



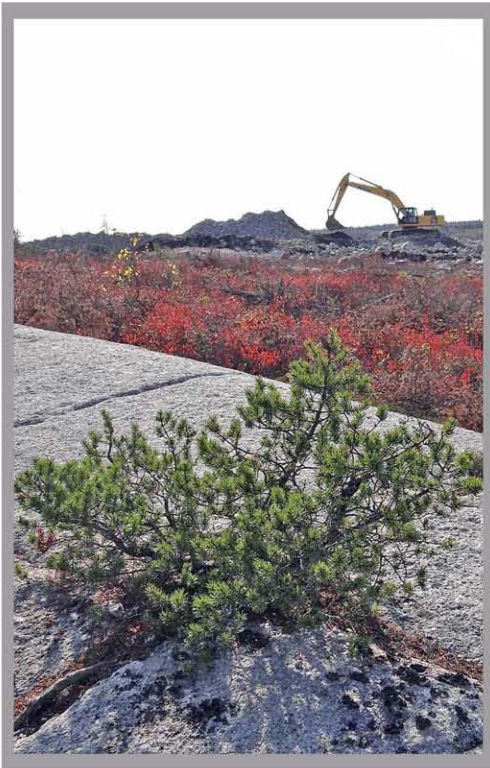
# From Barrens & Bogs to Gardens

**David Patriquin**

presentation to

**Atlantic Rhododendron & Horticultural Society**

**Nov. 3, 2020**





# Ericaceous Nova Scotia

David  
Patriquin

Atlantic Rhododendron  
& Horticultural Society

Feb 13, 2013





May 28, 2014

## Panayoti Keladis

Senior Curator and Director of  
Denver Botanic Gardens



Rhodora



Teaberry



Backlands



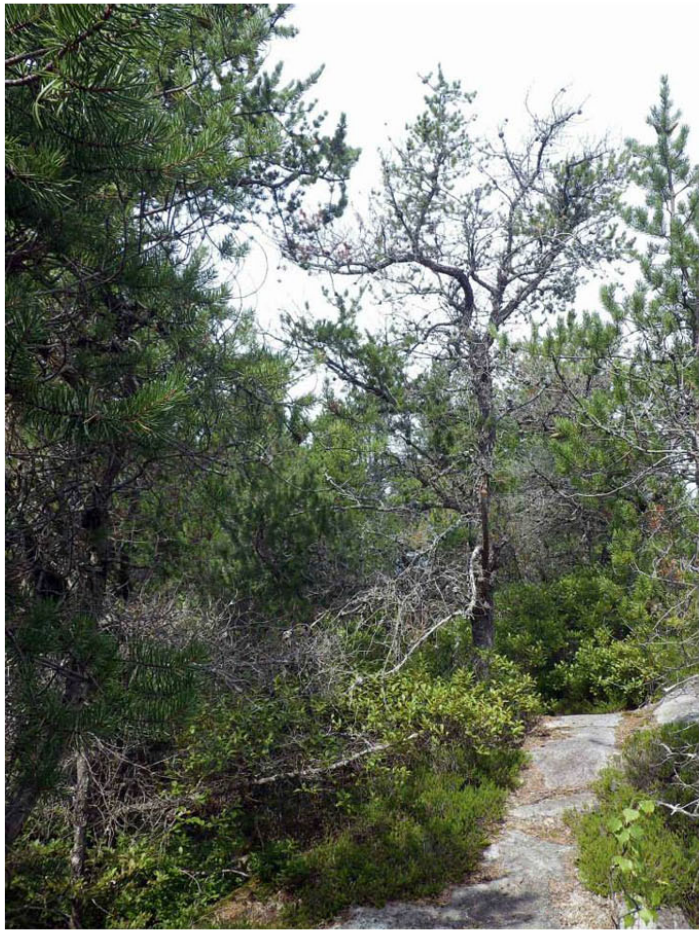
Chebucto Head



Huckleberry







Panayoti Keladis:

“Bonsai”

Jack Pine-Broom Crowberry Fire Barrens, Halifax





2 x 4 B&B garden



# Ericaceae & Nova Scotians

- Trailing Arbutus (Mayflower), Our Provincial Flower (1901)

- Great place to grow Rhododendrons

Kentville *Rhododendron* breeding 1952-1983 Don Craig

Capt. Richard Steele/ARHS

- “Wild” Blueberries - Nova Scotia’s biggest export crop

- Sam Vander Kloet (1942-2011)

Global *Vaccinium* authority

Collections at Acadia Irving Centre

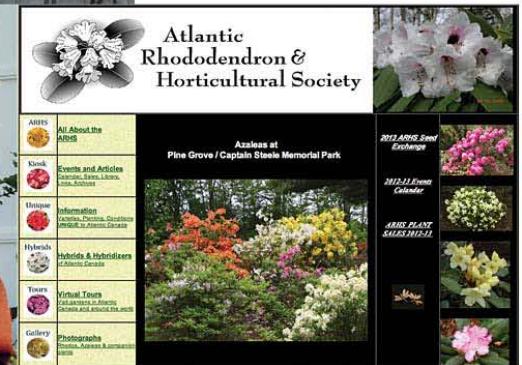
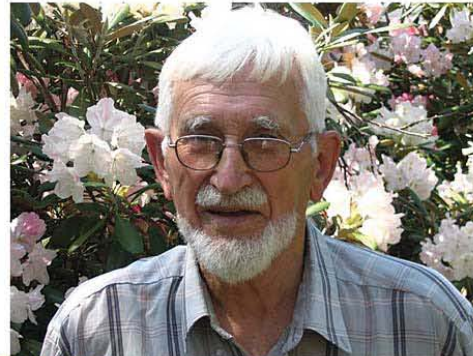
- Great place for wild Ericaceae to grow  
Nick Hill

