



# menziesia

Winter 2011 NPSBC Native Plant Society of British Columbia www.npsbc.org Volume 16, Issue 1

## President's Report

# Native Plant Society of BC looks to a great new year after wrapping up a busy 2010

By Dawn Hanna

The past year was an active one for the Native Plant Society of BC, with presentations, field trips, special projects and more. And we're looking forward to building on the successes of 2010 with more presentations, field trips that go even farther afield – including our 2011 AGM in Penticton – and involvement in as many activities as we can manage.

But before we move forward, we'd like to take a quick look back at the year behind us.

First of all, we'd like to thank the people who volunteered their time, energy and ideas to the NPSBC board, as directors last year:

- Ron Long, Port Moody
- Marian Daubeny, Vancouver
- Hugh Daubeny, Vancouver
- Nathalie Dechaine, Victoria
- Laura Duncan, Kimberley
- Moralea Milne, Victoria
- Randal Mindell, Vancouver
- Nadine Robinson, Vancouver
- Virginia Skilton, South Surrey
- Patrick Wilson, Langley
- Rossalynn Woodgate, Duncan

Marian Daubeny, Natalie Dechaine, Nadine Robinson and Rossalynn Woodgate have now stepped down as directors. We extend heart-felt thanks for their hard work and contributions to the society. They will be missed.

The membership of the society remained similar to years past and numbered 278 at the time of the Nov. 4 2010 AGM.

What follows is a summary of activities and items of note about the society.

### Victoria Native Plant Study Group

The Victoria Native Plant Study Group is a chapter of the NPSBC. They provided their members with some great presentations:

- October 2009: Carnivorous Plants with



Photo: Dawn Hanna

*Balsamorhiza deltoidea* (deltoid-leaved balsamroot) photographed at Mount Tzouhalem

Glenn Hallworth

- November 2009: Propagation of Native Plants with Brenda Costanzo
- January 2010: Gardening with Nature with Abe Lloyd
- February 2010: Fawn Lilies, their evolution and biogeography with Dr. Geraldine Allen
- March 2010: The Re-storying of Camas Landscapes with Dr. Brenda Beckwith
- April 2010: Edible and Medicinal Plants of Canada with Andy MacKinnon
- September 2010: Moss Landscapes of Southern Vancouver Island with Kem Luther

The Victoria NPSG was also the recipient of the Biodiversity Conservation Award, one of seven Saanich Environmental Awards for 2009. Cited was the NPSG's work to raise awareness about the beauty and value of native plants and to bring together gardeners,

horticulturalists, botanists and others who share a passion and curiosity for native plants.

### South Coast Native Plant Study Group

Speaker's nights were held at VanDusen Botanical Garden. Speakers were:

- October 2009: The Peavines of BC with Dr. Quentin Cronk
- November 2009: A Botanical Journey through the Siskiyou Mountains with Virginia Skilton, Daniel Mosquin and Ron Long
- December 2009: Conserving Native Flora amidst the Invasive Wave with Joe Bennett
- January 2010: PlantWatch: Plants, Climate Change and Citizen Science with Dawn Hanna and Patrick Wilson
- February 2010: The Secret History of Bracken Fern with Randal Mindell
- March 2010: Women Botanists of Western

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# NPSBC

Native Plant Society of British Columbia

## Our Mission

The purpose of the Native Plant Society of British Columbia is to encourage knowledge, appreciation, responsible use and conservation of BC's native plants and habitats.

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Menziesia is published four times a year.

Subscription is included with

NPSBC membership.

# Learning about *Allium* from the bulb up

By Moralea Milne

Many of our herbaceous plants can be difficult to recognize before they bloom. Members of the onion family, with their telltale odour, are easy enough to identify to the genus level. But distinguishing the species before bloom is a little more difficult. However, like most things, once you know the secret, it can be accomplished easily. The use of a magnifying lens is recommended to differentiate the species.

Eight onion species can be found in BC, unlike California, which has 47 species, not including many varieties and several introduced *Allium* pests.

The secret to telling one *Allium* species from another is the cellular reticulation, or patterning, on the bulb coats.

