

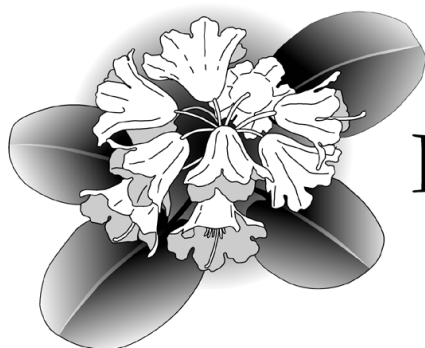
# AtlanticRhodo

[www.AtlanticRhodo.org](http://www.AtlanticRhodo.org)

Volume 47: Number 1

February 2023





# Atlantic Rhododendron & Horticultural Society

## Our Mission

*ARHS supports and promotes the development and exchange of expertise and material relating to the creation and maintenance of year-round garden landscapes featuring rhododendrons and other plants.*

## Inside this Issue

President's Report Jim Sharpe

A Word from the Editor Dennis Stuebing

2023 ARHS Garden Tour, May 20<sup>th</sup> and 21<sup>st</sup> Lynn Rotin

2023 ARHS Plant Sales Update Dennis Crouse

Dwarf Conifers: Year-Round Gardening Bob Howard

The Effect of the Polar Vortex 2023 on Rhododendrons Jamie Ellison

Nature-based Approaches to Storm Water Management Stephen Cushing

The Big One – 'Tai Haku' – the only Japanese Cherry not from Japan Joe Harvey

Iceland: It's Geography, Botany and Rhododendron Gardens Glen Jamieson

Photos in articles are by the authors, unless otherwise identified.

## Membership

**Atlantic Rhododendron & Horticultural Society.**

**Membership renewals are now due.** The current membership period is September 1, 2022 to August 31, 2023. The membership fee is \$30.00. For benefits and to download a membership form see ARHS website [www.atlanticrhodo.org](http://www.atlanticrhodo.org)

**American Rhododendron Society:** ARHS is a chapter in District 12 of the American Rhododendron Society. Combined ARHS and ARS membership cost is \$84.00 Canadian.

Cheques, made payable to Atlantic Rhododendron & Horticultural Society, should be sent to **Jim Sharpe, 6231 Watt St, Halifax, NS B3H 2B9. Payment may be made by e-transfer to [atlanticrhodo@gmail.com](mailto:atlanticrhodo@gmail.com)**

Please include name, address with postal code, e-mail address and telephone number, for organizational purposes only.

The Society is working on an on-line payment system. All details will be available on the Website when the new system is ready.

**AtlanticRhodo** is the Newsletter of the Atlantic Rhododendron & Horticultural Society. We welcome your comments, suggestions, articles, photos and other material for publication. Send all material to the editor.

**Editor:** Dennis Stuebing  
[dennis.stuebing@hotmail.com](mailto:dennis.stuebing@hotmail.com)

Published four times a year. February, May, August and November

Cover Photo: Green Carpet Korean fir, with blue-purple cones (*Abies koreana* 'Green Carpet') . [Photo Bob Howard]



## Calendar of Events

Meetings are normally held in the Nova Scotia Museum Auditorium. *Nova Scotia Museum of Natural History, 1747 Summer St. Halifax, Nova Scotia Canada*

Meeting notices will include a sign-up form for those who wish to attend in person. Space will be limited due to social distancing requirements as posted by Public Health at the time. The ARHS will continue to offer our programming by Zoom for those who cannot attend in person. Details and link will be sent to members.

**Tuesday, March 7, 2023 at 7:30 pm**

**Sam Hoadley, Manager of Horticultural Research, Mt. Cuba Center**  
**“Wild Hydrangea for the Mid-Atlantic Region”**

Take a deep dive into Mt. Cuba Center’s newly released *Hydrangea arborescens* evaluation results. After a five-year trial learn which *Hydrangea* received top marks from a garden perspective and which species and cultivars tallied the most pollinator visits. Included will be tips for successful cultivation and care of wild hydrangea in your home landscape. See <https://mtcubacenter.org/trials/wild-hydrangea-for-the-mid-atlantic-region/>

**Tuesday, April 4, 2023 at 7:30 pm**

**Freeman Patterson, ARHS Member and Landscape Photographer: “Les Deux Jardins de Claude Monet/The Two Gardens of Claude Monet”**

Claude Monet worked and succeeded spectacularly in two artistic media – gardening and painting. For him, the two were deeply entwined. Freeman’s images from both early spring and late summer reveal how Monet’s house garden and water garden are clear expressions of his personal and artistic growth.

**Tuesday, May 2, 2023 at 7:30 pm**

**Member-to-Member Plant Sale** At the Nova Scotia Museum of Natural History. Come to talk and purchase plants from our members in our always-popular plant sale. As well, we plan to have a pre-order plant sale from our rhododendron and plant propagators. Full details will be sent to ARHS members in the New Year.

**20 - 21 May 2023**

**ARHS Garden Tour** Annapolis Royal and area, Information about the garden tour is contained in this issue of the AtlanticRhodo.

**Thank you for avoiding the use of perfumes and scented products when you come to ARHS events.**

## Membership Renewals and Welcome to our New Members!

**Rebecca Lancaster**

We want to remind everyone who has yet to do so, to renew your membership as soon as possible! The funds we raise through membership fees, makes it possible for us to pay guest speakers and other aspects of our annual programming. Thanks for your ongoing support.

## A Word from the Editor - In this Issue

Dennis L. Stuebing, PhD

Is erratic weather our new norm? Are traditional temperature and precipitation patterns no longer helpful predictors of what to expect as we prepare for each new garden season? In this issue you'll find some information to better understand the impact of our changing climate. Jamie Ellison has examined how the February "Polar Vortex" affected *Rhododendron* flower buds. And, Stephen Cushing has provided an article on *Nature-based Approaches to Storm Water Management* explaining the ways municipalities are dealing with the ebbs and flows of precipitation.

You will also find plant profiles on dwarf conifers and the Japanese cherry "Tai-haku", kindly submitted by Bob Howard and Joe Harvey, respectively. With our deepest thanks to the Journal of the American Rhododendron Society we are pleased to include Glen Jamieson's article entitled *Iceland: It's Geography, Botany and Rhododendron Gardens*. This issue also includes updates on the 2023 Garden Tours and Plant Sales, as well as Jim Sharpe's President's and Program reports, and the annual ARHS scholarships distributed on behalf of the Society.

Thanks to all of the authors and contributors, those mentioned, as well as Dennis Crouse, Lynn Rotin, and, as always, Sterling Levy for his ongoing design and layout of the issue. If you would like to submit an article for an upcoming AtlanticRhodo, don't hesitate to contact [dennis.stuebing@hotmail.com](mailto:dennis.stuebing@hotmail.com). Enjoy! ✕

## President's Report

Jim Sharpe

I hope you and your garden are surviving the frequent temperature changes and high winds this winter. With the warnings from climate scientists for more extreme weather, we need to adapt our gardens to the changing conditions. It is wonderful to be part of the ARHS where we can share our strategies for plants and gardens.

This winter we have great presentations by Jenny Sandison on "Latest Trends in English Gardening" (Feb 7), Sam Hoadley from Mt. Cuba Centre in Delaware on "Wild Hydrangea for Mid-Atlantic Gardens" (March 7) and Freeman Patterson on "Les Deux Jardins de Claude Monet/The Two Gardens of Claude Monet" (April 4). We will be meeting in person at the Nova Scotia Natural History Museum at 7:30 PM or you can join from your home via Zoom. All presentations will be recorded and stored on the ARHS YouTube channel. The links will be sent out a few weeks after each meeting.

This spring we will be having two plant sales and our spring garden tour. On Tuesday, May 2<sup>nd</sup> we will be holding our Member-to-Member Plant Sale at the NS Natural History Museum. Then later in May, we will have the pick up for the "Pre-ordered Plant Sale" from local nurseries including Rhodoland (Jack Looye), Old Reo (Dave Veinotte), and Insigne (Ken Shannik). We have also placed an order for trays of plant plugs from North Creek Nursery in Pennsylvania, which specializes in eastern North American native perennials. Information about ordering will be distributed to members soon. Our Spring Garden Tour will be on May 20<sup>th</sup> and 21<sup>st</sup>, to the Annapolis Royal Historic Gardens, and some private gardens in the Annapolis Royal area. It is set for May this year to correspond with the "Rare and Unusual Plant Sale" on the afternoon of May 21<sup>st</sup>.

This spring, the American Rhododendron Society Convention "Georgia with Azaleas on my Mind" will be from 19-23 April in Atlanta (for more information please visit <https://www.azaleas.org/convention-2023/>), organized with the Azalea Society of America. The region north of Atlanta is home to fourteen species of native deciduous azaleas, more than anywhere else in the world, which will be featured on the garden tours and in the convention lectures. Also this spring, two conventions will be held in Nova Scotia. The Nova Scotia Association of Garden Clubs is hosting their convention "Working with Nature" at Mount Saint Vincent University from 2-4 June (for more information please visit <https://nsagc.com/NSAGC-Convention-Registration-Form>). The North American Rock Garden Society (NARGS) Convention "Rocks, Plants, Habitats" will be held in Truro from 8-11 June (for more information please visit <http://www.nargs23.org>). I'm working with ARHS members Roslyn Duffus, Darwin Carr, Rebecca Lancaster, and Jamie Ellison, to organize this event. The registration has opened and already NARGS members from the U.S., Canada, and Europe have registered. If you are interested in volunteering to help host this event, please contact me, or any member of the organizing committee.

The ARHS Board is reviewing our membership renewal system and financial arrangements for the organization. We are pleased to have Lynn Brooks as our new Membership Director and plan to contract a bookkeeper to manage the accounts and financial reports. If you are interested in assisting with the work of ARHS we are in need of a Treasurer. Please contact me at [atlanticrhodo@gmail.com](mailto:atlanticrhodo@gmail.com) if you are interested.