Jeremy Lundholm

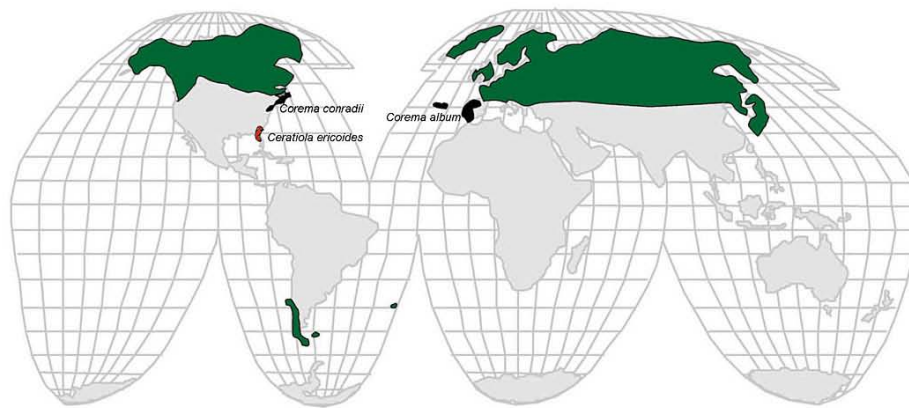
& others x ecological studies



Dr. Craig and Edmund de Rothschild viewing rhododendron seedlings, Kentville Research Station.



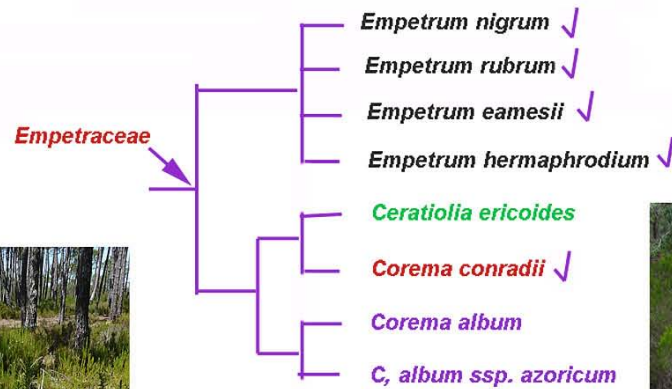




- *Empetrum*
- *Corema*
- *Ceratiola*

Li et al., 2002. Phylogenetic relationships of Empetraceae inferred from sequences of chloroplast gene matK and nuclear ribosomal DNA ITS region. *Molecular Phylogenetics and Evolution* 25 (2002) 306–315

Fig. 1. A schematic map showing modern distribution of *Empetrum*, *Corema*, and *Ceratiola*.



Camarinha, cerca de Ovar, Portugal  
Julho 2009  
Source: Wikipedia, no author



*Corema album* bernés

on <http://commons.wikimedia.org>



*Ceratiola ericoides*

B.A. Bowen on <http://commons.w>



SOURCE: Conservancy of SW Florida



# Ericaceae (Heath Family)

Genera ca. 120, species ca. 4100

(46 genera, 212 species in the flora): nearly worldwide.

- Leaves  
alternate/whorled; simple/no stipule  
many are xeromorphic/adapted to droughty & nutrient-poor habitat

- Flowers  
mostly bisexual  
typ 5 petals, 5-8 stamens  
typ sympetalous (fused petals)  
radial or bilateral symmetry  
insect, wind pollination

- Mycorrhizae  
obligatory; distinctive arbutoid, ericoid, monotropid  
adapt plants to acidic, nutrient-poor habitats

- Habitats/Ecology  
stress tolerators  
typ. in open, acidic habitats in cold to warm temperate climates  
most diverse in Mediterranean climates  
& in mountains of SE Asia/Malaysia & S. America

- Ecological Diversification (Stevens)  
taxa w. fleshy fruits (1500 spp)  
taxa w. xeromorphic leaves (1300+, various fruits)  
taxa epiphytic or epilithic (400 spp, often fleshy fruit)  
taxa w. large flowers & viscin threads in pollen (900 sp; dry fruit)  
Medit'n climates: many w. starchy tubers x fires  
(Commonly woody shrubs)





# The Chebucto Peninsula

*A good place for stress-tolerant Ericaceae*

Granitic bedrock --> nutrient-poor, acidic  
droughty soils

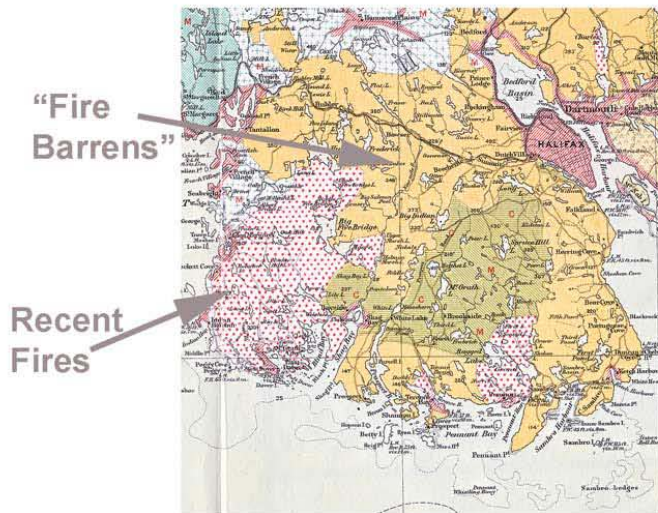
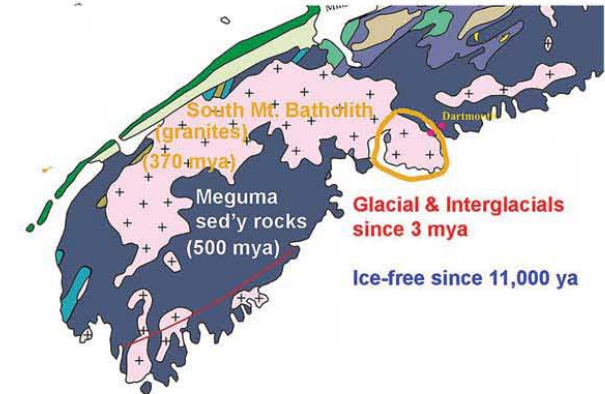
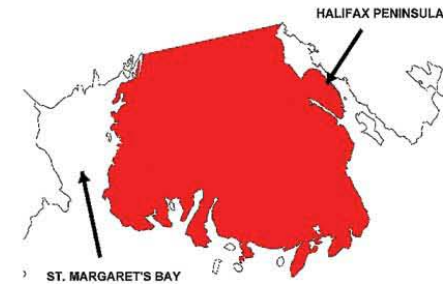
Glaciers ---> thin soils