*Allium cernuum* (nodding onion) is the most common and widely distributed onion in BC and as its common name implies, has a nodding flower head. It is very easily cultivated and makes a delicious green onion substitute. Anyone who grows this should never need to purchase green onions again! The bulbs are usually quite robust, clustered and somewhat egg-shaped, without a fibrous membrane, but with a vertical, elongate cell patterning in regular rows on the outside scales.



*Allium cernuum*



*Allium acuminatum*

*Allium acuminatum* (Hooker's onion) occurs on dry rocky bluffs, in drier conditions than nodding onions prefer. The bulbs are more noticeably round than the nodding onion, the outer scales are brownish, fibrous, with a waffle-like, square or polygonal structure, somewhat resembling the weave of a certain kind of cotton undershirt.



*Allium amplexans*

*Allium amplexans* (slimleaf onion) is blue-listed and found in vernal wet meadows and bluffs that dry out in summer. These bulbs are

similar to *A. acuminatum* bulbs but they have a wavy, horizontal, herringbone patterning (think interlocking bricks) on the outer, brownish, fibrous scales. Erica Wheeler has extended the knowledge of our *A. amplexans* species with her graduate work. The more common *A. amplexans* has white to pinkish flowers, upright leaves and is triploid. There are a few populations of a tetraploid variety on southern Vancouver Island that have bright pink flowers and leaves that hug the ground as they appear and always seem to remain more closely associated with the ground. Possibly this is an adaptation to the windy conditions along the coastline where they are found.



*Allium amplexans* (slimleaf onion)

Photo: Dawn Hanna

*Allium crenulatum* (Olympic onion) is found in dry rock outcrops and rockslides on Vancouver Island, in montane and alpine zones. The leaves are distinctive and unlike other onion species, they are low growing with a flattened, curved shape, hooked at the tips. The bulb is described as lopsided and egg shaped, with no fibrous network.

*Allium geyeri* var. *tenerum* (Geyer's onion) is extremely rare on southern Vancouver Island. In Metchosin, the single lonely population is found in the salt spray zone. The bulb is egg shaped, with a fibrous, brownish netting and a diamond shaped patterning on the outer scales. When in flower, many of the flowers are replaced with bulbils.



*Allium geyeri*

*Allium schoenoprasum* var. *sibiricum* (wild chives) has a narrow, oblong, scaly, clustered bulb with a fibrous reticulum but often appearing membranous, as outer coats are lost during collecting; cells are minutely striate. The flowers are arranged in a densely packed ball-shaped flowerhead, familiar to most herb gardeners.

*Allium validum* (swamp onion) is found in the steppe and montane zones and is described as having elongate, narrowly egg-shaped scaly bulbs that are clustered on a short, stout rhizome. The reticulations are somewhat similar to those found on nodding onions with vertical, elongate cell patterning in regular rows.

*Allium vineale* ssp. *vineale* or field garlic is an introduced, invasive species that is becoming more common and considered a noxious weed in many areas. They are reputed to have egg shaped, scaly, yellow-brown bulbs, that have some hard-shelled, daughter bulbs or bulblets within the scales with no reticulation. The flowers have bulbils but it is unlikely they would be growing in the same area as *A. geyeri*. \*

Information gleaned from:  
*Illustrated Flora of British Columbia, Volume Six, 2001*  
*The Jepson Manual, Higher Plants of California, 1993*

\* Drawings are crude copies made by myself, apologies to original illustrators.

President's report continued from page 1

North America with Linda Jennings

- April 2010: Hotspots for Spring Wildflowers
- October 2010: The Role of Native Plants in Vancouver's Botanical Gardens with Douglas Justice and Harry Jongerden

The NPSBC also organized a Spring Wildflower Fling in Duncan, with a number of field trips. It was, in a word, fantabulous, and more than 50 members attended.

The South Coast Native Plant Study Group also organized a number of field trips, including:

- April: a ramble to Campbell Valley Regional Park and Hi Knoll Park to see spring wildflowers,
- May: a visit to the UBC Botanical Garden,
- June: an exploration of the sand dune habitat at Iona Beach Regional Park,
- August: a day hike to Mount Baker,
- September: a day hike to Cypress Provincial Park, and
- October: a moss walk at Capilano River Regional Park.

