

# The Trees of Pugwash in 2015

(and recommendations for the future)

a project of

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# Agenda

- Background to the Project
- Methods
- Findings
- Recommendations
- Acknowledgements





# Background to the Project

- **Communities in Bloom evaluation for 2014**
  - “Develop an inventory of trees in the core streets of the village”
- **Communication between Pugwash CIB Committee and PND at Dal**
- **Agreement to inventory the trees of the village in October 2015**

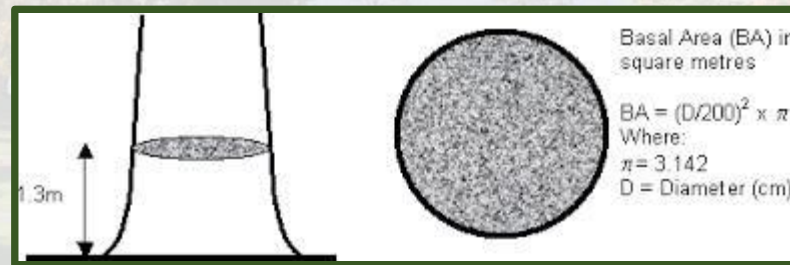
# Methods

- **Scope: mainly the trees on properties along the three north-south streets of the village (Water, Russell, Church) and the six east-west streets (King, Queen, Black, Prince Albert, Victoria, Durham)**
- **Inventory limited to species identification and diameter at breast height at each property**
- **Trees measured on 17 and 18 October by 11 students and PND (probably 90+% of all tree stems within the scope were measured)**
- **Data analysis focused on various ways of describing the tree canopy of Pugwash**
- **Also desired are recommendations for future development of the Pugwash tree population**



# Findings

- Stem count by species (number of stems in the surveyed area)
- Basal area by species (square metres in the surveyed area)



- Size-class distribution by species (number of stems of different size classes)

# Findings – Trees of Nova Scotia in Pugwash (35 spp.)

<b>Common Name</b>	<b>Scientific Name</b>		<b>Common Name</b>	<b>Scientific Name</b>
Ash spp.	Fraxinus spp.		Ironwood	Ostrya virginiana
Ash, Black	Fraxinus nigra		Larch	Larix laricina
Ash, Red	Fraxinus pennsylvanica		Maple, Mountain	Acer spicatum
Ash, White	Fraxinus americana		Maple, Red	Acer rubrum
Aspen, Trembling	Populus tremuloides		Maple, Sugar	Acer saccharum
Birch, Yellow	Betula alleghaniensis		Mountain Ash	Sorbus spp.
Birch, Gray	Betula populifolia		Oak, Red	Quercus rubra
Birch, White	Betula papyrifera		Pine, Jack	Pinus banksiana
Cedar, Eastern White	Thuja occidentalis		Pine, Red	Pinus resinosa
Cherry spp.	Prunus spp.		Pine, White	Pinus strobus
Cherry, Choke	Prunus virginiana		Poplar, Balsam	Populus balsamifera
Cherry, Pin	Prunus pensylvanica		Prunus spp.	Prunus spp.
Dogwood spp.	Cornus spp.		Serviceberry	Amelanchier spp.
Elm, American	Ulmus americana		Spruce, Black	Picea mariana
Fir, Balsam	Abies balsamea		Spruce, Red	Picea rubens
Hawthorn	Crataegus spp.		Spruce, White	Picea glauca
Hemlock, Eastern	Tsuga canadensis		Sumac, Staghorn	Rhus typhina
			Willow spp.	Salix spp.