Weather - windy & cool

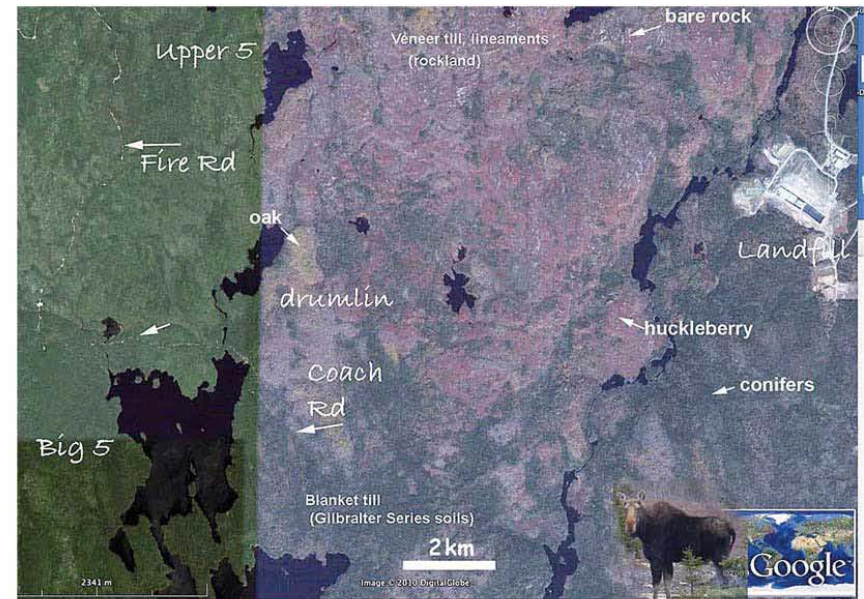
Coast - cool waters ---> Atlantic Coast  
Boreal Element

Historical Management: Fire!

Today: Large % Protected Areas, Parks



Fernow (1912)





# Hinterland Barrens (near the coast)



Broom Crowberry

On The Bluff Trail



Bearberry & Rocktripe Lichen  
on granite outcrop



Inland from Chebucto head

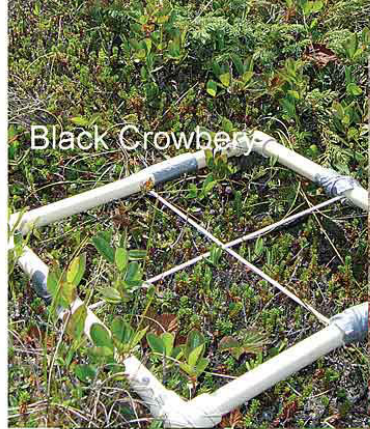


Bearberry



Barrens inland from Indian Harbour 23 Oct 2012





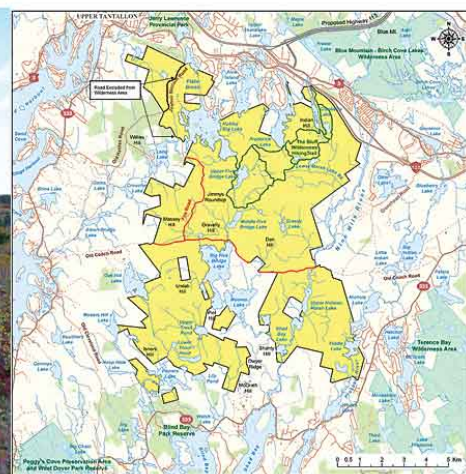
Bogs &  
Fens



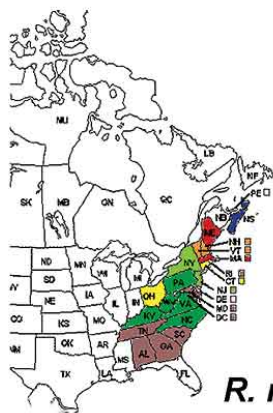
# Conservation



PROTECTED AREAS



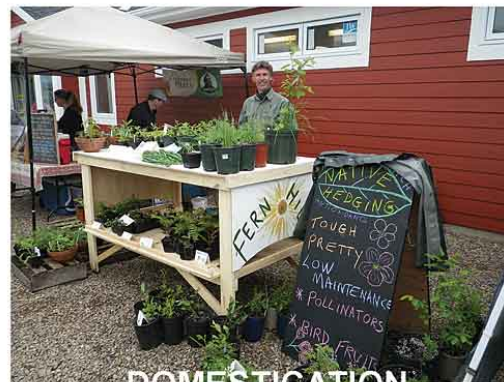
Five Bridge Lakes Wilderness Area



*R. maximum*



NATURAL LANDSCAPING



DOMESTICATION



ASSISTED MIGRATION ?





## Barrens & Bogs in N.S.

*Simplistic classification & prominent ericaceous species*



### BARRENS

nutrient-poor,  
droughty  
sparse, treeless  
stunted

### ROCK BARRENS

shallow soils  
over bedrock  
acidic

### SAND BARRENS

on thick sand  
deposits, excess  
drainage

### PEATLANDS

#### BOGS

rain-fed, poor drainage,  
high water table,  
nutrient-poor, acidic  
sphagnum peat

Labrador Tea  
Bog Laurel  
Bog Rosemary  
Cranberry  
Bog Huckleberry  
Leatherleaf,