#### Whistler BioBlitz

A number of NPSBC members took part in the Fourth Whistler BioBlitz in July, scouring the landscape from valley bottom to mountain top. Of the 700 species recorded, 197 were vascular plants and 135 were bryophytes. Of those 197 species, one native vascular plant – *Minuartia biflora* (mountain sandwort) had not been previously recorded in the area. It was found by past president Virginia Skilton in the high subalpine of Blackcomb Mountain.

#### Menziesia

Four issues of *Menziesia* were put out. We are always happy to receive submissions – from all over the province. Or if you have a business that would like to advertise in the magazine, you can get in touch with the editor as well.

#### Web Site: [www.npsbc.org](http://www.npsbc.org)

The board has embarked on a redesign of the NPSBC website. Graphic designer Isa Szeto has been working on the site and we hope to launch it before the end of the year. Many thanks go to Val Karlsson for lending a hand with some research. And to Virginia Skilton, Ron Long (and myself) for providing images for the website.

Also, the NPSBC now has a Facebook page, where you can catch up on what's happening, find notices of events, check out photos and contribute to discussions. To find it, sign on to Facebook and search Native Plant Society of BC.

#### Plant Sales

For the fifth year, we organized the native plant section of the Van Dusen Botanical Garden's annual plant sale for the NPSBC. Several member nurseries and individuals provided plants and volunteers provided help with set-up and answers to visitors' questions. Many thanks to Luc Turcotte for his work to keep everything organized and flowing smoothly.

Interestingly, the native plant section represented the second highest earning section at the plant sale, bringing in almost \$9,500.

The NPSBC also helped at the UBC Botanical Garden's native plant section at their annual Mother's Day Plant Sale.



*Lewisia rediviva* (bitterroot)  
Photo: Dawn Hanna

#### Workshops

The regular NPSBC grassland workshop was held on June 4 and 5 in Lillooet, with Don Gayton, forest ecologist and noted author. The workshop included classroom and field portions. Don donates his time for these workshops and proceeds are shared by the NPSBC and FORREX, co-sponsors of the events.

Our thanks to Don for his time and expertise. And to Kim North of the Lillooet Naturalists Society for helping to organize the logistics of the workshop, and to the Cayoose Creek Indian Band for the use of their facilities and for organizing an incredible wild foods supper for participants.

Ron Long ran a photography workshop in conjunction with VanDusen Botanical Garden in August. Our thanks to Ron for his time and expertise.

#### VanDusen Botanical Garden Partnership

Last year, the Native Plant Society of BC formed a working relationship with

VanDusen Botanical Garden to promote our mutual goal of educating more British Columbians about the province's native plants and the critical role they play in healthy ecosystems and a healthy environment.

The NPSBC was instrumental in organizing a seed exchange with The Royal Botanic Gardens Kew's Millennium Seed Bank that was part of a royal visit by Camilla, the Duchess of Cornwall. Many thanks to Leslie Ingram, Patrick Wilson (and myself) for helping to organize. And thanks to VanDusen Botanical Garden for the opportunity to showcase native plants.

The NPSBC also took part in Seedy Saturday, an annual springtime event organized by the Master Gardeners. We provided information and advice on native plant species, and information on the society to the many visitors who crowded in that day. Thanks to Hugh Daubeny, Val Karlsson, Patrick Wilson, Debra Taschuk (and me) for their help that day.

The NPSBC also brought in a new partner – BCIT's Ecological Restoration Program – to help in the effort to transform an underutilized and weed-infested portion of the garden to a showcase for native plants and their habitats.

#### PlantWatch

Last year, the Native Plant Society of BC became the BC coordinator for the PlantWatch program. The idea behind the program is to engage volunteers in tracking the bloom times of plants that are good indicators of climate change

After discussion at a January meeting, NPSBC members suggested that the species chosen for BC were perhaps not the best choices. Also, PlantWatch had technical problems with a computer server. Recently, the federal government announced that it would no longer be funding the program. There is a proposal by the University of Ottawa to take over the PlantWatch program, but we have yet to hear whether they received the funding to do so.

#### Flora ID Northwest

Flora ID Northwest, a series of interactive computer programs for plant identification are provided to us at a reduced rate by their creator, Bruce Barnes, member from Pendleton, Oregon. They are sold through the NPSBC web site, generating funds to support NPSBC projects and expenses.

Our thanks to Bruce for his continued generosity.

