"Niagara Rhodo"

Newsletter of the Niagara Chapter,
Rhododendron Society of Canada,
District 12, American Rhododendron Society
March 4, 2018

Our Purpose: We are a non-profit organization whose aim is to promote, encourage and support interest in the genus *rhododendron.* Our goal is to encourage gardeners to grow and appreciate these plants, by providing educational meetings with knowledgeable speakers, access to topical publications and hosting joint meetings with other chapters'

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Word of Caution

By becoming a successful grower, the reader will be exposed to a contagion for which there is no cure. Once infected with an appreciation of rhododendrons and azaleas most gardeners spend a lifetime collecting these most beautiful of all plants.

H. Edward Reiley

March 2018 Meeting & Plant Sale

Sunday, March 4, 2018. 2 P.M. Tom Laviolette. Director, (retired) Niagara Parks Botanical Gardens, Niagara Parks Landscape Design, School of Horticulture, Butterfly Conservatory. ***Plants and animals of the land and sea of Haida Gwaii: Haida culture and their Natural Environment.***

Sunday, April 8, 2018. 2 P.M. Kevin Kavanagh & Nick Yarmoshuk. ***What's in the Plant Sale? Describe for each cultivar: its strengths, weaknesses & appropriate growing conditions.***

Saturday, April 28, 2018. Annual General Plant Sale. 9 A.M.
Implement shed. Vineland Research & Innovation Centre.
Victoria Ave. Vineland Station, ON

Plants and animals of the land and sea of Haida Gwaii: Haida culture and their Natural Environment

Sunday, March 4, 2018. 2 P.M.

Rittenhouse Hall, Vineland Research & Innovation Centre

Tom Laviolette is known to our members as a consummate horticulturalist, an entertaining speaker and a traveler to interesting locales, with a keen sense for environmental issues. Late last summer, when we described our theme for this winter`s speaker program and invited Tom again to be a speaker, he volunteered to talk about his recent trip to a region not frequently found on a traveler's bucket list. He wrote to us. . . . . ***"after much consideration I believe a talk on Haida Gwaii will fit in more with the conservation theme of next year's talks."***

Tom Laviolette will provide his unique perspective to a very special Canada 150 celebration trip that he and his wife Sharon took in July, 2017. The destination was in coastal northwestern Canada where a small group of twelve lucky travelers visited several locations on pristine Haida Gwaii (formerly The Queen Charlotte Islands). The emphasis of the trip was learning about the Haida First Nations People while exploring nature. The mode of transportation was sailing on a sixty-nine foot vessel. Tom will share in detail the highlights of this exciting venture and will touch on a vast array of subjects ranging from Haida Culture to the Natural Environment which will include plants and animals of the land and sea.

Photos courtesy of Tom Laviolette

Haida Gwaii (*Copied from www BC Tourism promotion*)

The moody, misty islands of Haida Gwaii, previously called the Queen Charlotte Islands are 300 km (180 mi) long and located 100 km (60 mi) off the northwest coast of British Columbia. The two main islands, Graham Island in the north and Moresby in the south, are divided by Skidegate Channel and separated from mainland BC by Hecate Strait. The islands have developed in isolation from the rest of the province and were spared the effects of the ice that covered the rest of BC until 10,000 years ago. As a result, the coastal rainforests, wetlands, sand dunes, beaches, rugged mountains, streams and lakes of Haida Gwaii nurture an extensive population of

plants and animals that exist nowhere else on earth. In fact, because so many unique life forms have developed, the islands are referred to as Canada's Galapagos. The endless opportunities to experience the unique wilderness of Haida Gwaii include ocean kayaking, scuba diving, flight seeing, birding, wildlife observation, traditional canoeing, Llama trekking, cycling and hiking.

Collage by N. Yarmoshuk. Photos from BC Tourism Promotion

February 4, 2018 Meeting Overview

Sunday, February 4 started out as a snowy morning with low visibility and cold temperatures. Early that morning I received e-mails from members west of St. Catharines that snow was several inches deep, wind was blowing, and rural roads had yet to be cleared of snow. It seemed as though the inevitable that was likely each February would occur. . . . . weather limiting attendance at a long anticipated talk. Our resilient members too, must have been anticipating the talk. Fifty-four braved the elements from towns between and including Toronto to Fort Erie. As usual, coffee, tea, grapes, cheese and baked sweets greeted our dedicated members. After a short business program, description of the raffle prizes and two Bronze Medal presentations, our featured speaker, Robbie Hart of the University of Missouri and a researcher of climate impacts on development of rhododendrons, described his work on the Tibetan plateau in China.