#### Fens

peatlands fed by ground  
water, streams, lake edge

Leatherleaf,  
Bog Rosemary

### HEATHLANDS

Ericaceous species  
prominent, not waterlogged

### Highland

DWARF HEATH  
Black Crowberry  
Bearberry  
Blueberry

#### Inland

wind, fire  
Broom Crowberry  
Blueberry  
Teaberry

0.5 - 3 km

#### Coastal

wind, salt  
cool, humid  
Black Crowberry  
Broom Crowberry  
Bearberry

#### Inland

DWARF HEATH  
Broom Crowberry  
Bearberry

#### Coastal (on dunes)

Black Crowberry  
Bearberry  
Foxberry

### Trees

#### Jack Pine

on thin soils, crevices on  
more exposed sites

#### Black Spruce Tamarack

In depressions,  
fissures

#### Red Pine White Pine

on sand barrens

### Bushlands

more soil,  
moist to wet

Huckleberry  
Rhodora  
Sheep Laurel



### Distribution of Barrens in Nova Scotia

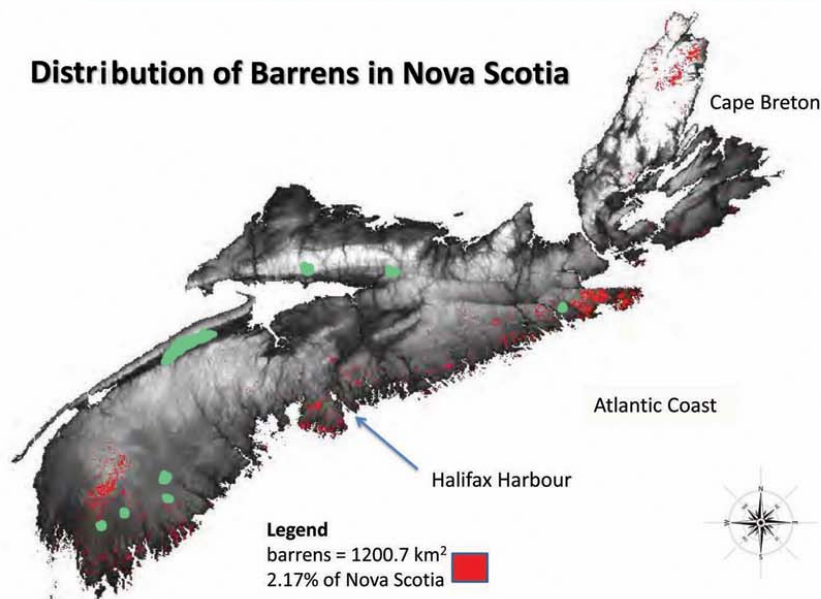


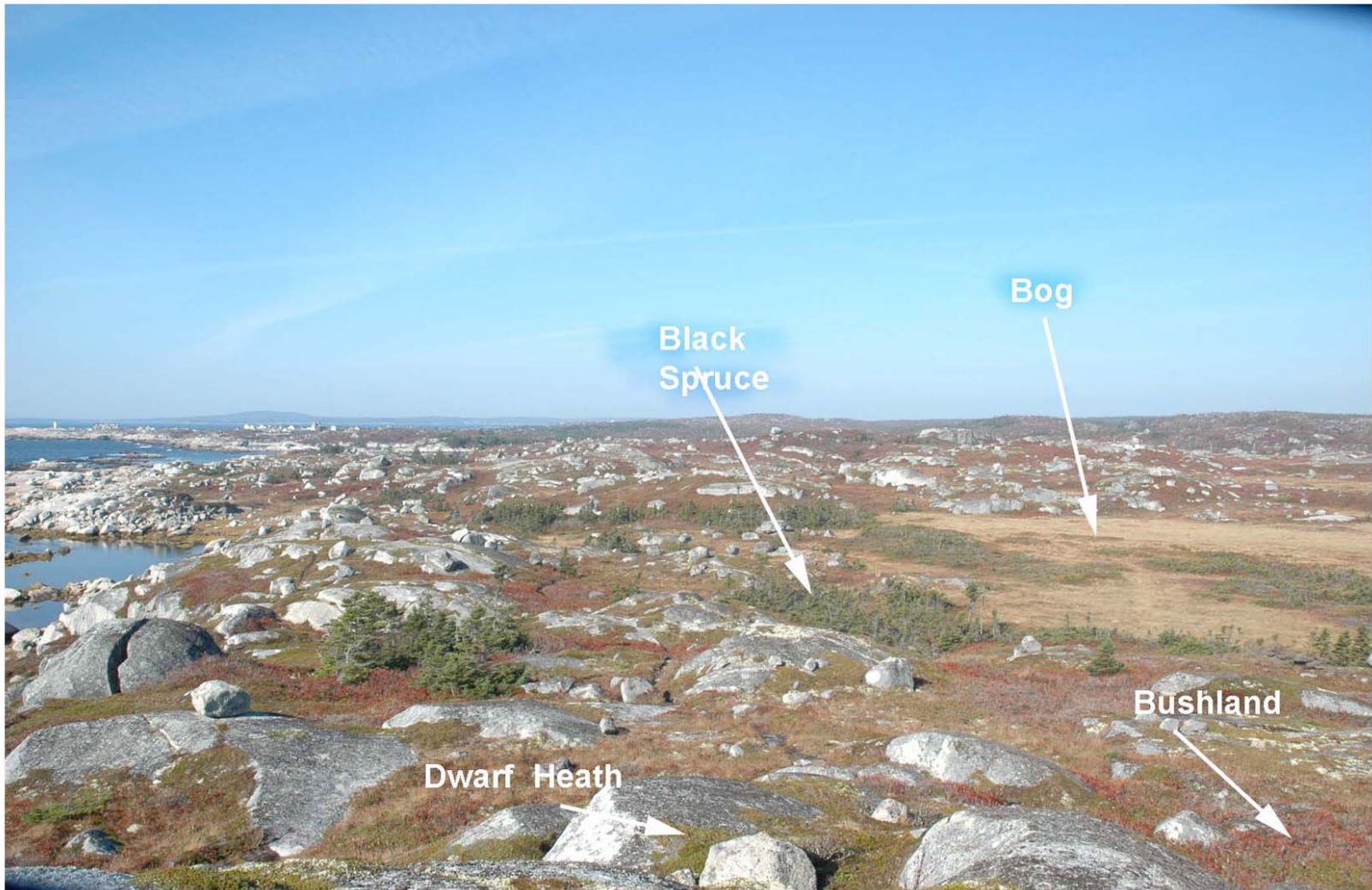
Figure courtesy of Caitlin Porter

Red areas are rock barrens,

I added the green smudges to  
show the approximate distribution  
of sand barrens historically