That's it for the president's report. We look forward to seeing you soon!  
*Dawn Hanna is president of the NPSBC.*

# Kimberley Nature Park contains rich variety of flora, fauna and habitat

By Ruth Goodwin

The Kimberley Nature Park, located on the lower slopes of the Purcell Mountains at the edge of the Rocky Mountain Trench, covers more than 800 hectares within the municipal boundary of Kimberley. For many decades this network of old roads and trails has been hiked, snowshoed, biked and skied by local residents (often with their canine companions)! In the 1970s, the area was proposed as a wildlife sanctuary and, for the next 25 years, nature enthusiasts worked with city council. Finally in 1994, the nature park boundary was formalized as a non-motorized recreation and conservation area. In 2001, the province of British Columbia granted the City of Kimberley a license of occupation over the Crown land within the park. The 204-hectare Horse Barn Valley Interpretive Forest that lies adjacent to the park became co-managed between the nature park

*continued on page 6*



Photo: Ruth Goodwin

Eimer's Lake is a small spring-fed pond within Kimberley Nature Park. At the far end of the lake is a sphagnum bog meadow where one can find *Rhododendron groenlandicum* and other bog species.

## Wildflower Walks in Kimberley Nature Park

NPSBC director Laura Duncan and botany enthusiast Ruth Goodwin have organized two wildflower walks to explore the diverse habitats of the Kimberley Nature Park. Please contact Laura at (250) 427-2600 or [gardenlaura@shaw.ca](mailto:gardenlaura@shaw.ca) or Ruth at (250) 427-5404 or [ragoodwi@shaw.ca](mailto:ragoodwi@shaw.ca) to let them know you're coming! Please bring a lunch and appropriate clothing/footwear.



*Balsamorhiza sagittata* (arrow-leaved balsamroot)

Photo: Jim Duncan

### May 15: Sunny Spring on Sunflower Hill

Sunflower Hill is aptly named for the profusion of the showy *Balsamorhiza sagittata* (arrow-leaved balsamroot) that carpets its slopes in mid-May. Less showy but equally beautiful are the *Delphinium nuttallianum* (upland larkspur), *Dodcatheon pulchellum* (shooting star), *Lithophragma parviflorum* (small-flowered woodland star), *Zigadenus venenosus* (meadow death-camas) and numerous other delights that are interspersed with the Ponderosa pine and bunchgrasses.

Meet at the Riverside Campground overflow parking lot at 9 a.m. for a three- to four-hour trek. The route will traverse the open slopes of Sunflower Hill before entering the woods for a moderate climb to the St. Mary Valley lookout, followed by a downhill return to the campground.

Distance: 6.6 km on both wide, even dirt roads and smaller, uneven dirt trails

Difficulty: Moderate

Elevation gain: 275 m

### July 10: Woodland Wonders

Kimberley Nature Park boasts a variety of habitats with their associated flora. This walk will wander through a range of forested landscapes looking for delights such as *Cornus canadensis* (bunchberry), *Linnaea borealis* (twinflower), *Chimaphila umbellata* (pipsissewa) and *Calochortus apiculatus* (three-spot mariposa lilies) nestled under the forest canopy.

Meet at 9 a.m. in the Overwaitea parking lot on Warren Avenue for a short walk to the Higgins Street entrance to the Kimberley Nature Park. A visit to Eimer's Lake will be in order before starting on the Edge Trail to Duck Pond and then returning to Overwaitea after a three- to four-hour journey in the park.

Distance: 5.8 km on both wide, even dirt roads and smaller uneven dirt trails

Difficulty: Moderate

Elevation gain: 190 m

# Winter temperatures play complex role in triggering spring bud burst

Spring bud burst has been occurring earlier in the year for many plant species because of warmer winter and spring temperatures. Understanding the long-term effects of this shift and adapting forest management to accommodate it requires deeper insights into the dynamics of bud burst.

Scientists with the Pacific Northwest Research Station conducted several experiments that involved exposing many genetic varieties of Pacific coastal Douglas-fir seedlings to a range of winter conditions. Their results, in conjunction with findings from many previous studies on bud burst in other plant species, enabled the team to build a mathematical model demonstrating that an intricate interplay between temperatures during winter and spring months is involved in producing this critical first step in the growth cycle.