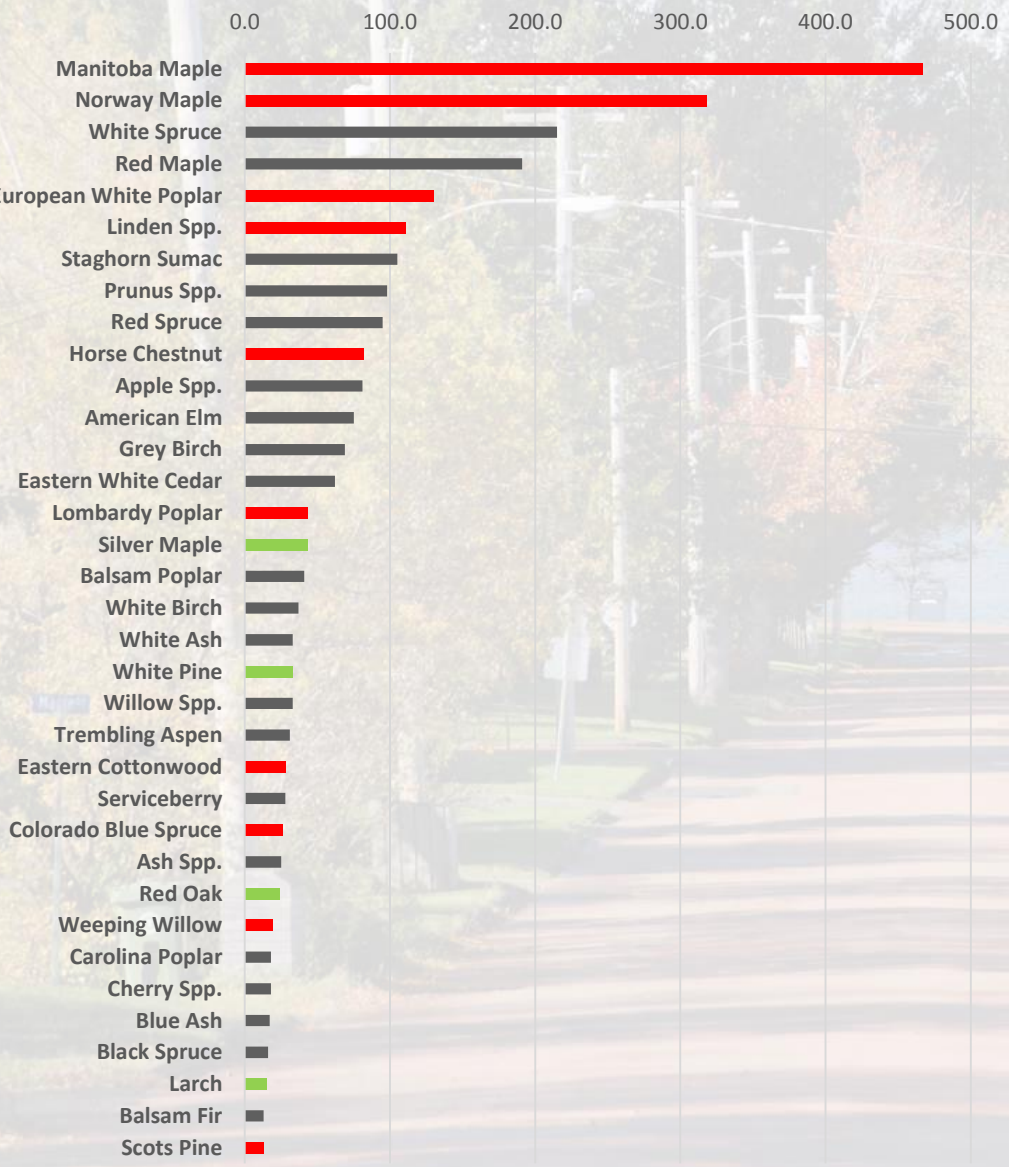
# Findings – Alien Tree Species in Pugwash (30 spp.)