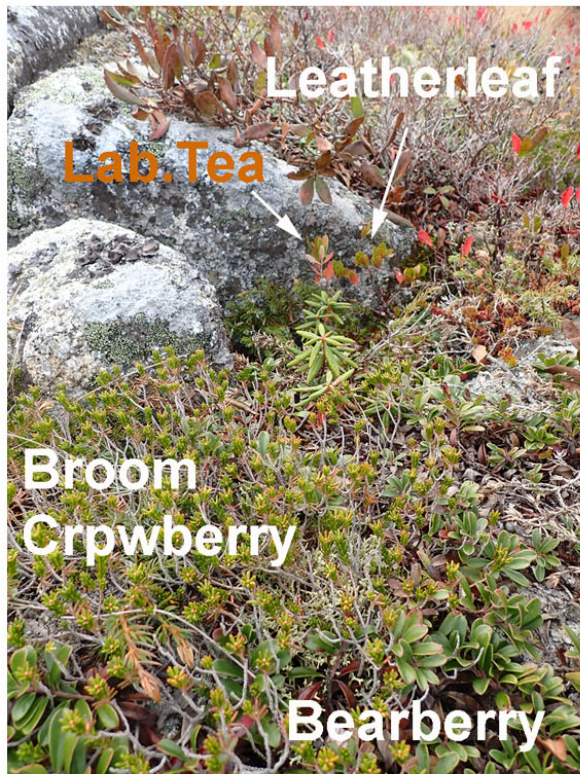


## Barrens & Bogs Landscape Mosaic - larger scale





## Barrens & Bogs Landscape Mosaic - smaller scale





# Barrens & Bog Garden





# Barrens & Bog Garden 2015



Tamarack

Jack  
Pine



Rhodora

Golden Heather



Sheep Laurel

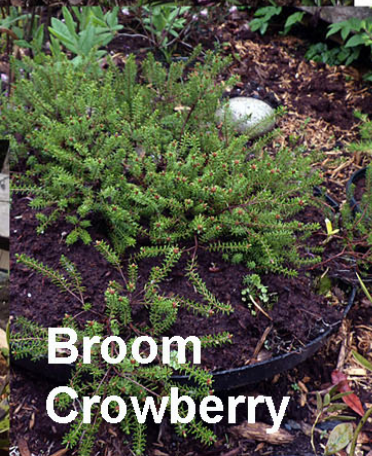
Bog Rosemary



Foxberry



Labrador Tea



Broom  
Crowberry



## Examples of Rare Species found in Nova Scotia's Barrens & Bogs

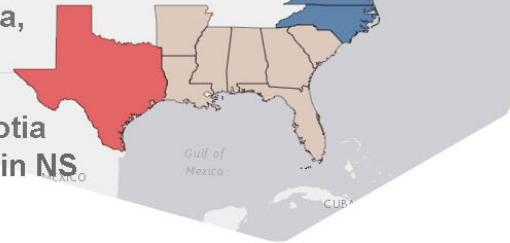


**Inkberry**



In Canada,  
found  
only in  
Nova Scotia  
Not rare in NS

UNITED STATES



**Broom  
Crowberry**



Secure *only* in Nova Scotia



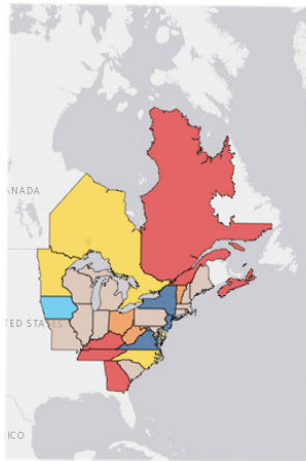
### State/Provincial Conservation Status

- Presumed Extirpated (SX)
- Possibly Extirpated (SH)
- Critically Imperiled (S1)
- Imperiled (S2)
- Vulnerable (S3)
- Apparently Secure (S4)
- Secure (S5)
- No Status Rank (SNR/SU/SNA)
- Exotic
- Hybrid



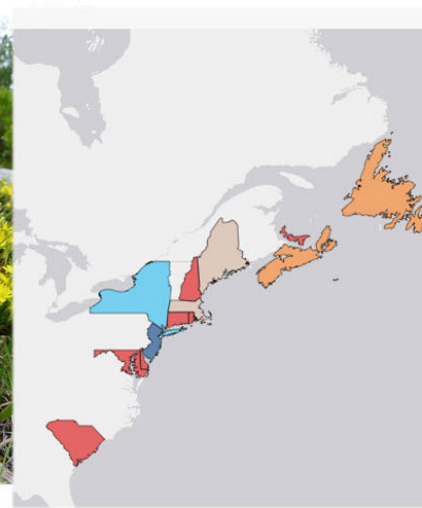
**Rockrose**

At Risk over  
most of its  
range including NS



**Golden  
Heather**

At Risk over most of  
its range including NS



Maps from  
NatureServ  
They show occurrence  
by jurisdiction, not  
the precise geographic  
range





At "The Oaks"





**Goutweed on borders  
with 3 neighbouring properties**

**Leaf-composting &  
Goutweed-control Alleys**

**Raised beds, built up with  
soil from alleys;  
shallow rooted ground  
cover used to stabilize  
borders**

**July 19, 2000**



1. Dig out trenches that received leaves in 2006



barrels with holes so compost dries out to conserve it; use on seedbeds and as fertilizer next year