They found that moderately warmer winters will continue to trigger earlier bud burst, but much warmer winters could result in later bud burst than has occurred historically. This is because plants exposed to fewer hours of optimal chilling temperatures in winter need more hours of warmth to satisfy their genetically determined needs for bud burst. The scientists propose that this relationship governs bud burst in many plant species. This research offers a



Photo: Daron Hanna

*Pseudotsuga menziesii* (Douglas-fir)

starting point for predicting bud burst for genetically different populations under future climate scenarios.

To read the entire report, go to [www.fs.fed.us/pnw/science/scifi128.pdf](http://www.fs.fed.us/pnw/science/scifi128.pdf)

## Kimberley Nature Park, cont. from page 5

and the Ministry of Tourism, Culture, and the Arts in 2004.

Today the area is stewarded by a local non-profit group called the Kimberley Nature Park Society through a memorandum of understanding with the city. It is mandated to promote and protect the park and to develop long-term plans for its stewardship. This society has numerous committees that maintain the trails and signage in the area, host public walks, maintain the website, consult with other user groups, and explore the flora and fauna within the park. The most recent map of the area was produced by the society in 2008 and can be purchased at various outlets around town. In addition, ecosystem restoration projects along with fire interface logging are keeping nature park volunteers busy these days!

Billion-year-old seas and more recent glaciers created the complex topography of the nature park today. The earliest known human use of the area was by the Ktunaxa people who have lived in the valley for 10,000 years. Their long history has been confirmed by the presence of a chert quarry for spear-points material within the park.

From the lowest to the highest elevation in the nature park, one



*Calochortus apiculatus* Photo: Neil Jennings

climbs about 600 metres (2,000 feet) allowing for a substantial hike within our town! On these trails through open grasslands, dense pine forests, rocky outcrops, shady cedar glens, talus slopes and old growth stands of western larch, park users can pass through distinct ecosystems that support a rich diversity of flora and fauna.

The park is affected by both the wet Pacific weather that moves down the St Mary's Valley and the drier colder air masses of the Rocky Mountain Trench. From the ponderosa pine and bunchgrasses of Sunflower Hill to the subalpine fir forests around Dipper Lake, wildlife abounds. There are about 15 tree species, 175 wildflower species and 90 species of birds. Bear, moose, elk, deer, cougar and coyote also roam the trails as do the smaller

squirrels, martens, chipmunks, voles and weasels. The Natural History Committee of the Nature Park Society has begun a species list of all the living organisms in the park. This ambitious project will be many generations in completing but is very enjoyable to this keen group of amateur naturalists. \*

Visit <http://kimberleynaturepark.rockies.net> for more detailed information on the natural history, human history, membership, events, interface fire and ecological restoration.

# New plant species waiting to be found in cupboards, drawers and cabinets

Looking to find a new species of flowering plant? Forget travelling to an exotic, remote destination; you're more likely to find a new species lurking in a herbarium, researchers report.

It's estimated that 400,000 species of plants currently exist in the world. It's believed that there are more, and while some significant discoveries have been found recently in places such as China and Vietnam, a new study suggests that more than half an estimated 70,000 species of flowering plants yet to be described by scientists, may already have been collected but are lying unknown and unrecognized in collections around the world. Why?

The reasons are related to both a lack of resources for herbaria and a lack of experts who can identify new species. The result – a vital reservoir of information about global biodiversity remains untapped. A recent study shows that it currently takes on average 30 to 40 years from the time a flowering plant specimen is collected to its being recognized and described as a new species.

"Many people think that discovering new species is primarily about expeditions to exotic locations and collecting new specimens, but the truth is that thousands of new plant species are lying unidentified in cupboards, drawers and cabinets around the world," said Dr. Robert Scotland of Oxford University's Department of Plant Sciences, an author of the report.

At the moment our knowledge of flowering plants is greater than our knowledge of almost any other group of organisms of comparable size – it is estimated that we know about four out of five species compared to knowing about only one in 10 species of insect, for example. Because flowering plants are found in every terrestrial habitat and every



**Lying in wait:** What new plant species are hiding within these drawers?

area of the globe they are a vital tool for monitoring biodiversity.

"Because people have been collecting plants from around the world since before Victorian times, the job of identifying a new plant species is becoming harder every year as collections fill up and it becomes more difficult to spot the new species," said Dr. Scotland. "A lot of work needs to be done comparing specimens from different parts of the world, and eliminating any duplicates, before we can be sure that a plant is unique and describe it. At the moment there simply aren't enough experts to do this."