<b>Common Name</b>	<b>Scientific Name</b>		<b>Common Name</b>	<b>Scientific Name</b>
<b>Apple spp.</b>	<b>Malus spp.</b>		<b>Maple, Manitoba</b>	<b>Acer negundo</b>
<b>Ash, Blue</b>	<b>Fraxinus quadrangulata</b>		<b>Maple, Norway</b>	<b>Acer platanoides</b>
<b>Buckthorn, European</b>	<b>Rhamnus cathartica</b>		<b>Maple, Silver</b>	<b>Acer saccharinum</b>
<b>Butternut</b>	<b>Juglans cinerea</b>		<b>Oak, English</b>	<b>Quercus robur</b>
<b>Catalpa</b>	<b>Catalpa spp.</b>		<b>Oak, Pin</b>	<b>Quercus palustris</b>
<b>Cedar, Eastern Red</b>	<b>Juniperus virginiana</b>		<b>Pine, Austrian</b>	<b>Pinus nigra</b>
<b>Chestnut, Horse</b>	<b>Aesculus hippocastanum</b>		<b>Pine, Scots</b>	<b>Pinus sylvestris</b>
<b>Cottonwood, Eastern</b>	<b>Populus deltoides</b>		<b>Poplar, Carolina</b>	<b>Populus canadensis</b>
<b>Elm, Red</b>	<b>Ulmus rubra</b>		<b>Poplar, European White</b>	<b>Populus alba</b>
<b>Fir, Colorado White</b>	<b>Abies concolor</b>		<b>Poplar, Lombardy</b>	<b>Populus nigra</b>
<b>Ginkgo</b>	<b>Ginkgo biloba</b>		<b>Rowan</b>	<b>Sorbus aucuparia</b>
<b>Lilac</b>	<b>Syringa spp.</b>		<b>Spruce, Colorado Blue</b>	<b>Picea pungens</b>
<b>Linden spp.</b>	<b>Tilia spp.</b>		<b>Spruce, Norway</b>	<b>Picea abies</b>
<b>Locust, Black</b>	<b>Robinia pseudoacacia</b>		<b>Willow, Weeping</b>	<b>Salix alba</b>
<b>Maple, Japanese</b>	<b>Acer palmatum</b>		<b>Willow spp.</b>	<b>Salix spp.</b>