2. New leaves placed in trenches act as Nutrient Trap (immobilizes N) & Soil Trap (soil washed from beds)



Oct 25, 2007

Coarser stuff, still immobilizes N



Goutweed rhizomes are removed as trenches are dug



## LEAVES, fall 2020





**Fesh leaf mulch added to alleys  
in summer for aesthetics**



**May 18, 2012**





Goutweed

**Stinging nettle**  
*(Urtica dioica)*

May 4, 2016





June 26, 2015

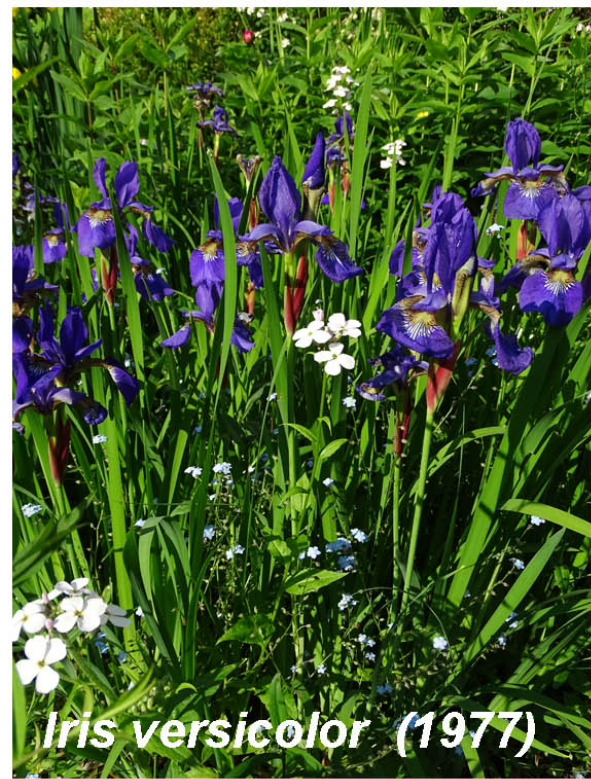




**Knapweed**



**Wild Mustard**



***Iris versicolor* (1977)**



**Speedwell**



**Seaside Goldenrod**

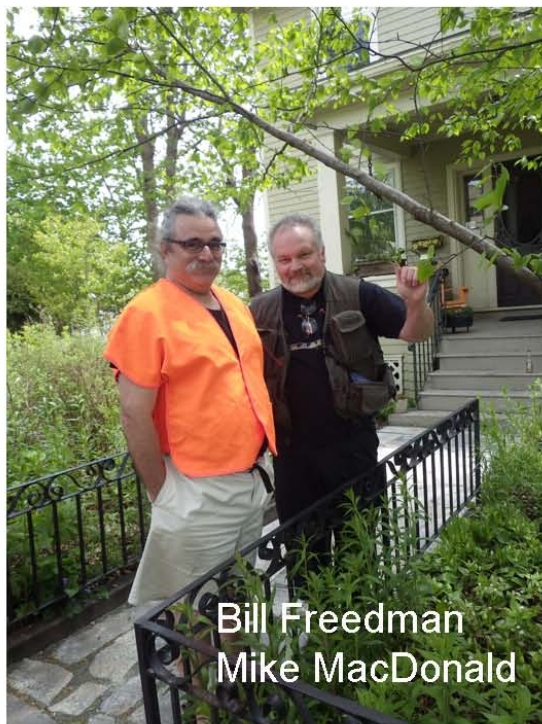




Nick Hill







Bill Freedman  
Mike MacDonald



scorched  
Jack Pine

**June 6, 2009 after "Spryfield Fire"** RB



**May 18, 2010**  
Rhodora

RB



**June 21, 2010**

RB

Jack Pine



# Irving Botanical Gardens plant sale 2011



Cardinal Flower  
Marsh Marigold  
Canada Anemone  
Swamp Milkweed  
Cutleaf Coneflower  
Turtlehead



Bearberry  
Inkberry (Baldwin)





June 9, 2011



May 10, 2013



June 19, 2020,



Aug 25, 2011



Aug 27, 2013

**Gypsum Garden**





**Sheep Laurel**



**Bog Rosemary**



**Bearberry**



**Cinnamon  
fern**



**Bayberry**



**Tamarack**



**Jack Pine**



**Rhodora**

**B&B plants in pots  
July 2011**





Coal Ash \*  
& protruding  
bedrock

June 18, 2012



A photograph of a garden bed filled with various plants. In the background, there is a weathered wooden picket fence. The garden bed contains several plants, some in black plastic nursery pots. The ground is covered with brown mulch and some fallen leaves. In the foreground, there are large, light-colored rocks and a large, textured log. A small black mouse is visible on one of the logs in the bottom center. The plants are labeled with white text.

**Rhodora**

**Tamarack**

**Broom  
Crowberry**

**Bayberry  
(nic)**

**Jack Pine**

**Sheep  
Laurel  
(nic)**



A photograph of a garden area. In the foreground, there is a green lawn. Behind it, a wooden picket fence runs across the middle ground. To the left of the fence, there is a dense garden bed with various plants, including tall green stalks with pink flowers and a large green bush. To the right of the fence, there is a smaller garden bed with a tree stump and some rocks. In the background, there is a house with yellow and white siding and a wooden deck. Large trees are visible behind the house.