Now that the days are getting longer I hope that you are enjoying your plants, rhodos, and garden. Happy Gardening! ✕

## 2023 ARHS Garden Tour, May 20<sup>th</sup> and 21<sup>st</sup>

**Lynn Rotin**

This year the ARHS Annual Garden Tour is an overnigher to Annapolis Royal, planned to coincide with the Rare and Unusual Plant Sale. Our tour includes the Historic Gardens and three private gardens. The dates are Saturday, May 20, and Sunday, May 21.

A garden tour of the Historic Gardens is being organized for Saturday afternoon at 2 pm on May 20th. Admission to the gardens will be FREE to paid-up ARHS members. Just identify yourself at the entrance so staff can check your name off the list.

The private gardens open for the tour belong to Bob Howard, ARHS member, long time ARHS Education Director Susan Tooke, a Nova Scotia artist, and Lorraine Beswick, a commercial flower gardener. Their large, country properties line the scenic Granville Beach Road that leads to the Habitation. Each garden is different from the others. Descriptions along with more information will be sent to members, as the date gets closer.

The tour concludes with the "Rare and Unusual Plant Sale" (see <https://www.facebook.com/acraups/>) on Sunday afternoon, May 21st from 1 – 4 pm. This sale is organized by Jill Coville from Bunchberry Nursery. It takes place at the Annapolis Royal market and features specialty growers from throughout the Maritimes.

We suggest that you drive down on Saturday morning and stay overnight at one of the local B&Bs or inns, for example, the new "boutique" motel, with information located on their website at <https://annapolisroyalinn.com/>

There is also the option of staying at the NSCC residence in Lawrencetown, approx. half an hour from Annapolis Royal. Information about the residence can be found on their website: <https://www.nsc.ca/study-at-nsc/housing/summer-conferences-and-events-space/avc.asp>

Times, descriptions, locations, and more information will be sent out closer to the date but mark your calendar and book your room now! ☺

## ARHS 2022 Scholarship Announcements Passionate Plant Person Awards

We are pleased to announce the following information about the annual ARHS Passionate Plant Person Awards. Dalhousie University and Nova Scotia Community College provided the results of the scholarship process at their respective institutions.

### 1. Jamie MacLean

Dalhousie University, Faculty of Agriculture

The 2022 recipient of the Passionate Plant Person Award at Dalhousie University, Faculty of Agriculture, is Jamie MacLean. Jamie is from Truro, NS and enrolled in the Diploma in Technology, Managed Landscapes program. The annual Scholarship evening was held Thursday, November 24 in which Jamie was awarded the ARHS scholarship.

### 2. Dustin J.

Nova Scotia Community College (NSCC), Horticulture and Landscape Technology - Landscape, Kingstec Campus

Thank you so much, it really does mean the world to me. I was over the moon when I checked my email saying I had been selected. This award will have a positive impact on my education because it'll allow me to work less during the school year and focus on my school work.

My future goal after school is to start my own landscape-centred business. I say landscape-centred because I'm not entirely sure which route I'm going to go down right now because I have a lot of interests that I think I could make into a business such as doing landscape photography, surveying, or possibly hardscape and softscape installation at a commercial scale. This award will help me achieve those possible future business ventures (*Taken from the NSCC Foundation announcement at: <https://express.adobe.com/page/btOYDEqZ0zLSj/>*). ☺

## 2023 ARHS Plant Sales Update

Dennis Crouse

### Members to Members Plant Sale

Tuesday, May 2<sup>nd</sup>, from 7:30 PM to 8:30 PM at the Museum of Natural History in Halifax

ARHS Members are invited to participate as vendors. Plants must be labeled with at least the botanical name and not include invasive species. Also, vendors that wish to participate will be required to set up early so we can open the sale at 7:30 PM sharp. Vendors who wish to participate are encouraged to contact Jane at [sunandwater@ns.sympatico.ca](mailto:sunandwater@ns.sympatico.ca). We appreciate the purchasers' patience and you are encouraged to bring your own tray or bag.

### Pre-Order Plant Sale

Saturday, May 13<sup>th</sup>, from 10:30 AM to 12:30 PM at St. James' Anglican Church, 6991 St. Margaret's Bay Road, Boutiliers Point (*the yellow church*)

This sale is only for ARHS Members with their membership paid prior to the sale. We are currently working on the list of plants and members should expect a plant list and further information on this sale in early March. Since this is a new venue we ask for your patience as we navigate in new surroundings. Volunteers are appreciated and are welcome to participate in this sale and are encouraged to contact Catherine at [catherine.abbass@gmail.com](mailto:catherine.abbass@gmail.com).

We have a stellar line-up of suppliers that include **Old Rio Nursery, Insigne Gardens, Jack Looye, North Creek Nurseries**. For all you plant addicts, we have an exciting list of choice plants to offer! Conifers, dogwoods, Japanese maples, magnolias, woodland plants, bulbous, ephemerals, rhododendron and azaleas for rock gardens or landscape specimens, and perennials for the pollinator gardens.

*Note: The sale will **not be at the Evers home**. The ARHS would like to acknowledge the many years of service that Duff and Donna Evers have given to the society. Their time, talents, patience, hospitality, and knowledge have been of great benefit to all. **Thank you for the memories and dedication!** ☘*



Donna's Mini mugo pine, Jeddeloh Canadian hemlock, and Alpine Star Korean fir. This is a display of foliage variation including the contrasting *Dianthus* 'Blue Boy' in the middle (*Pinus mugho* 'Donna's Mini', *Tsuga canadensis* 'Jeddeloh', and *Abies koreana* 'Alpine Star'). [Photo Bob Howard]

# Dwarf Conifers: Year-Round Gardening

Bob Howard

It snowed last night. The view this morning from our picture window of snow-covered conifers in the rock garden is beautiful. Even on a winter's day, the garden can feel so good.

Dwarf conifers are four-season plants. Throughout the year they are easy to grow and maintain. They provide lovely foliage textures, colour, and sculptural interest. In spring they are a great contrast to bulbs and flowers. By summer the variety of foliage and forms provides a unifying architecture to the garden. In the fall dwarf conifers are good companions to autumn colours. In winter they stay green, or rather, hold their needles in an immeasurable range of greens, with occasional blues, purples, yellows, and golds. From time-to-time snow clothes them handsomely.

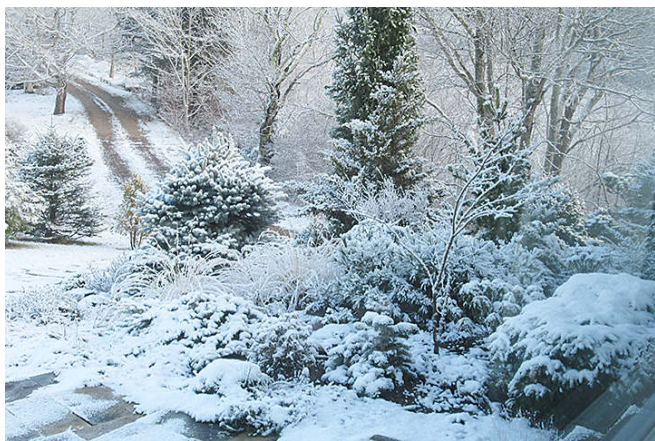
What is a dwarf conifer? Conifers are plants that bear cones with leaves that are needle-shaped or scale-shaped. All extant conifers are woody plants; most are evergreen. Spruce, pine, juniper, fir, and larch are well-known examples.

Size and rate of growth are not so readily understood. First of all, growing conditions significantly affect the size and rate of growth. Second, size and rate of growth can only be estimated in a general way. Third, the term itself, “dwarf plant”, is relative to the full-sized plant. The term “dwarf spruce” could be used for a plant that actually gets “big”. For example, ‘Montgomery’ blue spruce, a “dwarf” variety of the blue spruce tree *Picea pungens*, is estimated to grow to somewhere between 5 to 8 metres. That’s a big plant in a small garden, but much smaller than a full-sized blue spruce forest tree at 15 to 20 metres.

Dwarf and slow-growing plants can be divided into three categories: “miniature”, “dwarf”, and “intermediate or slow-growing”. Miniature conifers may only be 15 to 25 centimetres high after ten years; a dwarf conifer is in the 30 centimetres to 1.5m range and intermediate or slow-growing conifers reach 1.5 – 3 metres high in ten years. In common parlance, however, gardeners and nursery people tend to refer to all three categories simply as dwarf plants.

It’s important to remember that many slow-growers will nevertheless keep growing. Over time, it’s been surprising to me how quickly the years pass with the result that some of my dwarf conifers have outgrown the space I planned for them. I’ve also been surprised by the luck I’ve had transplanting a few of them. However, I think it’s better not to count on that. It’s better practice to plant conifers where you want them from the beginning. Fill in the spaces between young dwarf conifers with perennials or ornamental grasses and transplant them as the dwarf conifers fill in.

My readers will already be familiar with junipers for groundcover, ‘Bird’s Nest’ spruce as an evergreen shrub, and with small varieties of mugo pines. These are popular, useful, beautiful dwarf conifers. Beyond these, I’ve been lucky to find more unusual and exciting dwarf conifers through the ARHS Annual Plant Sale, as well as from Dave Veinotte, and other nurseries in Nova Scotia. Here’s a series of plant photos, showing various attributes of dwarf conifers. There are many more varieties to choose from. What is on offer changes from year to year. Make your choices from what’s available at plant sales and nurseries you visit. There’s no need to try to find these particular varieties.



Wintertime: with snow on Montgomery blue spruce, Just Dandy hinoki false cypress, and King’s Gap white fir, among others (*Picea pungens* ‘Montgomery’, *Chamaecyparis obtusa* ‘Just Dandy’, and *Abies concolor* ‘King’s Gap’).



Dwarf yellow hinoki false cypress (*Chamaecyparis obtusa nana lutea*).