The Cookie Brigade: One long standing feature of our meetings are the refreshments organized by a group of volunteers which has now expanded to more than 5 volunteer contributors, each participating in their own unique way as time and energy permit. At recent meetings they include Daryl Grant, Joan Kooger, Sandy Martin, Gwen Simpson, Dixie-Szasz Taylor, Jean Wackett and Wanda Yarmoshuk. A big **Thank You** goes out to each volunteer.

The Raffle & Vineland Azaleas: At this meeting the raffle was for Vineland Azaleas. Normally plant raffle winners in mid-winter would receive a token for plants to be delivered to them at the annual plant sale in April. We followed this practice on February 4, but we offered plants that are currently under development, the Vineland Azalea Introductions. These have been propagated using Tissue Culture and are now being prepared for introduction to our members and later to the Ontario Market.

All Vineland Photos by Carol or William Warkentin

Bronze Medals Awarded
Lillie Haworth & Peter Phelps

It has been 20 years since the Niagara Chapter hosted the 53rd Annual Convention of the American Rhododendron Society. A scant five years after the Rhododendron Society of Canada joined the ARS as its District 12, the Niagara Chapter undertook the responsibility to organize and hold the convention at Niagara Falls, Canada. Lillie Haworth, as a co-Chair and Treasurer, and Peter Phelps, as the Organizer of Tours, were instrumental in the success of the Convention and have been key members of the Board of Directors of the Niagara Chapter since that time.

Photo by Christina Woodward

Bronze Medal Award Citations

Lillie Haworth

Lil's analytical and highly organized efficiency have been the mainstay of our Chapter's smooth functioning. We have relied on her exacting approach to financial matters and record keeping for over 20 years. These attributes, combined with her clear thinking and problem solving skills, contributed enormously to the financial success of the 1998 ARS Convention, of which she was co-Chair. She has been the key driver behind the Pre-order of Plants Option for the Spring Sale, our key fund raiser, which enjoys ongoing popularity and success. Lil's wicked sense of humour is matched by her generous welcome to her home, which for years has served as the meeting venue for the Chapter's Board of Directors, as well as for the open-houses, pot luck picnics/dinners, and tours of her fabulous garden. She has won many awards for her plant and flower creations, and was once involved in Chapter flower shows to increase the awareness of Niagara hardy hybrids. We are delighted to present Lillie Haworth with this long overdue Bronze Medal, the highest award that it is within the Chapter's reach to award independently.

Peter Phelps

Peter's expertise with valuing cost and financial outcomes has guided much of the Chapter's short and long-range planning. We have indeed been fortunate that he transferred his professional skills and insights from his highly successful Home Design and Community Development Business to the needs and priorities of the Chapter. His shrewd attention to every element of a project's design, including the all-important intricacies of work flow, contributed to the efficiency of the complex series of Tours he organized as Chair of Tours for the 1998 Convention. For years after, Conventioneers were still asking, unsolicited, as to how this was achieved. For over 20 years with the Chapter such proficiencies have served him in various roles including Finance Director, and in his dedicated leadership on organizational details for, notably, the Annual Plant Sale. Peter's great sense of humor generates laughter and camaraderie among board members, which contributes to lively meetings and sound decision-making. Peter's wisdom and experience have enriched the Chapter and we are delighted to recognize his contribution with the Society`s Bronze Medal, the highest award that it is within the Chapter's reach to award independently.

Climate Change and Rhododendron Research

A Niagara Member's Perspective on Robbie Hart's Talk

February 4, 2018

On Sunday February 4, 2018, a packed house of the Niagara Region Chapter attended the presentation of Dr. Robbie Hart, Anthropologist, Ecologist and Statistician. The topic focused on climate - driven change on biological systems. The Himalayan species of rhododendrons were the test subjects.

Location of Dr. Hart's study:

In preparation for his doctoral dissertation and sponsored by the University of Missouri, Dr. Hart spent the years between 2009 – 2013 living on Jade Dragon Snow Mountain (Yulong Mountain) outside Lijang in Yunnan Province, China, studying the rhododendrons. Against the backdrop of a glaciated mountain, his site was located on the lush southern spur of a wall with an east / west aspect. Field stations were located in a 5km x 10km area along a gradient that ascended from 2760m to 4060m. Here the climate varied from summer monsoonal downpours to dry & sunny winters. There was no snow below 5000m. Sample plots were located every 100m and along this trek Dr. Hart walked daily for several years inspecting the blooms and plant performance of the rhododendron species growing along this path.