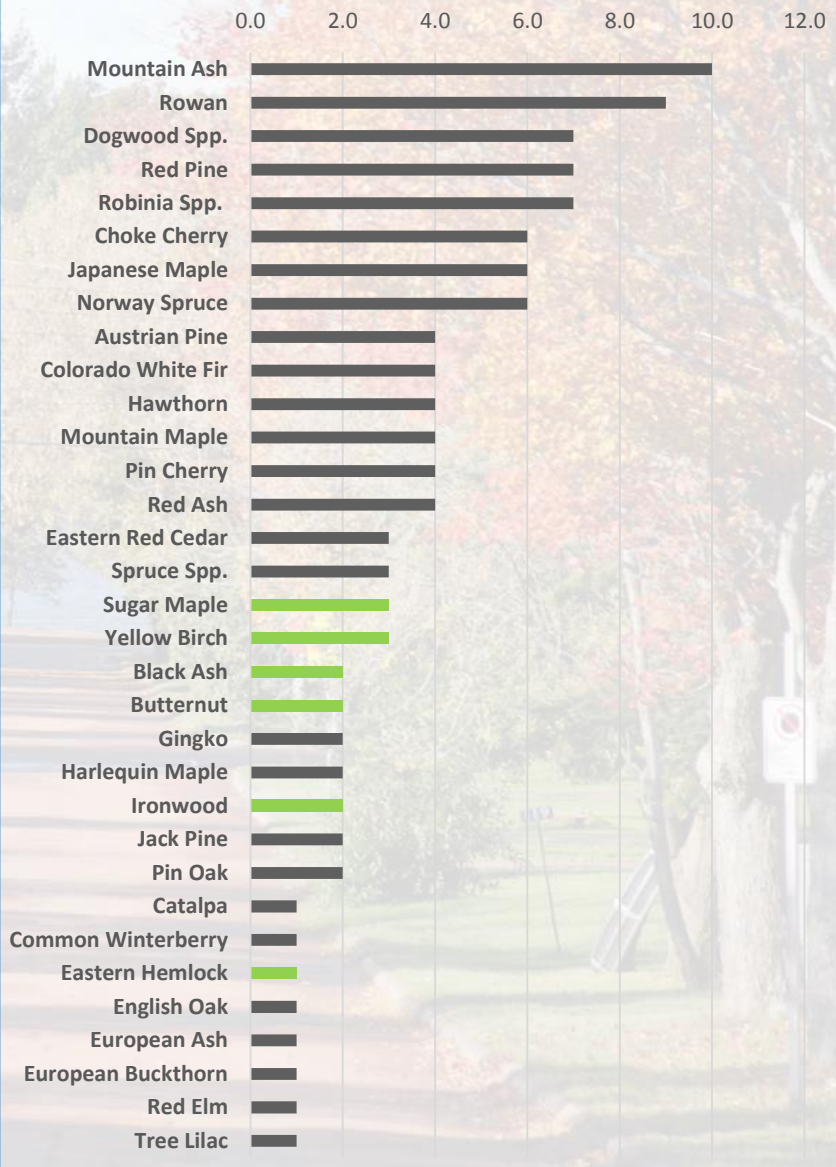


# Findings (red are alien spp. to control; green are native spp. to favour)

## Pugwash Trees: Species Count for Counts 11 or Higher



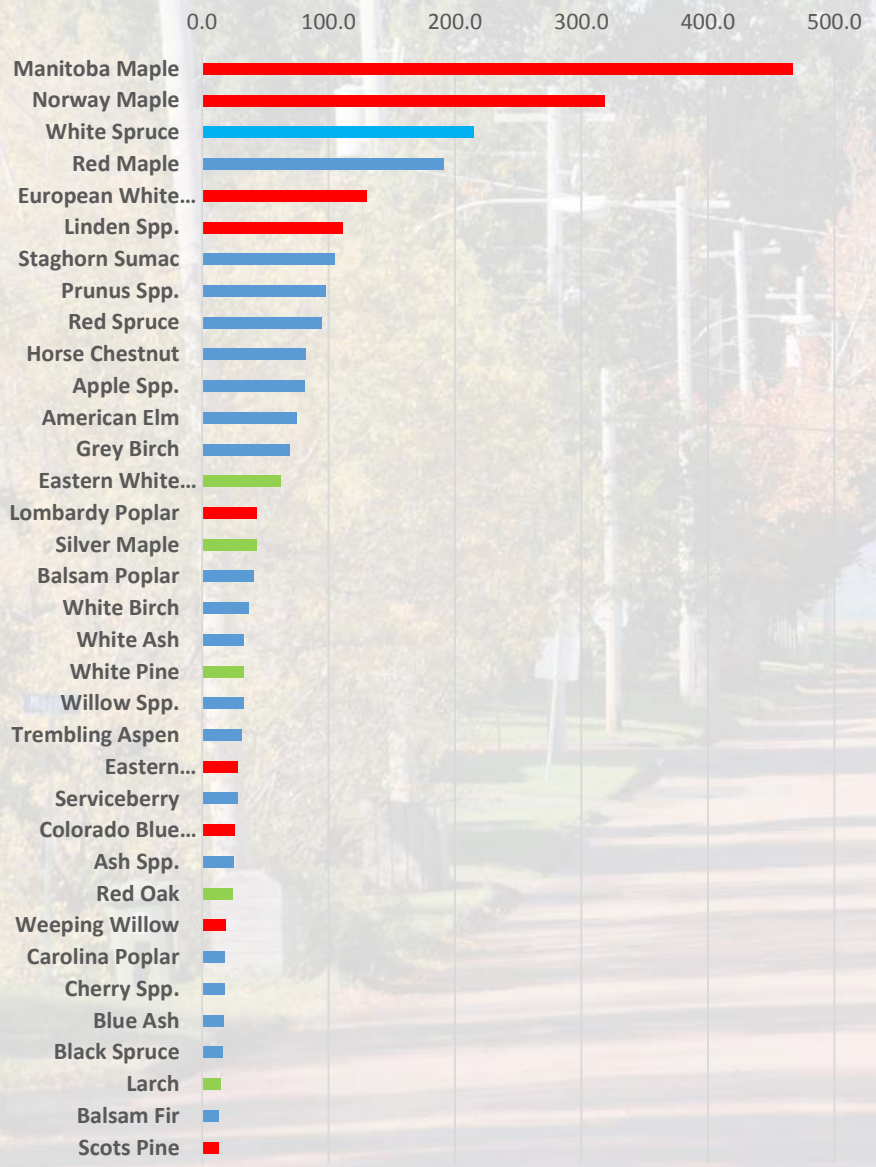
## Pugwash Trees: Species Count for Counts 10 or Lower