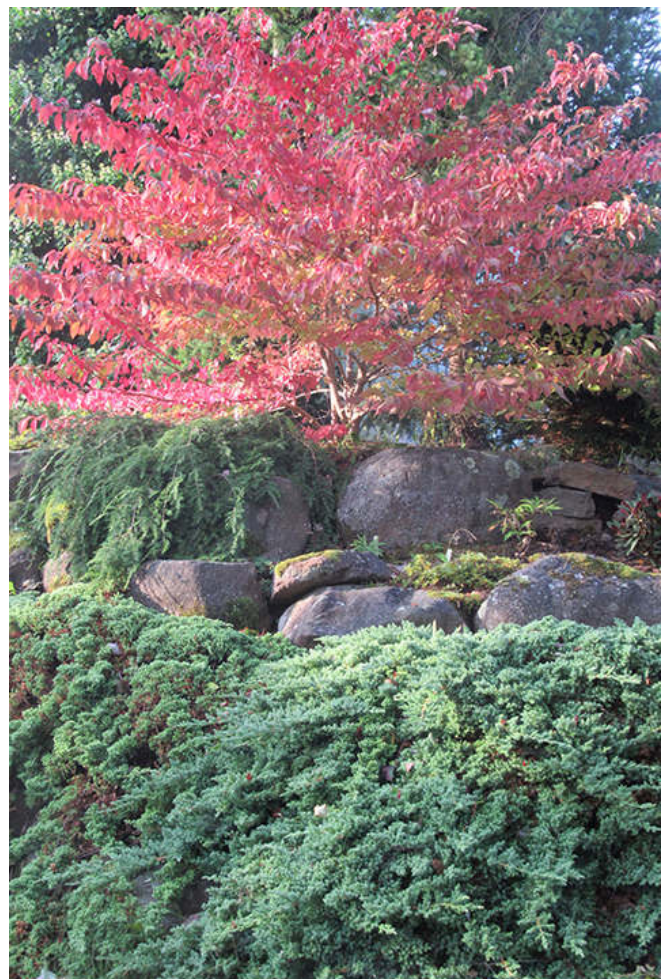
Golden Mop false cypress, Albert Globe white spruce, and Pink Chintz creeping thyme (*Chamaecyparis filifera* 'Golden Mop', *Picea glauca* 'Albert Globe', and *Thymus* 'Pink Chintz'),



Elf white spruce. This is a true miniature (*Picea glauca* 'Elf')



Goldilocks Japanese white pine -- showing the yellow new candles in spring (*Pinus parvifolium* 'Goldilocks')



Japanese dwarf garden juniper with Maries viburnum in fall colour (*Juniperus procumbens nana* with *Viburnum plicatum* f. *tomentosum* 'Mariesii')

### Some References and Resources

Bitner, R. (2007). *Conifers for Gardening: An Illustrated Encyclopedia*. Portland: Timber Press

Bloom, A. (2017). *Gardening with Conifers*. Richmond Hill: Firefly Books

Website of the American Conifer Society (an extensive database): <https://conifersociety.org/>

# Insight into Rhododendron Hardiness: The Effect of the Polar Vortex 2023 on Rhododendrons

Jamie Ellison

Hardiness is a complex concept and is further complicated when the temperature and moisture variables are erratic. Cold hardiness ratings do not always agree with plants observed after any given winter. Hardiness in most woody plants is established generally by minimum temperatures that a species or cultivar can tolerate over time. However, to understand plant hardiness, one must look at the entire growing season. Summer heat, moisture amounts, and timing of these all contribute to plant hardiness. However, for the most part, damage on *Rhododendrons* usually happens during the late fall and winter months and can be evaluated by the following aspects of winter hardiness:

1. Acclimation-Period - that plants acclimate from the end of the growing season to cold weather (Autumn-Early Winter)
2. Maximum Plant Hardiness-Lowest Temperatures - that plants can survive during midwinter (usually assigned as a plant zone)
3. De-acclimation/Re-acclimation Period - potential for plants to re-acclimate during periods of warm weather in winter

The acclimation period is when plants are setting and developing vegetative buds, flower buds, and lignifying stems in preparation for winter. Cold acclimation is also genetically determined by a complex response of biochemical and physiological reactions within the plant tissue. Variables during this period are the timing of cold, rate, and extent. Serious flower bud damage can occur particularly in climates where early autumn can experience low temperatures as flower buds are developing. Even the hardiest of species and cultivars can experience flower bud damage if this occurs. A favorable acclimation period would be somewhat less moisture and days getting progressively cooler with light frosts starting in mid-late autumn. Decreasing light levels and cooler temperatures trigger internal responses within the plant cells. During the acclimation of inactive floral buds, water moves from frost-sensitive undeveloped flowers and peduncles (flower stalk) to frost-tolerant tissues like vegetative buds and flower bud scales. High water content in cells renders the plant more vulnerable to mechanical damage from extracellular (outside the cell) freezing and can potentially lead to intracellular (inside the cell) freezing which is always lethal as it destroys the protoplasm (living parts) of the cell by rupturing the cell wall. The result of this is ultimately dead tissue.

If the acclimation period is favorable plants generally can survive low temperatures down to its maximum low temperature rating. If temperatures exceed hardiness ratings one can expect damage usually in this direction.



If there is snow cover or if the plants have been mulched or are well established, root damage is generally avoided. Flower buds are always less hardy than the stems and leaves and the first to show damage from cold weather. The freezing tolerance that is gained during cold acclimation is abandoned in reaction to warm/spring like temperatures in winter. Erratic temperature oscillations, the occurrence of unseasonably mild conditions followed by a rapid freeze, can damage prematurely de-acclimated tissues and produce winter damage on flower buds, leaves, and stems, resulting in dead floral pips, stem dieback, and leaf desiccation.

The 2022 and 2023 growing season was a real challenge for those of us growing *Rhododendrons* in Nova Scotia and perhaps in other areas in Atlantic Canada. Upon reflection, the 2022 season started off with a somewhat normal spring but soon transformed into a hot, droughty summer particularly in the southwestern Nova Scotia and the Annapolis Valley. Heat and humidity with spotty rain events were trending well into the late autumn. Warmish days soon transformed into incessant rain events and continued into warmer than normal temperatures with little or no frost in December. January 2023, the rain continued with mild temperatures with a few low double digits minus nights experienced inland while the coast only received minus single digit nights. These continued until the Polar Vortex had most of the Northeast in its brief icy grip on February 3<sup>rd</sup> with a quick exit on February 5<sup>th</sup>, 2023. Newfoundland largely escaped the carnage while most of the Maritimes had temperatures plunge from low -30°C in northern New Brunswick to -21°C. in southern Nova Scotia. This was followed by 80+ km/h winds that were relentless over a 36-hour period. Windchills (while not an actual temperature) were in the -40°C range. In Nova Scotia, Saturday (February 4) warmed up to a balmy -17 to -18°C until early Sunday morning when temperatures began a rapid rise back to the plus side of 0°C.

This “Perfect Storm” of events seems to have contributed to extensive flower bud damage even on reliably hardy cultivars. Further damage may be revealed this spring when latent injury could eventually expose leaf and stem damage. A recent flower bud dissection is showing extensive damage on hardy cultivars (Figs.1 and 2) and 100% flower bud loss (Fig. 3) on tender species and cultivars.



Fig. 1 - Extensive flower bud



Fig. 2 - R. 'Mist Maiden'



Fig. 3 - 100% loss

Fig. 4 illustrates minimal damage on a flower bud dissected from *R. 'Catalode'* housed inside an unheated poly tunnel.

Fig. 5 shows a comparison of unprotected and protected flower buds.

One may ask how a sheet of 6-8mm white plastic could reduce the effect of the extensive damage seen on unprotected plants. One possible explanation is that the plastic slows down the rapidity of freeze/thaw cycles and while the plant inside the poly tunnel experienced similar temperatures, it did so over an extended period of time. The plastic also eliminated the velocity and effects of the desiccating winds that ensued with the event.



Fig. 4 Slight damage.

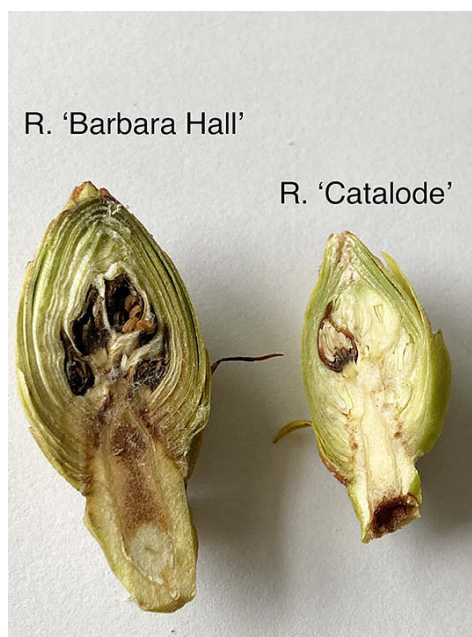


Fig. 5-Unprotected and protected plants

In conclusion, it appears that plants possibly did not acclimate well in 2022. Acclimation may have been delayed by the very warm autumn that extended into warm wet periods in early winter. Some possible explanations may be interpreted:

- Re-acclimation potential diminishes with an increasing de-acclimation period
- Mild temperatures can stimulate plants to de-acclimate
- Hardy cold tolerant plants tend to de-acclimate faster.

In the Annapolis Valley, we experienced a few nights of -10°C to -12-ish °C between exceptionally long periods of abnormally warm days. Some early potential flower bud damage could have occurred at this point. Long frost-free periods for most of January followed culminating in a Polar Vortex event on February 3<sup>rd</sup>, 2023, which is what we are witnessing now.

On a more favorable note, soils during this period were generally unfrozen and there was some snow accumulation before the rapid temperature fall. Roots for the most part should have been protected and shouldn't have been damaged. Plants and vegetative buds at this point look to be in good condition albeit a bit early to assess fully.