Statistics were included from:

1. Research data (elevations, temperature changes) gathered through personal on-site observation of rhododendron species for three years
2. Data gathered from local knowledge
3. Data gathered from historical collections

Theory on how biological systems respond to climate change:

- ✓ There is a shift poleward toward colder climes if the habitat becomes too warm
- ✓ On a mountain, plants will move either lower or higher to maintain constancy
- ✓ Plant phenology will shift in time - emergence of blooms will reflect changes in environmental temperatures

Reason for the choice of location:

The Tibetan plateau is a place that exhibits intense transformations in response to changes in temperatures. The area features topography that flows through deep gorges to high mountains. It is the centre of origin (parent plants) for many hybrids, species rich in the wide range of species types, and rich in the diversity of pollen presentations (for collectors) and pollinators.

Reasons for focusing on rhododendrons:

- ✓ A sophisticated 125 year-long collection of historically preserved plant specimens along with corresponding observations exist and these are vital to the study. These notes included the location of the plant, number of the collection, date and all the associated plant observations.

- ✓ In this temperate zone of origin, rhododendron species are especially diverse. In this area 500 species exist as compared to 200 species in other locales. The growing conditions are particularly conducive to growing a range of species, many co-occurrent. It is a hot spot for collectors locally and globally. Primroses grow very well also. There is a great diversity in the flowers / sizes of bushes / zone appeal.
- ✓ Rhododendrons are part of the culture of the indigenous people. The local Naxi and the Yi are familiar with the plants and offer knowledgeable data. The rhododendron (*R. racemosum – a perfumed shrub with waxy leaves ranging from white to red blooms partnered with pines on the mountain)* is incorporated into their spring festivals. They use the plants for food/ fodder / medicines / honey / bowl carvings. They know those which are beneficial and those that are poisonous.
- ✓ Rhododendrons have an ecological importance. Their blooms are easily studied and reflective of climatic change. The locals use their blooms as seasonal indicators to the planting time of buckwheat (in recent years those pointers are not as definite). Data of flowering, temperature variations, and trunk core from the plants were collected along the gradations of ascent.

History of Rhododendron Collections:

In the 1920's, Europe was developing an interest in rhododendrons. Early explorers were commissioned by collectors and sent to scout out new species, collect seeds and make pressings of the plants. With no perceived long-term climate change in the phenology of rhododendrons, Dr. Hart used the findings of Dr. Joseph Rock (reporter for the National Geographical Society), Frank Kingdon-Ward, George Forest and Baron Heinrich Handel Mazzetti to add data to his current findings. These comparative data showed no change in flowering time; he then created an algorithm of temperature and elevation to determine whether an entire year's plant performance is more important than the time nearer to flowering. His findings showed that fall and winter appear to determine flowering time, later or earlier. This is why long term forecasts don't accurately demonstrate climate change impact. Much observation and study over several years still need to be completed.

The local ecologists also collected species and had decades of observations. See '*The Paper Road by Eric Mueggler Archive & Experience in the Botanical Exploration of West China & Tibet.'* Many of their non-scientific records, kept for other purposes, have proven invaluable. Along with this treasure chest of information Dr. Hart also networked with the Royal Botanical Gardens in Edinborough, Scotland, where the many pressings of the aforementioned explorers are housed.

Despite the multitude of species, Dr. Hart focused on the following eleven species:

R. racemosum	R. lepidotum	R. adenogynum	R. impeditum
R. yunnanense	R. oreotrephes	R. primuliflorum	R. fastigiatum
R. rubiginosum	R. traillianum	R. beesianum	

Dr. Hart's Observations:

The general pattern of appearance of flowers reflected the elevation. Elevation was important, as was temperature.

At higher elevations flowering occurred later. That is, the cooler the temperature, the later flowering occurs. But it was also noted that the warmer the preceding fall, the later the flowering occurs.

For your reporter this is a peculiar paradox We learned that it also exists, unexplained, in much of the literature on this subject.