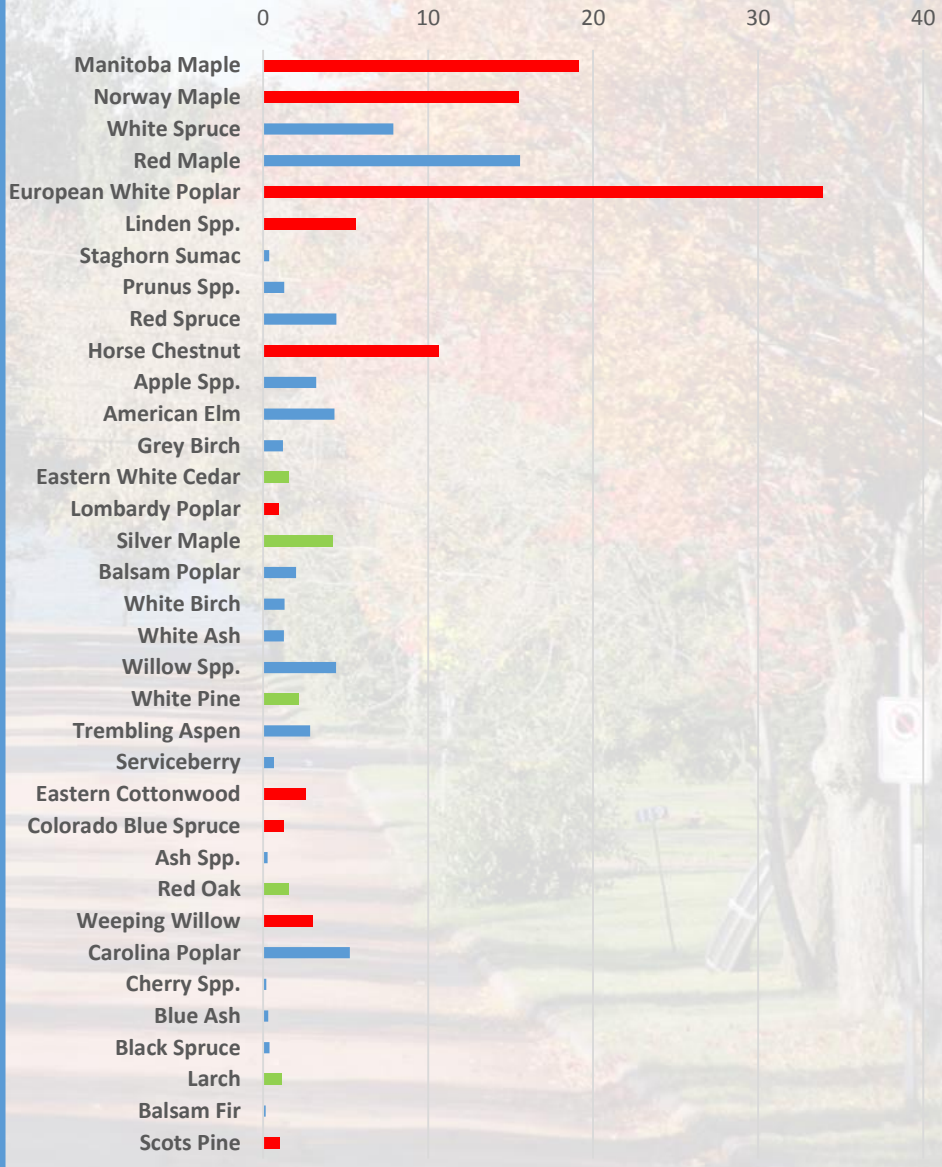


# Findings (red are alien spp. to control; green are native spp. to favour)

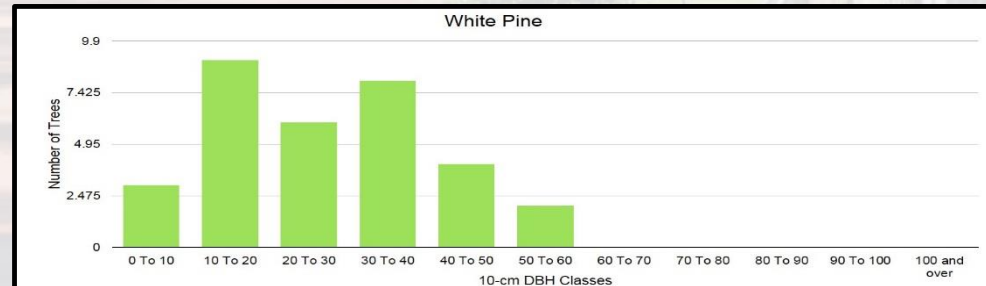
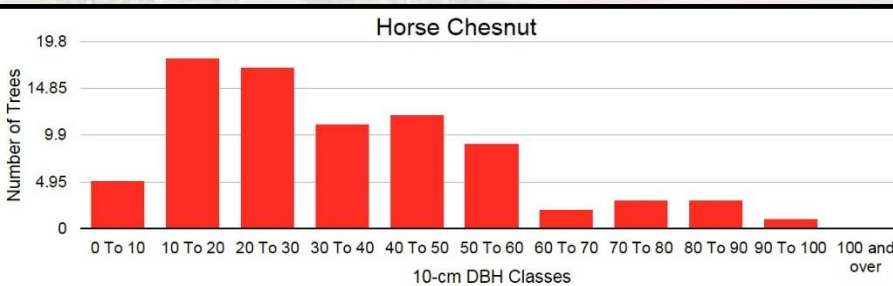