#### Information Sourced

<https://scholar.lib.vt.edu/ejournals/JARS/v38n2/v38n2-pellett.htm>

<https://scholar.lib.vt.edu/ejournals/JARS/v23n1/v23n1-havis.htm>

<https://scholar.lib.vt.edu/ejournals/JARS/v40n4/v40n4-pellett.htm>

<https://cdnsiencepub.com/doi/10.1139/cjr38c-043>

[https://www.researchgate.net/profile/Scott-Kalberer/publication/222815400\\_Deacclimation\\_and\\_reacclimation\\_of\\_cold-hardy\\_plants\\_Current\\_understanding\\_and\\_emerging\\_concepts/links/5bb24be1299bf13e6059e6b2/Deacclimation-and-reacclimation-of-cold-hardy-plants-Current-understanding-and-emerging-concepts.pdf?origin=publication\\_detail](https://www.researchgate.net/profile/Scott-Kalberer/publication/222815400_Deacclimation_and_reacclimation_of_cold-hardy_plants_Current_understanding_and_emerging_concepts/links/5bb24be1299bf13e6059e6b2/Deacclimation-and-reacclimation-of-cold-hardy-plants-Current-understanding-and-emerging-concepts.pdf?origin=publication_detail) α



R. 'Minas Grand Pre'. [Phpto John Weagle]

# Nature-based Approaches to Storm Water Management

Stephen Cushing

Midcentury ‘out of sight, out of mind’ approaches to managing storm water still dominate how we collect and distribute excess water from impervious surfaces. More temperate communities on the west coast of North America have been experimenting with alternative and nature-based approaches to water management for generations. However, cold climate applications are more recent but are beginning to emerge as accepted practice.

With patterns of unpredictable and intense water-related weather, property owners and governments are increasingly looking to nature-based solutions to mitigate the effects of climate change. In Canada, storm water management policy and practice falls to municipalities and local water utilities to coordinate. This has varying levels of success given location-specific mandates to manage storm water volume and/or quality. The solutions, if focused on volume control alone, often feel more engineered than natural with little capacity to filter or buffer direct flows into waterways. A recent parliamentary policy change in the United Kingdom will be an important one to watch. The government updated the *Flood and Water Management Act* to mandate sustainable drainage in all new developments in England. The impetus was climate risks associated with overwhelmed storm sewers and waterways.

A combination of engineered and horticultural approaches can be useful in adapting landscapes and communities for the challenges experienced with a changing climate. Permeable paving, bio-swales, rain gardens, detention ponds, and wetlands, are useful combinations of solutions to slow the release of water into waterways, filter pollutants through plant material and soil, and stabilize soil.



Figure 1: Residential-Scale Rain Garden with a planted soil berm and deep gravel drainage bed.

## What Do These Solutions Look Like?

Nature-based storm water solutions like rain gardens and bio-swales are depressions in the landscape that are designed to collect water from roof tops and paved surfaces, hold it temporarily, and allow for the slow recharge of ground water. The size of these systems can be as small as a few square meters or measured in hectares, depending on the volume of water to be intercepted.

To appropriately size a storm water solution, more complicated sites require detailed calculations to reflect water capture area, slopes, surface materials, and rate of permeability. Large capture areas often require a backup drain tied into a drainage system to prevent overflows when fully saturated or when the ground is frozen. On a residential property these calculations are usually not necessary, but an important take-away is to know where the water is coming from and that the water must go somewhere; it does not disappear once it soaks below the surface.



Figure 2: Soil Cells. Highly impervious situations can be engineered to have planted soil cells with backup drains tied into the municipal system. This was the case with the Argyle Street streetscaping project in Halifax,

Understanding the topography and geology of your location will be helpful to avoid making your former problem, someone else's current problem.

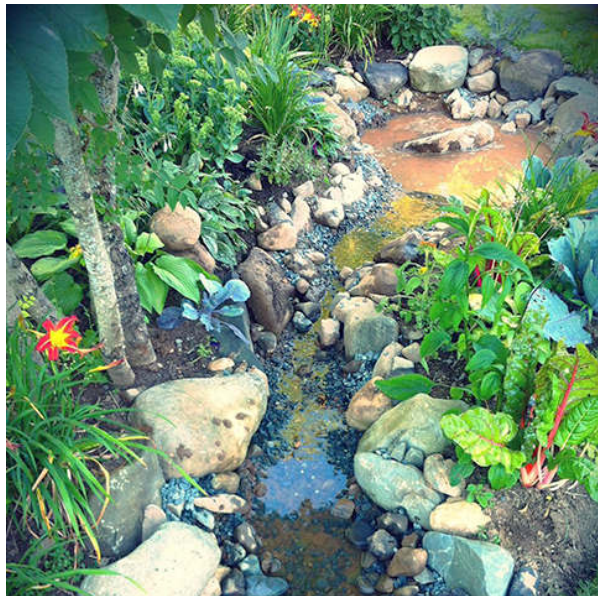


Figure 3: Residential-Scale Rain Garden with dry riverbed and holding pond with cultivated perennials and annuals,

### Selecting Plants for Nature Based Solutions

The landscape design, plant selection, and maintenance of nature-based systems are incredibly important for the system's effectiveness and acceptance. Joan Iverson Nassauer, an American landscape architectural academic, studies human perceptions of landscapes. Decades of research suggests that designing and managing naturalized landscapes and storm water infrastructure purely for its function, risks failing to gain public support. Designing for human experience, including landscape aesthetics and horticulture quality, is essential to showcase a change in landscape and water management.

In addition to considering some of the basic principles of good landscape design (i.e. texture, line, colour, form, mass) the suitability of plant species will vary depending on the level of water holding required. These systems can be difficult environments with standing water when precipitation is at its peak and drought conditions when there is little precipitation. One way to expand the range of useable plant species is to create several planting zones with varying levels of drainage (e.g. dry, moist, marginal, submerged). Whatever the layout and combination of plant material, there is no reason why storm water management cannot offer seasonal interest and aesthetic enjoyment. ☐



Figure 4: Institutional Rain Garden beside a permeable paver bike parking pad.



Figure 5: Institutional Rain Garden with a central drainage channel, curb cuts to allow road drainage, and perennial plantings.

## Joe's Jottings #19:

### The Big One – 'Tai Haku' – the only Japanese Cherry not from Japan

Joe Harvey

I live on a beautiful island in the Pacific Ocean, I tell my friends. They think I am pulling a fast one but it is true. The only nagging problem with Vancouver Island is the thought about the 'Big One'. This is the name for the coming major break in the Cascadia Fault off the island and the huge tidal wave that will accompany it. It is due any day (or century, it is a bit vague). The previous one was on 26 January 1700 (at about 9 PM, for the details people). We know that because, the date was recorded by the Japanese as a tsunami (literally, harbour flood) when it arrived.

I was surprised to see the 'Big One' when I visited the Abkhazi Garden in the 1980's. But this is a different 'big one', an ornamental flowering cherry. Now most people call it a Japanese cherry but I know it is not, and here is why.

#### Captain Collingwood Ingram (1880-1981)

The central figure in introducing the 'Big One' is Collingwood Ingram who inherited the family estate, the Grange, at Benenden, Kent. He was a keen birdwatcher at first, wrote a book, prepared illustrations and while I am sure he had a pair of binoculars, there is nothing that beats a bit of birdshot for observing the fine details. In World War 1 he volunteered in the Army Cyclists Corp (don't laugh, anyone who can bag a pheasant at 50 feet can put a rifle bullet where it hurts), then the Royal Flying Corp, precursor of the Royal Air Force (RAF).

When the Great War was over, he decided to concentrate on planting the estate with rare trees, eventually getting more and more into ornamental cherries. This enabled him to write the definitive book on Japanese cherries and this gave him his nickname 'Cherry Ingram'.

Now the Japanese unofficial national flower is *Sakura*, the cherry blossom (the chrysanthemum is the royal flower) and viewing the haze of flowers during the short blooming period in spring is a national passion. The closest I have got is viewing the blossoms around the Tidal Basin in D.C., the result of a gift of trees from Japan to the American people, and it was a wonderful experience.

Naturally there is a Japan Cherry Society, so of course they invited this surprise expert in their tree from the other side of the world to be the principal speaker, which 'Cherry' did. As an honoured guest they show him precious ancient manuscripts of cherries with beautiful watercolour paintings.

"Which is that one?" He said, pointing to a blurry but beautiful painting on one manuscript.

"We don't know", was the reply. "It is extinct and there is no name attached to it."

"Well," he said, "I have that one on my estate."

'Cherry' Ingram got this cultivar in 1923, when a lady in Sussex got in touch with him about a falling-down rotten cherry she had got in a consignment of trees from Japan in 1900. Not knowing which one it was, he propagated it. But how was he able to be so confident that the one in the Sussex garden was the same as in the manuscript? Easy, it had enormous white flowers, bigger than any other cherry, which is exactly how I recognised it when I saw it in Abkhazi Garden, having never seen one before.

So there was no traditional Japanese name, but to speak about it, they needed a nickname. How about 'Big One'? Fine, so that is what it is called, which is ridiculous except that in Japanese it is spelt "Tai Haku" which sounds really good to anyone who isn't Japanese. Real translation: Big White Cherry, and it can also be printed as one word: 'Taihaku'.

In the 1980's Al Smith was the nursery expert on cherries and most other plants. He had worked for Victoria Parks for about a century and saw the early planting after World War Two of the streets of Victoria with Japanese flowering cherry trees. He confirmed that 'Tai Haku' had been planted along Fairfield and there might be survivors. I could not find one and so far as I know the pair in Abkhazi are the last in the district. (Al is now in a nursing home).