Gppsum  
Garden

Barrens &  
Bog Garden

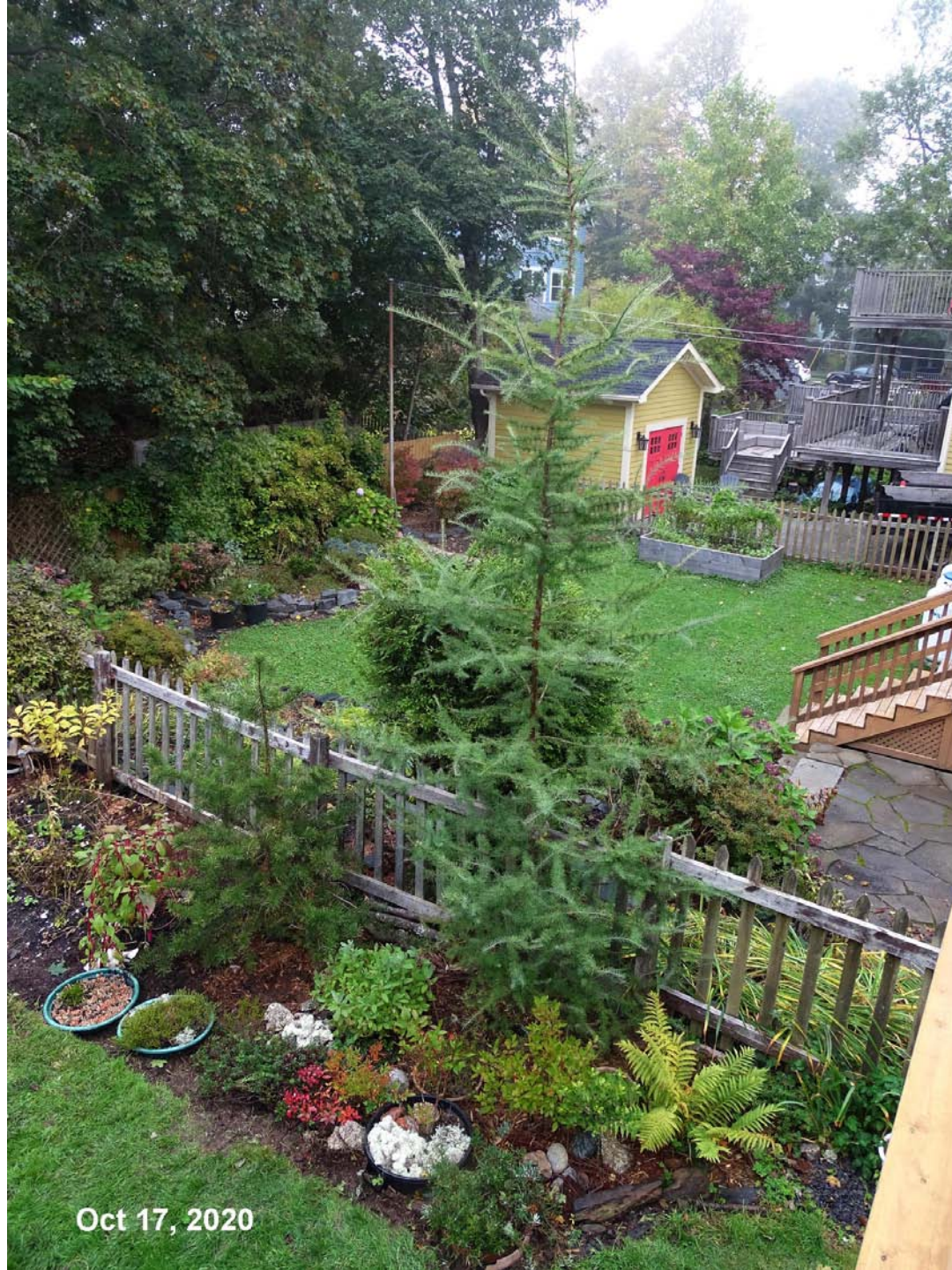
Aug 9, 2012





May 22, 2013



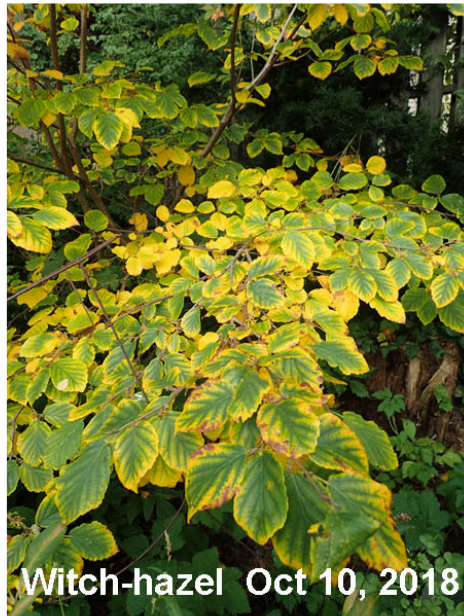


Oct 17, 2020



## **“Woodland” in front of tall fence**

- Red & Black Spruces
- Balsam Fir
- ewes (hort. var)
- Witch-hazel
- Striped Maple
- Mt. Maple
- Shadbush





## Ericaceous and other native species in the Barren & Bog Garden

<b>Full Sun</b>	<ul style="list-style-type: none"> <li>* (Labrador Tea)</li> <li>* Bog Rosemary</li> </ul>	<ul style="list-style-type: none"> <li>• Tamarack</li> <li>• Jack Pine</li> <li>• (Bayberry)</li> </ul>	<ul style="list-style-type: none"> <li>* Broom Crowberry</li> <li>* Golden Heather</li> <li>* Bearberry •</li> <li>• Lichens</li> </ul>
<b>Shady, shade tolerant</b>	<ul style="list-style-type: none"> <li>* Rhodora</li> <li>* Cranberry</li> <li>• Cinnamon Fern</li> </ul>	<ul style="list-style-type: none"> <li>* (Sheep Laurel)</li> <li>* (Foxberry)</li> <li>* Inkberry</li> <li>* Teaberry</li> <li>* Lowbush Blueberry</li> <li>* <u>Highbush Blueberry</u></li> </ul>	
<b>More Shade</b>		* (Mt Laurel)	
	<b>Wet</b> Roots in soil continually moist or wet	<b>Drier</b> Plants well rooted in soil or on decaying wood	<b>Droughty</b> On thin soil over bedrock
	In containers with restricted drainage Or no drainage Or in Low Spots	Open bottom containers Or None	In shallow, drained trays Or on rocks, shallow soil