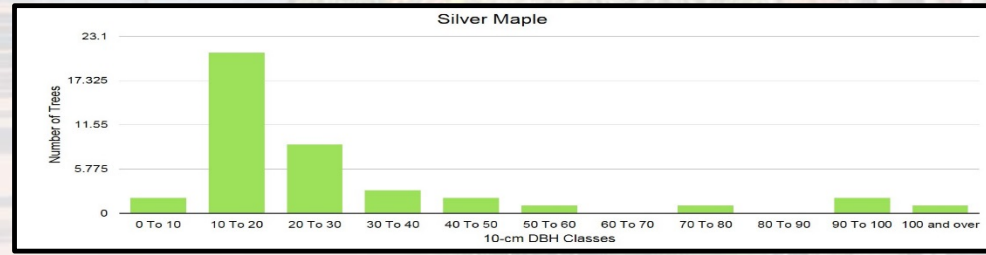
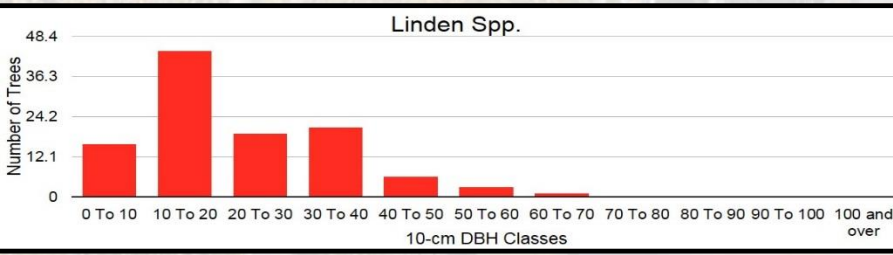
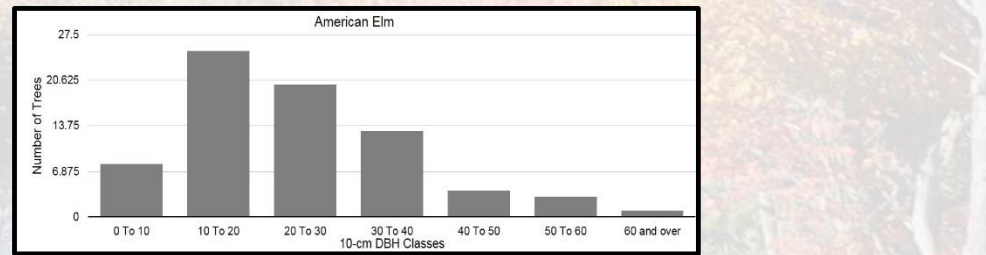
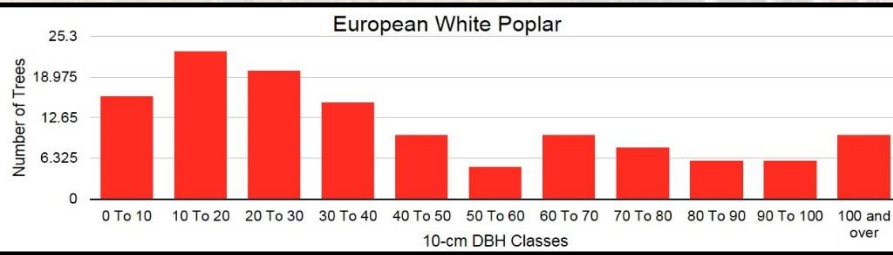
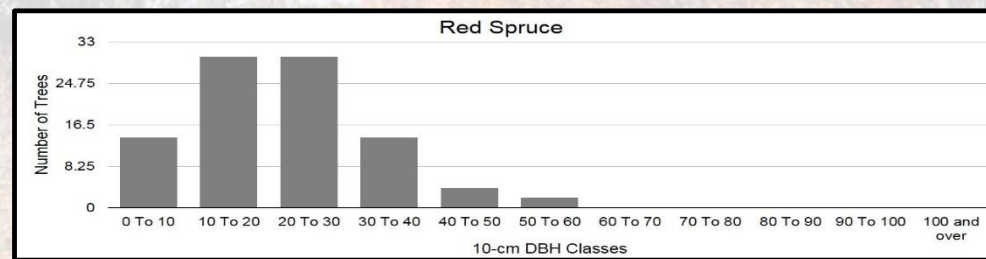
