cinnamon Fern (*Osmunda cinnamomea*) and Spinulose Wood Fern (*Dryopteris carthusiana*).



Figure 11. Small raised area located in the northwest corner of the study area south of the access road. The dominant shrub present is Downy Alder (*Alnus viride*).

## Woodland

The woodland south of the access road (Fig. 1) is primarily mixed forest with the left or west half of this area (Fig. 12) very similar in terms of vascular plant species present and soil moisture regime, to the mostly mesic, mixed forest present on the north side of the access road.



**Figure 12.** Mixed woodland on the west half of the section of the study area located below the access road. This woodland, in terms of plant species present and soil moisture regime, is similar to the mixed woodland occurring north of the access road.

The mixed woodland in the right (east) half of the study area below the access road is noticeably wetter than the previously examined mixed woodlands (Fig. 13). The presence of numerous deadfalls significantly hamper movement through this area and there is evidence of major disturbance in the past by means of the use of a large (wide) vehicle. The roadways created by these vehicles are still very evident and display areas of bare substrate. Red Maple (*Acer rubrum*) and Larch (*Larix laricina*) are dominant trees in this woodland. A small amount of Yellow Birch (*Betula alleghaniensis*) is also present. Ground cover is dominated by ferns including a variety of wood ferns (*Dryopteris* spp.) and Cinnamon Fern (*Osmunda cinnamomea*). Sedges (*Carex* spp.) are also abundant and include Three-seeded Sedge (*Carex trisperma*) and Brownish Sedge (*Carex brunnescens*). In addition to the abundant ferns and sedges in this habitat, Blackberry canes (*Rubus* spp.) of several species are also abundant in this area also suggesting past disturbance.



**Figure 13. Mixed woodland in the eastern half of the study area located south of the access road. There are a significant number of deadfalls present in this area and evidence (in the form of habitat damage) of large, heavy vehicle usage, possibly for logging purposes, in this area in the past.**

## DISCUSSION

There were no vascular plant species listed under either federal species-at-risk legislation or provincial species-at-risk- legislation observed during this survey.

In addition, non-listed vascular plant species of conservation concern were not observed during this survey.

As noted in the Introduction, some later flowering and/or fruiting species could not be identified at the time of this survey due to their immaturity or absence of necessary structures required for accurate identification.

**TABLE 1. List of the vascular plant species observed during this survey, the habitats in which they occur and their ACCDC (Atlantic Canada Conservation Data Centre) Subnational Status Rank and their Provincial General Status Rank (GS rank). Habitat abbreviations: coniferous woodland(CW), mixed woodland (MW), disturbed mixed woodland (dMW), stream (S), pond (P), raised (shrubby) area (RA).**

LATIN NAME	COMMON NAME	ACCDC SUBNATIONAL STATUS RANK*	GS RANK**	HABITAT(S)
<i>Abies balsamea</i>	Balsam Fir	S5	4 secure	CW, MW, P
<i>Acer rubrum</i>	Red Maple	S5	4 secure	CW, MW, dMW
<i>Alnus incana</i>	Speckled Alder	S5	4 secure	MW, S, P
<i>Alnus viride</i>	Downy Alder	S5	4 secure	MW, P, RA
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	SNA	7 exotic	MW, S
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	4 secure	CW, MW
<i>Betula alleghaniensis</i>	Yellow Birch	S5	4 secure	dMW
<i>Betula papyrifera</i>	White Birch	S5	4 secure	MW
<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge	S4	4 secure	MW
<i>Carex brunnescens</i>	Brownish Sedge	S5	4 secure	CW, MW, dMW
<i>Carex intumescens</i>	Bladder Sedge	S5	4 secure	MW, dMW
<i>Carex novae-angliae</i>	New England Sedge	S5	4 secure	CW, MW, P
<i>Carex trisperma</i>	Three-seeded Sedge	S5	4 secure	CW, MW, dMW
<i>Coptis trifolia</i>	Goldthread	S5	4 secure	CW, MW
<i>Cornus canadensis</i>	Bunchberry	S5	4 secure	CW, MW
<i>Dennstedtia punctilobula</i>	Hay-scented Fern	S5	4 secure	MW, dMW, RA
<i>Deschampsia flexuosa</i>	Wavy Hair Grass	S5	4 secure	MW
<i>Doellingeria umbellata</i>	Tall White Aster	S5	4 secure	MW, dMW, RA, S
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5	4 secure	MW, dMW
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	4 secure	CW, MW, dMW, P, RA
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	4 secure	MW
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	4 secure	CW, MW, dMW
<i>Galium</i> sp.	a bedstraw	S5	4 secure	P
<i>Gaylussacia baccata</i>	Black Huckleberry	S5	4 secure	CW, MW
<i>Ilex verticillata</i>	Winterberry	S5	4 secure	MW
<i>Juncus effusus</i> sl	Soft Rush	S5	4 secure	CW, MW, dMW, P, RA
<i>Kalmia angustifolia</i>	Sheep Laurel	S5	4 secure	CW
<i>Larix laricina</i>	Larch	S5	4 secure	CW, MW, dMW