For anyone wanting one, I found that softwood cuttings are really easy to root in one of my 'Joe's Cookers' and I have a few planted into one gallon pots in my backyard. They are available for a good cause. But amateur growers are terrible at not pruning their trees, and rooted cuttings need several years of side shoot removal to develop a good standard trunk. Show small plants no mercy. Clip off the side branches and develop height. Commercial growers often graft at the top of a tall seedling cherry and then you get a mess of basal shoots, so I much prefer cuttings. The Abkhazi trees are obviously from cuttings and have survived from presumably the 1950's. ♪

# Iceland: Its Geography, Botany and Rhododendron Gardens

*Reprinted from the Journal of the American Rhododendron Society from Volume 77, Number 1, Winter 2023, pp 14 - 25.  
Thanks to the author and the American Rhododendron Society for permission to include it herein".*

Glen Jamieson  
Parksville. BC,  
Canada

Photos by author  
except as noted.



In May, 2017, Kristian Theqvist was invited to Iceland by Vilhjálmur Lúðvíksson, a keen and knowledgeable gardener and a past president of the Icelandic Horticultural Society, to advise interested rhododendron growers there on how best to grow rhododendrons. Kristian is a successful rhododendron grower in Turku, Finland, which has some similar climate characteristics to Iceland, but soils that are markedly different. He summarized his four-day visit there and the advice he gave to the Icelanders in a detailed JARS article (Theqvist 2018). Here, I expand on his observations, as in June 2022, my wife Dorothy and I, along with another couple, spent two weeks

circumnavigating Iceland. It was our first time there and apart from visiting many of its scenic locations, I was particularly interested in Iceland's botany and the recent successes Icelandic gardeners were having in growing rhododendrons. This article thus gives a brief overview of Iceland's geography, weather and its botany, refreshing readers of some of the descriptions given by Theqvist (2018), but in addition, showcasing some native plants, Iceland's public gardens, and some private rhododendrons gardens.

## Geography

As a refresher, Iceland is a Nordic island country in the North Atlantic Ocean (Fig. 1) just south of the Arctic Circle and is the most sparsely populated country in Europe. It is the biggest land mass on top of the Mid-Atlantic Ridge, a divergent tectonic plate boundary (Mid-Atlantic Rift, Fig. 2) that separates the North American and the Eurasian Plates. Its central volcanic plateau is erupting quite frequently (Fig. 3), in fact

as recently as July-August 2022. Its interior consists of an unpopulated plateau characterised by sand and lava fields, mountains, and glaciers, with many glacial rivers that flow to the sea through the island's lowlands (Fig. 4). The result are innumerable, spectacular waterfalls as the rivers drop off the elevated plateau (Fig. 5a,b).

Iceland is Europe's second-largest island after Great Britain, being slightly larger than Ireland. The main island covers 101,826 km<sup>2</sup> (39,315 mi<sup>2</sup>), of which 62.7% is tundra (Fig. 6). There are also about 30 minor islands that cover an additional 1200 km<sup>2</sup> (675 mi<sup>2</sup>). Lakes and glaciers cover 14.3% of its surface and only 23% is vegetated (Fig. 4). Its highest elevation is 2110 m (6923 ft) and many fjords punctuate its 4970 km (3088 mi) coastline, which is also where most settlements are situated. Its overall population is about 376,000, and its capital and largest city is Reykjavík, which (along with its surrounding areas) is home to over 65% of the population. Its second largest city is Akureyri (Fig. 7), located on the



Fig. 1. Location of Iceland in the North Atlantic Ocean. Source: en.wikipedia.org.

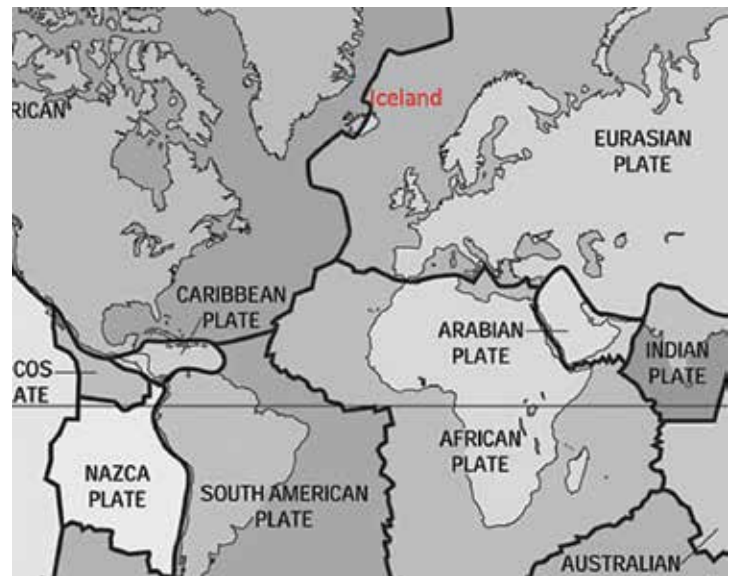


Fig. 2. The Mid-Atlantic Ridge's path through Iceland. [https://commons.wikimedia.org/wiki/File:World\\_tectonic\\_plate\\_map\\_large.png](https://commons.wikimedia.org/wiki/File:World_tectonic_plate_map_large.png)

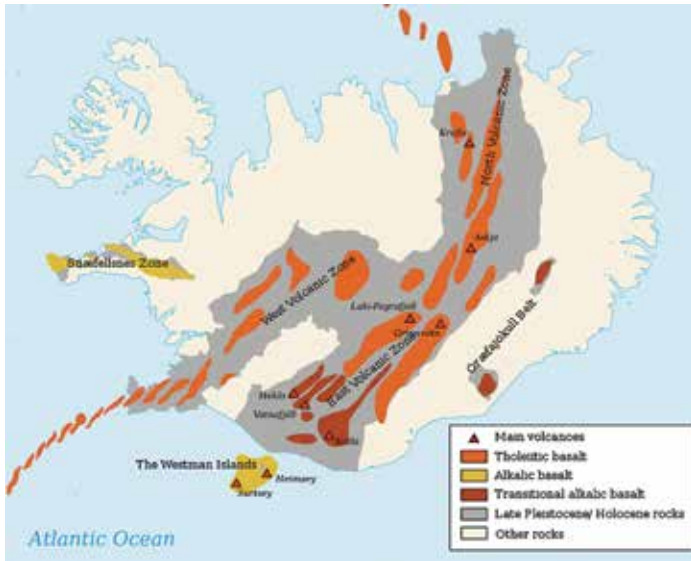


Fig. 3. Areas of volcanic activity in Iceland along the Mid-Atlantic Ridge. Source: en.wikipedia.org



Fig. 4. Iceland topographic map. Dark green and brown = < 500 m, Light green = > 500 m, white = glaciers. Red lines = main highways, and the Ring Road around the country. Source: en.wikipedia.org



Fig. 5a. Icelandic waterfall. Unnamed. Photos: Stewart Yee.



Fig. 5b. Icelandic waterfalls. Dynjandi Waterfall. Photos: Stewart Yee.

north coast with a population of about 19,000. Most other coastal settlements each have only 600-2000 residents.

## Volcanism

Iceland is one of the most active

the notorious Eyjafallajökull eruption in 2010, which stopped all air traffic over Europe for several days by spewing plane engine-abrasive ash in the air, and more recently in March 2021 and again in August, 2022, near Fagradalsfjal on

the Reykjanes Peninsula.

The nature of eruptions in Iceland is diverse, from small effusive eruptions where lava flows quietly from fissures and crater rows to large explosive eruptions in ice-covered central volcanos that produce large ash plumes and significant flash-flooding from melted ice. The latter can destroy buildings, roads and bridges, and cover large areas deeply with gravel and sand washed down from the highlands. A major eruption came in the Vestmann Islands in 1963. That eruption buried a fishing town of 5500 inhabitants with ash and lava, and the



Fig. 6. Köppen climate types of Iceland. Grey = tundra, green = Subpolar oceanic. Source: en.wikipedia.org



Fig. 7. Akureyri. Photo: Dorothy Jamieson.

whole population had to be evacuated overnight. Another example is the 565 km<sup>2</sup> (218 mi<sup>2</sup>) Eldhraun lava field, the world's largest recorded lava flow, from an eight-month long eruption in 1783-84. The particular eruption, known as Skaftáreldar (the Skaftá River Fires), a 27 km (16 mi) long eruptive fissure consisting of 130 craters on the southwest side of the Vatnajökull Glacier), that created this immense lava field is considered to be among the most poisonous (toxic ash and a widespread sulphuric aerosol cloud) recorded to date. It significantly reduced sunlight for three years and had a huge impact on Iceland. The entire population was nearly forced to evacuate in a mass migration to Denmark due to the resulting disease and famine that killed

more than half the island's domestic animals and 25% of the human population. Even much of Europe was affected by reduced sunlight and its impact on agricultural production. In Great Britain, over 20,000 people died and the 1783 summer is known as the Sand Summer due to the fallout of ash and its climate impact. At its peak, about a quarter of the earth's surface was impacted by the aerosol cloud, all land north of 30° latitude.

### Climate

Iceland's coastal climate is subarctic (Fig. 6), and the warm North Atlantic Current (the northern extension of the Gulf Stream beyond Newfoundland) ensures generally higher annual temperatures than in most places of similar latitude in the world. Regions

in the world with similar climates include the Aleutian Islands, the Alaska Peninsula, and Tierra del Fuego, although these regions are closer to the equator. Despite its proximity to the Arctic, the island's coasts remain ice-free throughout the winter.

Iceland's climate varies between different parts of the island. Generally speaking, the south coast is warmer, wetter, and windier than the north. The Central Highlands are the coldest part of the country and low-lying inland areas in the north are the most arid. Snowfall in winter is more common in the north than in the south.

The country's highest air temperature recorded was 30.5° C (86.9° F) in 1939 at Teigarhorn on the southeastern coast, the lowest was -38° C (-36.4° F) in 1918 at both Grímsstaðir and Möðrudalur in the northeastern central plateau, while maximum/minimum temperature records for Reykjavík were 26.2° C (79.2° F) in 2008 and -24.5° C (-12.1° F) in 1918. The average temperature for Reykjavik in January has been around 1° C (33.8° F) for many



Fig. 8. Iceland's regions. Source: orangesmile.com



Fig. 9. Atlantic puffins (*Fratercula arctica*).

decades. Like much of the world, annual minimum temperatures in recent years are becoming warmer.