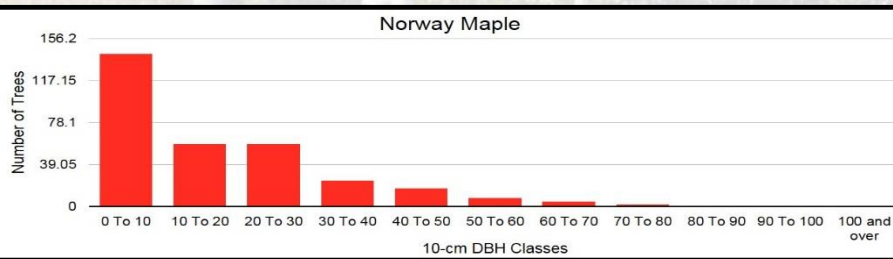
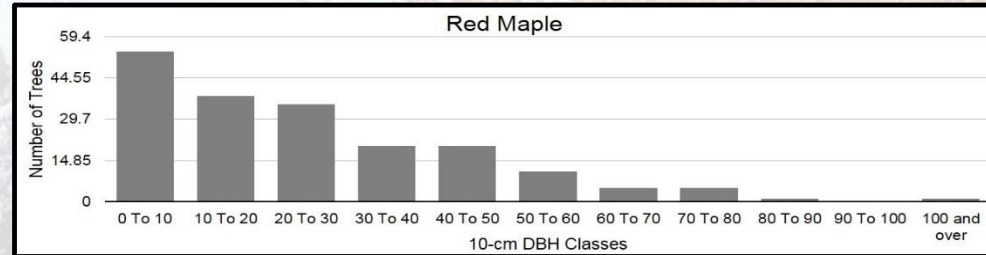
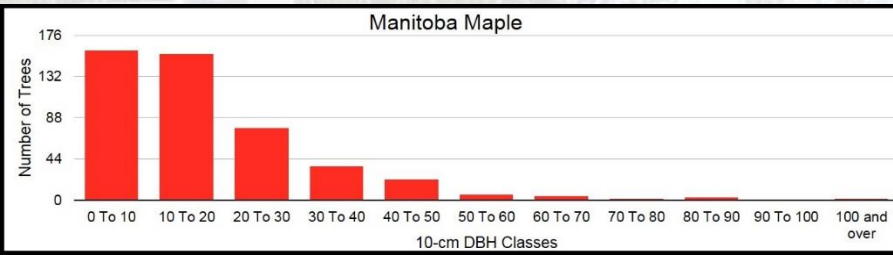
## Pugwash Trees: Species Count for Counts 11 or Higher