LATIN NAME	COMMON NAME	ACCDC SUBNATIONAL STATUS RANK*	GS RANK**	HABITAT(S)
<i>Linnaea borealis</i>	Twinflower	S5	4 secure	CW, MW
<i>Luzula acuminata</i>	Hairy Woodrush	S5	4 secure	CW, MW, dMW
<i>Luzula multiflora</i>	Common Woodrush	S5	4 secure	MW
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5	4 secure	P, S
<i>Maianthemum canadense</i>	Wild Lily-of-the-valley	S5	4 secure	CW, MW, dMW
<i>Mitchella repens</i>	Partridgeberry	S5	4 secure	CW, MW
<i>Morella pensylvanica</i>	Northern Bayberry	S5	4 secure	P
<i>Nemopanthus mucronatus</i>	Mountain Holly	S5	4 secure	MW
<i>Oclemena acuminata</i>	Wood Fern	S5	4 secure	MW
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	4 secure	RA
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5	4 secure	CW, MW, dMW, P, RA
<i>Oxalis montana</i>	Common Wood Sorrel	S5	4 secure	CW, MW
<i>Picea glauca</i>	White Spruce	S5	4 secure	CW, MW
<i>Picea mariana</i>	Black Spruce	S5	4 secure	CW
<i>Picea rubens</i>	Red Spruce	S5	4 secure	MW
<i>Prenanthes sp.</i>	a lion's-paw	S5	4 secure	MW
<i>Pteridium aquilinum</i>	Bracken Fern		4 secure	CW
<i>Rubus hispidus</i>	Bristly Dewberry	S5	4 secure	CW, MW, dMW, S
<i>Rubus spp.</i>	blackberries	S5	4 secure	RA, dMW
<i>Solidago rugosa</i>	Rough Goldenrod	S5	4 secure	MW, P, RA
<i>Sorbus decora</i>	Showy Mountain Ash	S4	4 secure	CW, MW, dMW
<i>Sparganium sp.</i>	a burreed	S5	4 secure	P
<i>Spiraea alba var. latifolia</i>	Meadowsweet	S5	4 secure	P
<i>Thelypteris novaboracensis</i>	New York Fern	S5	4 secure	CW, MW, dMW, S
<i>Trientalis borealis</i>	Starflower	S5	4 secure	CW, MW, S
<i>Utricularia geminiscapa</i>	Twin-stemmed Bladderwort	S4	4 secure	P
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5	4 secure	CW, MW
<i>Viburnum nudum var. cassinoides</i>	Witherod	S5	4 secure	MW

\*ACCDC: Atlantic Canada Conservation Data Centre ; explanation of status ranks: **S5 = Secure** (common, widespread, and abundant in the province); **S4 = Apparently Secure** (uncommon but not rare; some cause for long-term concern due to declines or other factors); **SNA = Not Applicable** - A conservation status rank is not applicable because the species is not a suitable target for conservation activities, e.g. a non-native species (<http://www.accdc.com/en/rank-definitions.html>).

\*\*The Nova Scotia general status ranks used in this report are based on the ranks used in the 2015 Wild Species of Canada Report (available at <http://www.wildspecies.ca/home>) ; **S5 = secure** (at very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats; **S4 = apparently secure** (at a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors; **S7 = non-native** (exotic).