Both southwestern Iceland (e.g., Reykjavik) and the ends of the deep fjords on the north coast (e.g., Akureyri) have subpolar oceanic climates (Fig. 6). Minimum monthly average Reykjavik temperatures are  $-3^{\circ}\text{C}$  ( $26^{\circ}\text{F}$ ) in the winter and  $13^{\circ}\text{C}$  ( $55^{\circ}\text{F}$ ) in the summer. Minimum/maximum monthly average Akureyri temperatures are  $-6^{\circ}\text{C}$  ( $22^{\circ}\text{F}$ ) in the winter and  $15^{\circ}\text{C}$  ( $59^{\circ}\text{F}$ ) in the summer. Annual rainfall ranges from 300 to 700 mm (12 to 28 in) in the north and from 1270 to 2030 mm (50 to 80 in) in the south, with mountain areas wetter.

What also characterises Iceland are its strong winds, especially in southern areas. Wind speed in the lowlands reaches 65 km/h (40 miles/hr) on 10–20 days per year, but on upwards of 50 days per year in places in the highlands. Its strongest measured 10-minute sustained wind speed is 225 km/h (140 mi/hr) and the strongest gust was 267 km/h (165 mi/hr). Driving around the country, we frequently saw smaller waterfalls where all the falling water never reached the bottom but was rather blown sideways or even back up over the top of the precipice. Climate road signs often showed both temperature and wind speed to warn travellers of conditions ahead. When you park a car and its windy, you are advised to park the car facing upwind, so the doors are not whipped back and damaged when they are opened!

Being so far north, day length varies from about 22 hours in late June to two hours of twilight in late December.

## Regional Geography

From a tourist perspective, Iceland has eight regions (Fig. 8), the Capital Region, Southern Peninsula, West, Westfjords, Northwest, Northeast, East and South that are intended to assist with planning a holiday in Iceland, and are therefore primarily geographical,

rather than administrative. We visited all of them, and while outside of the Capital region, they all had similarities (lots of grazing sheep, largely treeless landscapes, and large areas covered with Alaska lupins), they were each also unique. Reykjavik in the **Capital Region** is the world's northernmost capital of a sovereign state and has all the characteristics of a modern city, although with a relatively small, folksy downtown surrounded by newer suburbs.

The **Southern Peninsula** of Reykjanes is very active volcanically and has lava and the mountains of the Mid-Atlantic Ridge in the background. It also has the Keflavik International Airport, hot springs (e.g., Blue Lagoon) and the Álfagjá rift valley, spanned by the Bridge Between Continents (tectonic plates).

The **West Region** is one of the most geologically diverse regions, with the stratovolcano Snæfellsjökull, the crown jewel of Snæfellsjökull National Park.

**Westfjords** is the least populous region (7115 people), lying on the Denmark Strait facing the east coast of Greenland. It is connected to the rest of Iceland by a seven km (four mile) wide isthmus, and is very mountainous, with the coastline heavily indented by dozens of fjords surrounded by steep mountains and cliffs, making roads very circuitous. Its Látrabjarg cliffs (14 km (eight miles) long and up to 440 m (1445 ft) high) are the longest bird cliffs in the northern Atlantic Ocean, with millions of birds, including Atlantic puffins (Fig. 9, *Fratercula arctica*), Northern gannets (*Morus bassanus*), guillemots (Common murre (*Uria aalge*)), and razorbills (*Alca torda*).

**Northwest Iceland** is much gentler and less forbidding than the Westfjords, with undulating meadows dotted with isolated barns and farmhouses.

**Northeast Iceland** is a showcase of volcanic and geothermal landforms surrounding Lake Mývatn and Ásbyrgi Canyon. It also has the Dettifoss waterfall in Vatnajökull National Park,

the second most powerful waterfall in Europe, and Akureyri, Iceland's Capital City of the North.

Travelling eastward through the lunar landscape of Möðrudalur on the interior highlands is **East Iceland**, with the fertile valley of Hérað. Its landscape has narrow fjords, jagged peaks, toppling waterfalls, geothermal hotspots, and for Iceland, small lush, recently planted forests. It has a wild population of introduced Reindeer (Caribou, *Rangifer tarandus*) and the spectacular Jokulsarlon Glacier, with its icebergs in a lagoon adjacent to the sea.

**South Iceland**, just east of the Capital Region, has marshlands, bays, cultivated pastures, estuaries and black sand deserts. It is also the location of the Golden Circle, a one to two-day scenic driving loop from Reykjavik, with the Sólheimajökull Glacier, Geysir Hot Springs, Gullfoss Waterfall, Kerið Crater, and Þingvellir National Park (from 930–1844 AD, the historic initial meeting place on the Mid-Atlantic Rift of the world's longest running, still ongoing parliament).

## Botany

When the island was first settled in 874 AD, it was extensively forested, with around 30% of the land covered in trees, mostly the northern birch (*Betula pubescens*) which formerly formed forests over much of Iceland, along with small stands of common aspens (*Populus tremula*), mountain ash (*Sorbus aucuparia*), common junipers (*Juniperus communis*) and other smaller trees, mainly willows (*Salix* spp.). Permanent human settlement greatly disturbed this isolated ecosystem of thin, volcanic soils and its limited species diversity. The original birch forests were heavily exploited by medieval Vikings and their descendants over the centuries for firewood and timber. Deforestation, climatic deterioration during the Little Ice Age (1500–1850 AD), and overgrazing by livestock (cattle and sheep) imported by the settlers has



Fig. 10. A small natural northern birch (*Betula pubescens*) "forest" in Ásbyrgi Canyon, Vatnajökull National Park.



Fig. 11. Icelandic mountains, with no forests.

Fig. 12. Some of the more visible native Icelandic plants, and the exotic Alaska lupin.



Fig. 12a. Mountain Avens (*Dryas octopetala*) National Flower of Iceland.



Fig. 12c. Heath spotted orchid (*Dactylorhiza maculata*).



Fig. 12f. Wood cranesbill (*Geranium sylvaticum*),,

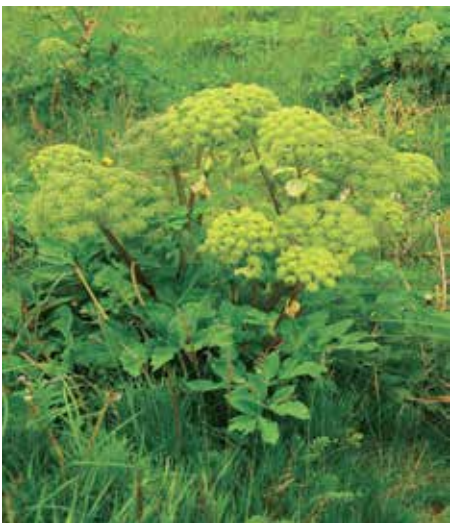


Fig. 12b. Angelica (*Angelica archangelica*),



Fig. 12g. Pink Creeping Thyme (*Thymus praecox* subsp. *arcticus*),



Fig. 12e. Perennial Cornflower (*Centaurea montana*),



Fig. 12d. Marsh marigold (*Caltha palustris*),



Fig. 12h. Woolly fringe moss (*Racomitrium lanuginosum*) on lava.



Fig 12i. Woolly willow (*Salix lanata*), and J. Alaska lupin (*Lupinus nootkatensis*)

caused a loss of critical topsoil due to erosion. The sheep culture is deeply embedded in Icelandic heritage and the erosion effects of open range grazing on the landscape are only being slowly recognized by farming communities.

The environmental consequence today is that many farms have been abandoned and three-quarters of Iceland's area remains degraded by soil erosion. Today, only a few small birch stands (Fig. 10) remain in isolated reserves and while the planting of new forests has increased the number of trees of many species, often alien ones, the forested result remains far less than the extent of the original forests. Only about 2% of the land is now covered by forests of which about 0.5% are newly planted.

Vegetation does not extend above about 300 m (1000 ft), so with a lack of forests, the hills and mountains show



Fig. 12j. Alaska lupin (*Lupinus nootkatensis*).

all their geological details, and rivers, streams and waterfalls are readily visible from a great distance (Figs. 5,11). Excluding mosses, lichens, and algae, Iceland has about 490 plant species: three endemic, and about 100, 10 and 150 clearly European, American and circumpolar, respectively ([http://www.iceland-nh.net/plants/background\\_plants1.html](http://www.iceland-nh.net/plants/background_plants1.html)). These consist of heathers and a few other low evergreen plants, grasses and a variety of small herbaceous species (Fig. 12). By far the most dominant, visual species in June and early July is the alien, vibrant purple Alaska lupin, *Lupinus nootkatensis*, brought

to Iceland in 1945 by Hákon Bjarnason, the representative of a committee tasked to select plants that might do well in the harsh Icelandic landscape as a means both to add nitrogen to the soil and to function as an anchor for organic matter. In this respect is has done

exceptionally well. However, although in places a monoculture (Fig.13), not a single native species of plant has been lost due to alien imports to date.

### Public Gardens

There are two main public botanical gardens in Iceland, one in Reykjavik and the other on the north coast in Akureyri. The Reykjavik Botanical Garden was founded in 1961 and is run by the City of Reykjavík. Its main role is to conserve plants for education, research and delight (Fig. 14a-f). Its Director is Hjörtur Þorbjörnsson, and he and Vilhjálmur Lúðvíksson kindly toured us around its 4.7 ha (11.6 acres), which includes about 5000 accessions of 3000 taxa in eight plant collections. Of those, they have 45 living accessions of 35 rhododendron taxa and cultivars (Table 1A). The collection is thus very small, and a number of rhododendrons there seemed to be stressed (Fig. 14f). They add no amendments to the soil for rhododendrons, and do not use garden soils that have added lime. Hjörtur noted that the soil in the Botanical Garden is quite peaty but also wet and cold, so is not ideal for rhododendrons. Staff thus try to lift the borders when beds are made, and they mulch, either with compost or leaves.