Oxford University's Department of Plant Sciences has its own herbarium containing around one million specimens and for the study worked with colleagues from the Natural History Museum

(London), Royal Botanic Gardens Kew, Royal Botanic Garden Edinburgh, Missouri Botanical Garden, and the Earthwatch Institute.

"Our own research into one particular genus of flowering plants, *Strobilanthes*, described 60 new species from specimens which had been sitting unexamined in herbaria for a long time," said Dr. Scotland. "We now know that this pattern of new species going unrecognized is repeated at the world's greatest plant collections, hindering efforts to monitor global biodiversity and measure the impact of human activity on plants and animals."

A report of the study: *Herbaria are a major frontier for species discovery* was published in Dec. 21 edition of PNAS (Proceedings of the National Academy of Sciences).

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## Russian olive listed as weed south of the border

Recently in Montana, Russian olive (*Eleagnus angustifolia*) was added to the Montana Noxious Weed List, thanks in great part to the Montana Native Plant Society. Now, Russian olive can no longer be sold or transported legally into the state. Unfortunately, the designation does not require that areas already containing Russian olive be treated or the plant be removed. The state recommends research, education and prevention to

minimize the spread of this exotic tree.

In BC, Russian olive is not currently listed as invasive or as a weed by the Ministry of Agriculture and Lands. It is, however, being tracked by the Ministry of Natural Resource Operations' Invasive Alien Plant Program.

The impacts associated with Russian olive are many. It displaces native herbaceous and woody species on active floodplains, along rivers and in gullies.

Once established, Russian olive may hinder recruitment of native cottonwood and willow on some sites. The native pioneer species (primarily *Populus* and *Salix* spp.) rely on physical disturbance to create bare, moist patches for seedling establishment. These pioneering natives form temporary woody communities that are succeeded by non-forested communities, such as prairie or sagebrush steppe.

# Researchers find answers to “abominable mystery”

What, in nature, drives the incredible diversity of flowers? This question has sparked debate since Darwin described flower diversification as an “abominable mystery.” The answer has become clearer, according to researchers at the University of Calgary.

Doctors Jana Vamosi and Steven Vamosi of the Department of Biological Sciences have found that the size of the geographical area is the most important factor when it comes to biodiversity of a particular flowering plant family.

The researchers were looking at the underlying forces spurring diversity. Why are there more than 22,000 species in the *Orchidaceae* family, for example, while there are only 40 or so species in others, such as *Elaeagnaceae*. In other words, what factors have produced today’s biodiversity?

“Our research found that the most important factor is available area. The number of species in a lineage is most keenly determined by the size of the continent or continents that it occupies,”

says Jana Vamosi.

Steven Vamosi adds that while the findings of this research mostly shed light on what produces the world’s diversity, it may comment on what produces extinction patterns as well. “The next step is to determine if patterns of extinction risk mirror those observed for diversification, specifically to contrast the relative influence of available area and traits.”

Typically, when it comes to explaining the biodiversity of flowering plants, biologists’ opinions fall into three camps: family traits (e.g. showy flower versus a plain flower), environment (e.g. tropical versus arid climate), or sheer luck in geography (e.g. a seed makes it way to a new continent and expands the geographical range of a family).

But the Vamosi research demonstrates that geography isn’t the only answer; traits of the family came in a close second to geography. Traits that may encourage greater diversity are known as key innovations. Scientists have hypothesized that some families possess more species

because they are herbs, possess fleshy fruits, or that their flowers have a more complex morphology. Zygomorphy, when a flower can only be divided down the middle to make two equal mirror images, is thought to restrict the types of pollinators that can take nectar and pollen from the flower. Flies, for instance, won’t often visit zygomorphic flowers. Bees, on the other hand, adore them.

“Although geography may play a primary role, a close second is the flower morphology of the plants in a particular family,” says Jana Vamosi. “So essentially all camps may claim partial victory because morphological traits should be considered in the context of geographical area.”

*Key innovations within a geological context in flowering plants: towards resolving Darwin’s abominable mystery* by Jana C. Vamosi and Steven M. Vamosi was published in the on-line edition of the journal *Ecology Letters*.