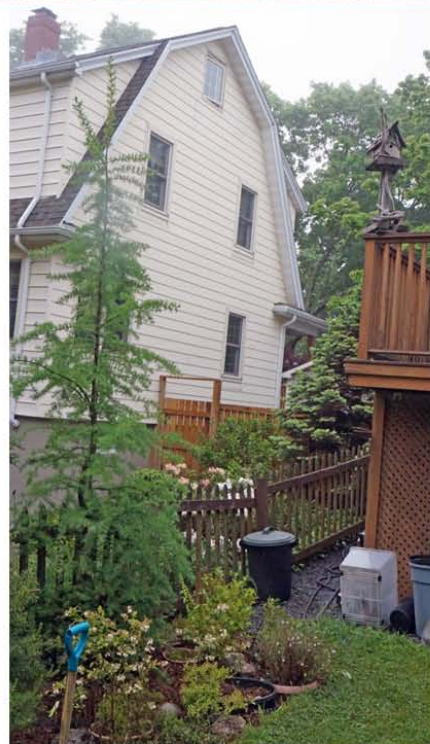
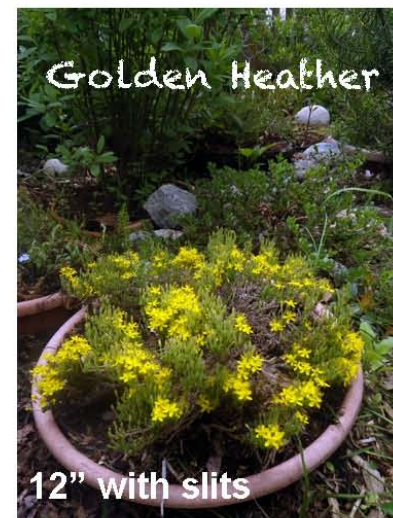
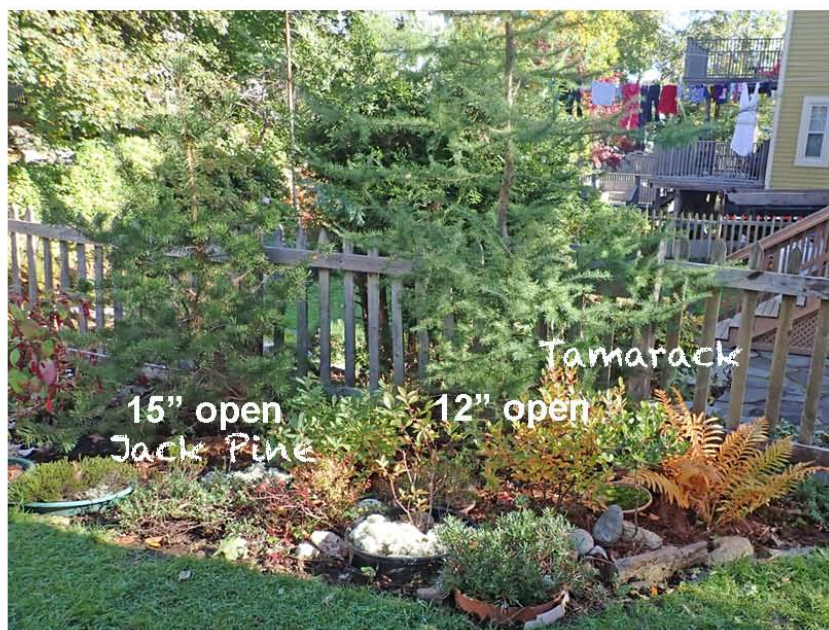
\*Ericaceous species

( ): Not currently (2020) in B&B Garden -moved or lost

Underlined: horticultural variety

**Standard Soil Mix: 3 parts peat to 1 part of my garden soil**









May 27, 2013



May 18, 2010 - post Spryfield fire



May 30, 2017



*Rhodora vistas*

The Bluff Wilderness Hiking Trail  
September 27, 2009



May 30  
2016



May 15, 2016



May 21, 2015





**Both plants were cut back after  
flowering, late June**



**Documents give details about controversial golf development in coastal N.S.**

Record filed in N.S. Supreme Court by province includes value of Owls Head provincial park



Michael Gorman · CBC News · Posted: Nov 03, 2020 6:00 AM AT | Last Updated: 7 hours ago



This picture shows Little Harbour in the upper left, private land in the foreground and the Owls Head park reserve in the upper right. (Nova Scotia Nature Trust)







**Swiss Air Memorial**

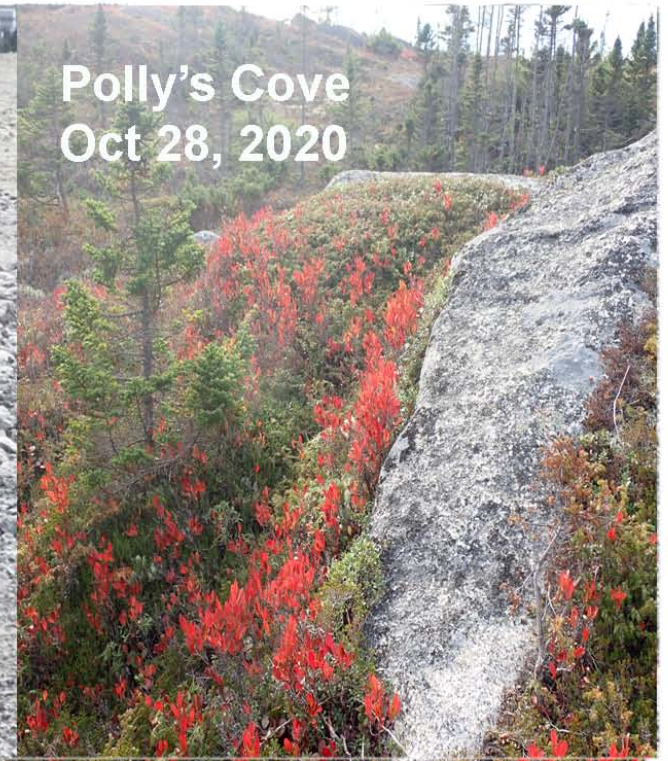


**Governor's Brook Greenspace**



**Bayers Lake Extension Sep 2020**

**The True "Barrens"**



**Polly's Cove  
Oct 28, 2020**





**Assisted Migration needed....**

***Kalmia laterifolia***  
**Worcester, Mass.**  
**June 23, 2013**





**Geoffrey Grantham on Piggy Mt. Nov 1, 2016**









Pollys Cove Oct 28, 2020