The Akureyri Botanical Garden (Lystigarðurinn Akureyri), the world's second-most northern botanical garden at 65.68° N, has a similar collection of rhododendrons, with 39 rhododendron species and hybrids growing in the garden, represented by 63 living specimens. They were growing in raised beds (Fig. 15a,b) and were in generally good condition (Fig. 15c,d,e), perhaps because of better soil and being on a slope, which allows colder air to flow downwards and away from the garden. Nothing is added to the acidic soil in the rhododendron beds apart from softwood mulch when required and the rhododendrons are watered sparingly throughout the drier months.

We arrived in Akureyri late in the day,



Fig. 13. A monoculture of the Alaska lupin, *Lupinus nootkatensis*.



Fig. 14. Reykjavik Botanical Garden. a) Plantings of different herbaceous plant species.



Fig. 14b. Rock garden.



Fig. 14c. *Meconopsis betonicifolia*, the Himalayan blue poppy.



Fig. 14d. *Dodecatheon pulchellum*, the shooting star.



Fig. 14e. Two of its 35 rhododendron taxa, *R. degronianum* subsp. *yakushimanum* 'Dreamland' (left) and 'Blumeria' (right).



Fig. 14f. *R. oreodoxa* var. *fargesii*.

Fig. 14a-f. At the Reykjavik Botanical Garden.

but because the day length in June was about 22 hr, I was still able to explore the garden on my own late in the evening and take photos. Unfortunately though, this prevented me from meeting Travis Prymr Heafeld, the garden's botanist, but through Vilhjálmur I was able to contact him, and he kindly sent me the names of rhododendrons they are currently growing (Table 1B). There were a further approximately 100 species/cultivars tried in the garden that did not survive.

The Akureyri Public Park was first opened in 1912 and the botanic section was added in 1957. The park has been enlarged three times since 1912 and is now about 3.6 ha (8.9 acres) and lies 40-50 m (130-165 ft) on a slight slope above the fjord near midtown.

The aim of the botanical garden is to grow trees, shrubs and perennials (e.g., Fig 16 A-D) in the demanding climate of Northern Iceland, which is characterized by pronounced seasonality of temperature and a greatly variable day length. Akureyri is situated near the relatively sheltered end of Eyjafjörður (Fig. 6), which is one of the longest fjords in Iceland and thus provides a favourable microclimate for plant growth. Beside the 430 native species, there are 6600 alien taxa growing in the garden. The garden is an International Plant Exchange Network (IPEN) member and is active in seed-exchange, public information, education and recreation.

### Private Gardens

We were able to visit two private gardens, one about 60 km (37 miles) north of Reykjavik and the other about 50 km (30 miles) east. The former is the impressive 7 ha (17 acre) garden on



Fig. 15. Akureyri Botanical Garden. a) Rhododendrons in raised beds.



Fig. 15d, 'Scarlet Wonder'.



Fig. 15b. Rhododendron beds in a sloping garden.



Fig. 15e Tigerstedt Group.



Fig. 15c. 'Jackwill'.

15 ha (37 acre) of land of Sólveig Jónsdóttir and Ólafur Jónsson (Fig. 17), probably the most experienced amateur collectors and growers of rhododendrons in Iceland. Located on a treeless plain, they built their cottage in 1999, but first had to plant trees to create a "forest" to provide a wind break and shade before starting to plant rhododendrons in 2011. Their climate's minimum winter temperature is now about  $-12^{\circ}\text{C}$  ( $10.5^{\circ}\text{F}$ ). The average temperature in the winter is now about  $-4$  to  $-2^{\circ}\text{C}$  ( $25$  to  $28.5^{\circ}\text{F}$ ).

In plantings, they use both local soil materials and peat, and before planting, loosen the soil around the hole for better aeration. They dig 50



Fig. 16. Akureyri Botanical Garden. A) Display garden, B) Rock garden..

A.

‘Blumeria’	<i>R. catawbiense</i> ‘Grandiflorum’
‘China Boy’	<i>R. catawbiense</i> ‘Roseum Elegans’
‘Cunningham’s White’	<i>R. caucasicum</i>
‘Gartendirektor Glocker’	<i>R. dauricum</i>
‘Gartendirektor Riegerer’	<i>R. degonianum</i> subsp. <i>heptamerum</i>
‘Vigdís’	<i>R. mucronulatum</i>
<i>R. brachycarpum</i>	<i>R. myrtifolium</i>
<i>R. brachycarpum</i> subsp. <i>tigerstedtii</i> [= subsp. <i>brachycarpum</i> ]	<i>R. occidentale</i>
<i>R. degonianum</i> subsp. <i>yakushmanum</i> ‘Dreamland’	<i>R. oreodoxa</i>
<i>R. degonianum</i> subsp. <i>yakushmanum</i> ‘Koichiro Wada’	<i>R. oreodoxa</i> var. <i>fargesii</i>
<i>R. fortunei</i>	<i>R. purdomii</i>
<i>R. hirsutum</i>	<i>R. racemosum</i>
<i>R. impeditum</i>	<i>R. schlippenbachii</i>
<i>R. luteum</i>	<i>R. smirnowii</i>
<i>R. mole</i>	<i>R. ungerii</i>
<i>R. calendulaceum</i>	R. unknown (3).
<i>R. catawbiense</i>	

B.

Fraseri Group	‘Ramapo’
‘Aksel Olsen’	‘Rosa Mundi’
‘Cassata’	‘Scarlet Wonder’
‘China Boy’	‘Sun Fire’
‘Christmas Cheer’	<i>R. brachycarpum</i> ‘Roseum’
‘Christmas Cheer’	<i>R. calostrotum</i> ‘Rock’s form’
‘Cunningham’s White’	<i>R. campylocarpum</i>
‘Cunningham’s Snow White’	<i>R. catawbiense</i>
‘Elvira’	<i>R. caucasicum</i>
‘Ems’	<i>R. fauriei</i> (= <i>R. luteum</i> )
‘Eskimo’	<i>R. ferrugineum</i>
‘Goldbukett’	<i>R. ferrugineum</i> X <i>R. hirsutum</i>
‘Helsinki University’	<i>R. hirsutum</i>
‘Jackwill’	<i>R. japonicum</i>
‘Lee’s Dark Purple’	<i>R. myrtifolium</i>
‘Maharani’	<i>R. nitidulum</i> var. <i>omeiense</i>
‘Mikkeli’	<i>R. oreodoxa</i> var. <i>fargesii</i>
‘Norfolk Candy’	<i>R. smirnowii</i>
‘Percy Wiseman’	<i>R. watsonii</i>

Table 1. Rhododendron species and cultivars currently growing in the A. Reykjavik Public Garden (Hjörtur Þorbjörnsson) and B. Akureyri Public Garden (Travis Þrymr Heafield).



Fig. 16. Akureyri Botanical Garden. C) *Lewesia* planting, and D) *Paeonia*.



Fig. 17. Sólveig Jónsdóttir and Ólafur R. Jónsson.

'Dagmar'	'Silberwolke'
'Eskimo'	'Virginia Richards'
'Fantastica'	<i>R. degronianum</i> subsp. <i>yakushimaum</i> 'Karminkissen'
'Ninotschka'	<i>R. degronianum</i> subsp. <i>yakushimaum</i> 'Sonatine'
'Rabaatz' (slightly sensitive to wind)	<i>R. oreodoxa</i> var. <i>fargesii</i> (sensitive to spring frosts)
'Silver Jubilee'	

Table 3: The best performing rhododendrons in Sólveig and Ólafur's garden (Sólveig Jónsdóttir).



Fig. 18a. Rhododendrons in Sólveig and Ólafur's cottage garden.



Fig. 18b. More rhododendrons in the cottage garden.



Fig. 18c. Rhododendrons in their home garden

Fig. 18a-c. Some rhododendrons in Sólveig and Ólafur's a, & b) cottage garden and c) their home garden in Hafnarfjörður, a southern suburb city of Reykjavík.



Fig. 19. Ólafur Njálsson: A) with 18-year-old rhododendrons (touching *R. oreodoxa* var. *fargesii*) in his garden adjacent to his Náttthagi Nursery. B) with some five-year-old-plantings in his test garden (in three beds there are around 100 1- to 5-year-old cultivars) to see how new species/cultivars survive.

cm (20 in) wide holes 40 cm (16 in) deep and then add a mixture of one part one-year-old horse manure, one part pine needles and one part wood chips, which creates a nice acidic mix. They mulch with pine needles almost every year. Among the approximately 250 rhododendrons they now grow in clearings in their forest (Fig. 18a,b), they have found those listed in Table 3 to be hardy and bloom best. They grow about another 50 rhododendrons at their home in Hafnarfjörður, a southern suburb city of Reykjavik (Fig. 18c).

The second private garden we visited belongs to Ólafur Njálsson (Fig. 19),

which is adjacent to his Náttthagi Nursery with its great variety of imported Danish rhododendrons (Fig. 20), as there is no substantial rhododendron propagation in Iceland. He is continuously testing many of these imported plants in his garden to see how they perform over time (Fig. 19b). He started his nursery about 50 km (30 miles) east of Reykjavik in an area which was open tundra at the time, so like Sólveig, his first job was to plant trees to create a “forest” windbreak. Consisting of many different tree species, with *Populus trichocarpa* (poplars, various clones); *Picea sitchensis*, *glauca* and *engelmannii*

(spruce); *Pinus contorta* and *uncinata* (pine); *Alnus sinuata* (alder), *Larix decidua* (larch), and *Betula pubescens* (birch) as the main species, the “forest” took 10-20 years for parts of it to become dense enough to provide sufficient shelter for his nursery plants and planted rhododendrons (Fig.19).