To help us to better understand this paradox, in a private communication to Niagara Rhodo, Dr. Hart wrote:

> **"Advanced phenology in the warmer temperatures of lower elevations, that we saw in transect observations, was also reported in local knowledge, and evidenced in the herbarium collection.**
>
> **We also saw phenology changing with changes in annual temperature, advancing with warmer weather from 2012 to 2013, a similar effect reported by local people, and advancing with warmer annual temperatures as evidenced by herbarium collections. In addition plants that advanced their phenology in this way produced more flowers and fruits.**
>
> **Local people reported a lack of long term directional change, and although our ecological record did not stretch that far back, we were able to confirm this with herbarium collections.**
>
> **This lead to an apparent contradiction in the data, which in some ways mirrored the apparent contradictions in the literature.**
>
> **However, each of these methods also revealed distinct details, which helped to explain some of these apparent contradictions: the especially long timescale of the historical collections led to a model which showed that warming in one part of the season can lead to delayed phenology. The balance between this and annual warming advancing phenology has at least until now effectively prevented any apparent observation of long-term directional change. "**

That is, temperature changes in various parts of one year may cause contrary phenological effects, in the following year.

In other observations, Dr. Hart reported: The species spaced themselves in flowering time i.e. species #1 bloomed, then finished and species #2 would then take its turn in flowering. This created a natural barrier to cross-hybridizing.

The overlap of species was random and much lower than expected.

As the climate warmed, the flowering was consistently earlier. In a one year between 2012 and 2013, flowering occurred 2.36 days earlier.

Dr. Hart's Conclusion:
Rhododendrons pre-form buds and dormancy (a chill requirement in the fall & winter) is needed for these buds to be prepared for flowering in the spring. Changes in temperature influence this chilling factor and determine the time of flowering. Hence, variations in climatic temperature are reflected in timing of rhododendron blooms.

by ***Liz Malicki***
with contributions from Christina Woodward

Describing the Research Site

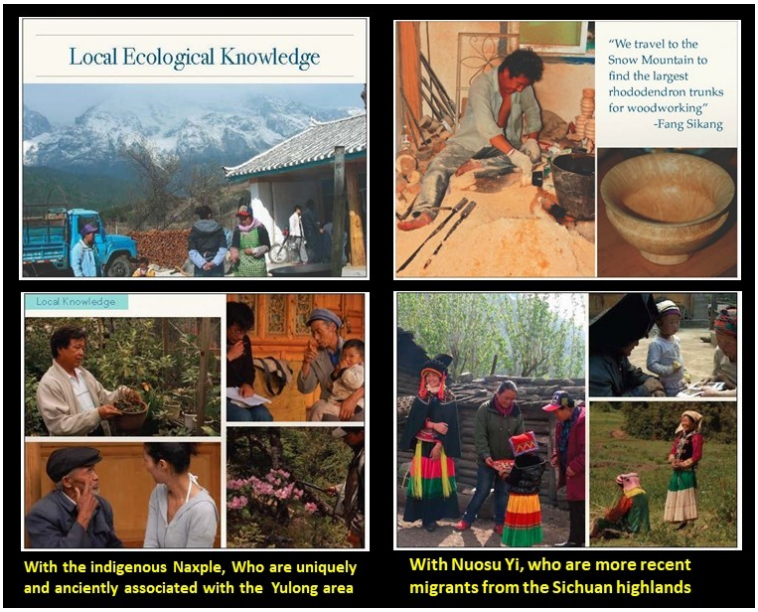
Edited by N. Yarmoshuk

Robbie Hart writes, "To answer the question of how the biological systems on the Tibetan Plateau are responding to climate change, I structured my thesis with a tight geographic and organismal focus, but a diverse set of methods.
The eastern end of the Himalayas, where I work, is not only literally hot spot of climate change, it's a hotspot of biodiversity. The great Asian rivers: the Yangtze, Mekong, Salween, and Irrawaddy all pour off of the Tibetan plateau in this relatively small area, creating a landscape of high mountains,

interspersed with some of the deepest gorges in the world. This fosters what is, arguably, the highest temperate plant biodiversity in the world. Rhododendrons are especially diverse, with perhaps 500 species inside this circle and maybe half of those endemic to the area. My geographical focus was at the center of this diversity on Mt. Yulong".

Rhododendron Diversity

Local Knowledge



Local people have been observing rhododendron phenology, **not just for two years**, but for their **entire lives**; and are members of a cultural continuity which has **accreted ecological knowledge over generations**.

Early collectors preparing herbarium samples recorded detailed data on environment conditions. Rhododendrons were and remain important to many of the minority ethnic groups in these areas from both utilitarian and cultural perspectives. For a detailed discussion of this topic see: ***Herbarium specimens show contrasting phenological responses to Himalayan climate*.**
https://doi.org/10.1073/pnas.1403376111