## Pugwash Trees: Basal Area (m<sup>2</sup>) for Species of 11 Stems or More



# Findings





# Recommendations

- Celebrate the trees you have – walkabouts, dissemination of the inventory, special events
- Increase the canopy – the density of trees could easily be greatly increased without overloading the village in shade (grass is highly over-rated! 😊 )
- Plant some new trees every year so that the age-class structure (size structure) becomes diversified
- In new plantings, favour:
  - NS native species
  - Native species that are poorly represented or missing in the inventory
  - Acadian and Carolinian forest species
  - Close-to-the-street locations for new trees
  - (see the tree-list recommendations)
- Gradually phase out problem species such as Manitoba maple and Norway maple (plant no new ones, prevent natural regeneration from flourishing by cutting saplings, plant desirable species under the canopies of these species)
- Get some quality tree ID books (such as “Trees in Canada” by John Farrar) for the Pugwash library; promote the use of online tools for learning about tree species (such as <http://novascotia.ca/natr/forestry/treeid/>)

# Recommendations – Current Native Tree Species to **Favour**

Common Name	Scientific Name		Common Name	Scientific Name
Ash spp.	Fraxinus spp.		Ironwood	Ostrya virginiana
Ash, Black	Fraxinus nigra		Larch	Larix laricina
Ash, Red	Fraxinus pennsylvanica		Maple, Mountain	Acer spicatum
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Elm, American	Ulmus americana		Spruce, Black	Picea mariana
Fir, Balsam	Abies balsamea		Spruce, Red	Picea rubens
Hawthorn	Crataegus spp.		Spruce, White	Picea glauca
Hemlock, Eastern	Tsuga canadensis		Sumac, Staghorn	Rhus typhina
			Willow spp.	Salix spp.



## Recommendations – Native Tree Species to Consider Adding

<b>Common Name</b>	<b>Scientific Name</b>
<b>Aspen, Largetooth</b>	<b><i>Populus grandidentata</i></b>
<b>Beech, American</b>	<b><i>Fagus grandifolia</i></b>
<b>Cherry, Black</b>	<b><i>Prunus serotina</i></b>
<b>Maple, Striped</b>	<b><i>Acer pensylvanicum</i></b>

## Recommendations – Current Alien Tree Species to Favour and to Shun

Common Name	Scientific Name	Common Name	Scientific Name
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Locust, Black	Robinia pseudoacacia	Willow, Weeping	Salix alba
Maple, Japanese	Acer palmatum	Willow spp.	Salix spp.



## Recommendations – New Alien Tree Species to Consider Adding

<b>Common Name</b>	<b>Scientific Name</b>
<b>Basswood</b>	<b><i>Tilia americana</i></b>
<b>Beech, European</b>	<b><i>Fagus sylvatica</i></b>
<b>Butternut</b>	<b><i>Juglans cinerea</i></b>
<b>Black Walnut</b>	<b><i>Juglans nigra</i></b>
<b>Chestnut, American</b>	<b><i>Castanea dentata</i></b>
<b>Hackberry</b>	<b><i>Celtis occidentalis</i></b>
<b>Hickories</b>	<b><i>Carya spp.</i></b>
<b>Honey-Locust</b>	<b><i>Gleditsia triacanthos</i></b>
<b>Hornbeam (Blue-beech)</b>	<b><i>Carpinus caroliniana</i></b>
<b>Maple, Freeman</b>	<b><i>Acer freemanii</i></b>
<b>Oak, Bur</b>	<b><i>Quercus macrocarpa</i></b>
<b>Oak, White</b>	<b><i>Quercus alba</i></b>
<b>Tulip Tree</b>	<b><i>Liriodendron tulipifera</i></b>

# Acknowledgements

- Dalhousie students/graduates Bimal Aryal, Jordan Bell, David Foster, Carlisle Kent, JJ Klimek, Stephanie Maasik, Caytlyn McFadden, Caitrin Pilkington, Brynn Roach, Sydney Toni, Katherine Witherspoon
- The Pugwash Communities in Bloom Committee, particularly Maureen Leahey
- The very generous folks at the Chatterbox, for feeding us so well
- The fine villagers who hosted us overnight between measurement days
- All the villagers who kindly allowed us to access their properties to measure trees