He bought his 5.6 ha (13.8 acres) land in 1987 and began planting trees in 1988. He bought 10 ha (24.7 acres) more in 1989 and an additional 7.4 ha (18.3 acres) in 2010, for a total now of 20.3 ha (50 acres). His property is located a few kilometres south of a moderate-sized mountain, which greatly



Fig. 20: Rows of newly imported Danish rhododendrons for sale his Náttthagi Nursery.

influences the garden's temperature and precipitation. In some winters he has very little snow from the mountain and Iceland's central highlands while in others, there has been up to 3.5 m (11.5 ft) of snow! As the snow melts, it becomes heavy and this can damage his snow-buried rhododendrons, which has happened.

In 2022, he was selling about 60 different species and hybrids (Fig. 20), but could offer about 300 according to his experience with them to date. Every second winter is almost free of snow, but instead there are then temperatures down to -10 to -12° C (10-14° F), with frozen soil. The prevailing dry wind gusts are from the highlands, and the most damaging period for evergreen plants is from January to May. The strong spring sun makes things worse for plants with evergreen leaves as they need water from their frozen roots. Coming from a winter with very little sunlight because of a shortened day length, the increasingly bright sunlight can then burn evergreen leaves, resulting in a yellow-green colour and brown tips.

If Icelandic gardens are not sheltered enough from winter winds by tree plantings, windscreens must be set up in November and left until after the middle of May. Screens must be open at the top so the rhododendrons can get at least some winter light for photosynthesis. Iceland's daylength in early winter is twilight for only a few hours, while in contrast, June daylight is 22 hr, with two hours of twilight.

## Summary

Iceland is a remarkable country – amazing vast landscapes, friendly people that seem to all speak English fluently, and generally great facilities for tourists. I qualify this slightly, as away from Reykjavik and Akureyri, towns are quite small (about 600-2000 people) with relatively little available accommodation and restaurants. However, our travel agent had all our accom-

modations prebooked, so we had no problems with places to stay. Prices are higher than in North America in all aspects (fuel (eg., gas at about \$CDN 3.45/l (\$US 10.35/gal), accommodation, meals, rental cars, etc.), but like travel in Europe proper, well worth the added cost to visit this special country. We traversed the Ring Road around the country, with a few days extra to see the Westfjords region more extensively, and this required about two weeks to do comfortably, travelling an average of about 270 km (160 miles) per day, for about 3800 km (2280 miles) in total.

The vegetation, apart from the introduced lupins, was mostly alpine-like, with few plants above 30 cm (one foot) high (Fig. 12) except occasionally some native shrubs and trees in sheltered locations (Fig. 10) and the few locations where alien trees had been planted (e.g., in Reykjavik and in a new forest near Egilsstaðir, East Iceland). Sheep were pretty much everywhere, and with little fencing, in the warmer months can be frequently observed either adjacent to or even on roads. There are so many unique geological features to experience and fantastic landscapes to pass through that it truly is one of the more magical countries to visit.

Kristian Theqvist (2018) described in detail many of the cultural challenges in growing rhododendrons in Iceland, but concluded that “it would be possible to grow most of the temperate zone rhododendrons in Iceland if they are provided with proper wind shelter.” In this I concur, at least with respect to locations in the subpolar oceanic climatic zone near the ocean.

From the rhododendron culture data I received, there are still challenges to rhododendron culture in Iceland, but as shown in the private gardens of Sólveig Jónsdóttir and Ólafur Njálsson, they can be overcome. Plant collections in public gardens, such as rhododendrons, are often placed in specific limited locations to best showcase them, which may

not always be best for the survival of the various species and cultivars being presented. The best successes by gardeners are typically achieved by dedicated people that can carefully monitor the performance of their plants, and make timely culture adjustments when necessary.

Rhododendrons planted in both the country's public gardens were each part of a massive collection of mostly alien plants, and so it is likely not possible for staff to give a lot of attention to the specific culture needs of any specific group of plants. As pointed out by Kristian, public gardens are somewhat show gardens and are primarily a beautiful place where citizens can spend their leisure time. As such, they are perhaps not always the best indicators of what specific garden plants can actually be successfully cultured in their region.

## Acknowledgements

Thanks to Vilhjálmur Lúðvíksson for showing us around Reykjavik and introducing me to staff at both Public Gardens, for helping arrange logistics re my meetings with both Sólveig Jónsdóttir and Ólafur Njálsson, and for help with the accuracy of data in this document. Both Sólveig and Ólafur graciously showed me their gardens and were very forthcoming about the challenges and successes they experienced in growing rhododendrons in Iceland.

## Reference

Theqvist, K. 2018. Growing Rhododendrons in Iceland. *J. American Rhodo. Soc.* 75: 115-122.

*Glen Jamieson is the District Director of District 1 (British Columbia) and a member of Mt. Arrowsmith Chapter. He is also the editor of JARS.*

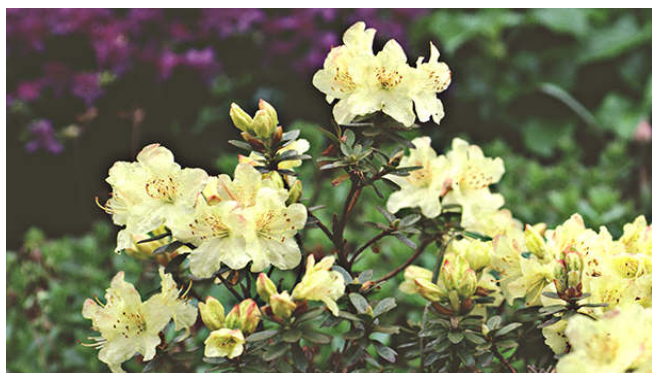


*Daphne cneorum*. [Photo Chris Hellenier]

## Atlantic Rhododendron and Horticultural Society Board Members and Other Roles

ROLES & RESPONSIBILITIES	NAME	CONTACT INFORMATION
President, Program Director, and Acting Treasurer	Jim Sharpe	sharpe@ns.sympatico.ca
Vice-President, Website and Communications	Rebecca Lancaster	thelancasters62@gmail.com
Secretary	Nancy Lewis	nancy.lewis56@gmail.com
Plant Sale Coordinators	Dennis Crouse Jane Rostek	denniscrouse0@gmail.com sunandwater@ns.sympatico.ca
Editor, AtlanticRhodo	Dennis Stuebing	Dennis.stuebing@hotmail.com
Garden Tour Coordinator	Lynn Rotin	lynn.rotin@gmail.com
Director-at-Large	Carol Morrison	carolsfineart@ns.sympatico.ca
Seed Exchange Coordinator	Sharon Bryson	sbryson@ns.sympatico.ca
Membership Coordinator	Lynn Brooks	lynbrook@bellaliant.net
Garden Outreach	Chris Hopgood	cpher111@gmail.com
District 12 ARS Representative	Christina Woodward	canadacaw@yahoo.ca

**Photo Album - A selection of photos from our archives.**



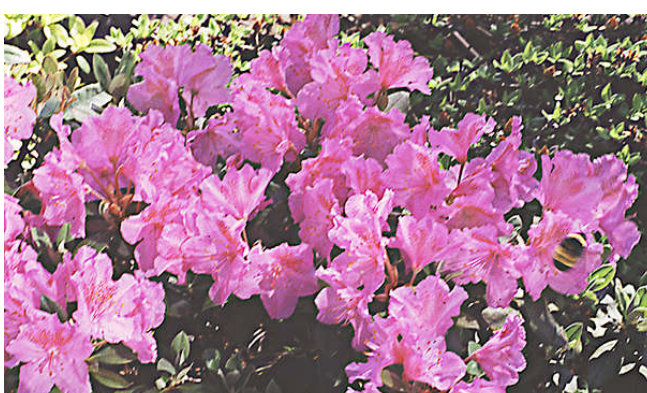
*Rhododendron 'Chikor'*. [Photo John Weagle]



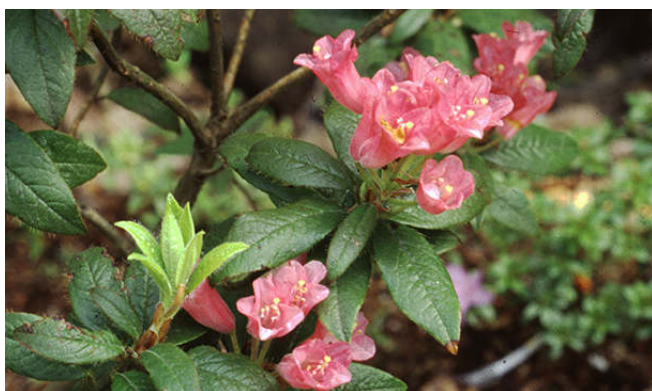
*Rhododendron 'Curlew'*. [Photo John Weagle]



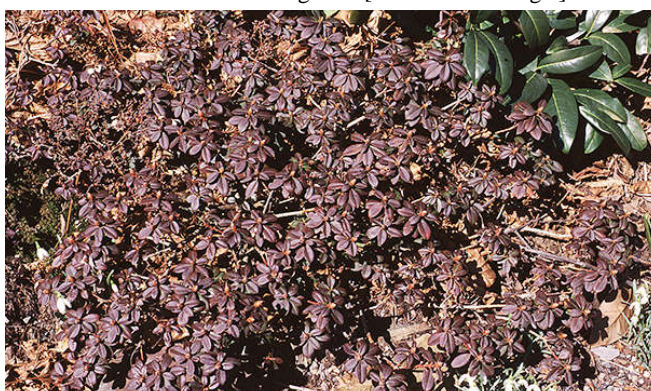
*Rhododendron 'Egret'*. [Photo John Weagle]



*Rhododendron 'Widgeon'*. [Photo John Weagle]



*Rhododendron 'Razorbill'*. [Photo John Weagle]



*Rhododendron 'Wren'* Winter foliage. [Photo John Weagle]



*Hamamelis 'Arnold Promise'* [Photo Chris Helleiner]



*Hamamelis 'Jalena'*. [Photo Sterling Levy]