## Biological Consulting Services

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- ❖ *Interpretation of legislation, policies and regulations*
- ❖ *Developing & preparing public education material*
- ❖ *Report preparation*

Shona works cooperatively with Management Committees, First Nations, Non-Profit Organizations, & Governments.

**Contact: [Lawson.shona@gmail.com](mailto:Lawson.shona@gmail.com) 250.508.4021**

## Field trip leaders wanted!



**The Native Plant Society of BC** is a completely volunteer endeavour, from the directors who sit on the board, to the speakers who share their knowledge, to the field trip leaders who get us out and about. If you’re interested in leading or co-leading a field trip anywhere in the province, please let us know.

Send an email to [dawnhanna@telus.net](mailto:dawnhanna@telus.net) or call (604) 831-5069.



# Crazy like a phlox: Sorting out the cushion-forming species

The following article is reproduced by permission of the author and its original source *Kalmiopsis*, *Journal of the Native Plant Society of Oregon*. *Phlox caespitosa* (tufted phlox), which occurs in the southern portion of BC, has long been considered a synonym for *Phlox douglasii* (Columbia phlox). Although the following article does not include British Columbia as part of *P. douglasii*'s range, some botanists believe that it may occur in the Okanagan area. ~ Editor

By James Locklear

*Phlox douglasii* is a name covering... a multitude of botanical sins." So wrote Ira Gabrielson in his 1932 classic, *Western American Alpines*, and so I discovered for myself some 70 years later. With grants from the Native Plant Society of Oregon and the North American Rock Garden Society, I waded into a study of the genus *Phlox* in general and *P. douglasii* in particular. While matters of nomenclature can be tedious to work through, the species in question is a prominent wildflower in a number of plant communities in central and eastern Oregon, and a clear picture of its taxonomic identity is important to understanding and describing the ecology of these communities.

## The Discovery of Columbia Phlox

English botanist William Jackson Hooker established the name *Phlox douglasii* in his *Flora Boreali-Americana* (1838), in honour of David Douglas, who collected the specimens used to describe the new species. As David Douglas's mentor, Hooker profoundly influenced botanical exploration of North America. Hooker was named Regius



This specimen collected by David Douglas in 1827 became the type specimen when William Hooker described *Phlox douglasii*. It resides in Kew Gardens' herbarium.

Professor of Botany at Glasgow University in 1820, and helped develop the Glasgow Botanic Garden where his path crossed that of a newly hired gardener (David Douglas). Hooker was so impressed with the young Scot that he recommended Douglas to the Royal Horticultural Society of London as a botanical collector (Hooker 1836). Douglas made his first collecting trip under the auspices of the Society in 1823, traveling to the northeastern United States and Canada. In 1824, he set sail for the west coast of North America, arriving at the mouth of the Columbia River in April 1825. In



Photo: Robert Korffage

*Phlox douglasii* (Columbia phlox)

this vast watershed, Douglas collected seeds and plant specimens for the society, and in the process, discovered scores of new species that today bear his name (McKelvey 1955).

Douglas collected the first specimens of Columbia phlox in 1826. The type specimen (holotype) of *P. douglasii*, held in the herbarium of the Royal Botanic Gardens, Kew, bears Douglas' handwritten notation, "Limestone rocks of the Columbia and subalpine range of the Blue Mountains...1826." A duplicate specimen at the Museum of Natural History, London, bears the exact same notation. A third Douglas specimen, held by the Gray Herbarium of Harvard University, bears the notation, "very common on the Blue Mountains on Limestone rocks."

The Blue Mountains of northeastern Oregon and adjacent southeastern Washington comprise several ranges, including the Wallowa Mountains. Douglas's journal for the years 1823 through 1827, published by the Royal Horticultural Society in 1914, reveals he made two separate excursions into the Oregon portion of the Blue Mountains in June and July of 1826. Douglas most likely encountered Columbia phlox in flower on his first excursion, which commenced on 18 June 1826. Douglas was in the heart of the Blue Mountains on June 20th, when he hiked to the summit of "the highest peak of those untrodden regions," the height of which he estimated at least 9,000 feet above sea level

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(probably the Wallowas). Between the 20th and 25th of June, Douglas records, "I contented myself by botanizing over the eastern declivities of the mountains," where, at lower elevations, he encountered "several new species of Phlox."

Columbia phlox is relatively common at middle elevations in the Blue Mountains, as evidenced by a proposed common name, Blue Mountains phlox (Wherry 1969). In addition to the Blue Mountain collections of phlox, Douglas's list of plants collected in mid-April of 1826 near the mouth of the Spokane River on the Columbia River in present-day Lincoln County in eastern Washington included a small, shrubby Phlox "which comes near to *P. setacea* [= *P. subulata*]." Columbia phlox is a common and showy part of the local spring flora in this area, and is the only phlox in eastern Washington that fits Douglas's description.

#### Untangling Nomenclatural Knots

As one of the first of the cushion-forming phloxes described from western North America, the name *P. douglasii* initially served as catch-all for many later-discovered, superficially similar species, a number of which were treated as varieties or subspecies of *P. douglasii* at some point in their nomenclatural histories. Further confusion was caused by the emergence of the term "Douglasii Hybrids" in horticultural literature in the early 1900s, which was applied to a wide variety of cushion phlox cultivars of probable hybrid origin (see discussion under Horticulture).

Edgar Wherry brought much needed clarity to this situation through a series of taxonomic papers on the western phlox species (1938, 1941, 1942) and his 1955 monograph on the entire genus in which he recognized *P. douglasii* as a distinct species with a distribution centered on the Columbia Plateau in the Pacific Northwest.

The clarity was short-lived. In his treatment of Phlox in *Vascular Plants of the Pacific Northwest* (1959), Arthur Cronquist reduced *P. douglasii* to synonymy under *P. caespitosa*. Cronquist described the type of *P. caespitosa* as "a compact plant of the taxon usually known as *P. douglasii*." Since the name *P. caespitosa* was published by Thomas Nuttall (1834) four years prior to Hooker's (1838) publication of *P. douglasii*, Cronquist reasoned, "the latter name [*P. douglasii*]...must subside."

Wherry (1962, 1965) considered this "a serious misunderstanding," calling *P. douglasii* and *P. caespitosa* "about as

distinct species as can exist among the Microphloxes." Indeed, Wherry (1955) had placed the two species in independent subsections of the genus – *Douglasianae* and *Caespitosae*. Despite Wherry's protests, Cronquist's view gained the day thanks to the wide circulation of *Vascular Plants of the Pacific Northwest*, and most botanists and ecologists have been using *P. caespitosa* for this species ever since.

I examined the type material (the original specimens used to describe the species) of *P. douglasii* and *P. caespitosa*,



Side view of *Phlox douglasii* showing stiff needle-shaped leaves, calyx lobes and the glandular hairs.

Photo: Robert Korhage

plus I studied both entities in the field (*P. douglasii* in Washington, Oregon, and California; *P. caespitosa* in Montana). This work led me to conclude that the two represent separate species (Locklear 2009). As noted by Wherry (1962, 1965, 1969), the leaves of *P. douglasii* are dark green, slender and needle-shaped (acicular or acerose) and covered by long gland-tipped hairs, while the leaves of *P. caespitosa* are pale green, relatively broad and flat (linear-oblong), thickish and bear coarse glandless cilia along the margins. The distribution of *P. douglasii* is centered on the Columbia Plateau, while that of *P. caespitosa* is centered in the Northern

Rocky Mountains. Accordingly, the name *P. douglasii* has been reinstated (Locklear 2009).

Wherry (1955) recognized *P. douglasii* subsp. *rigida*, which he considered a shorter, more compact expression of Columbia phlox that grows in exposed, xeric habitat. The subspecies is based on *P. rigida*, described by English botanist George Bentham in 1845, also from material collected by David Douglas. As presently understood, the subspecies does not appear to warrant recognition and *P. rigida*, a name found in older floristic and ecological literature of Oregon and the Pacific Northwest, should be regarded as a later-published synonym of *P. douglasii*.

#### Description of Columbia Phlox

Columbia phlox is a subshrub, with herbaceous flowering growth that dies back to woody tissue at the end of each growing season. It is sparingly and diffusely branched, forming open tufts 10-20 cm tall from a woody base, the numerous erect-ascending annual flowering branches 5-15 cm long with about four leaf nodes apparent. The overall growth habit is more strongly condensed in exposed, xeric situations with flowering shoots only 2-4 cm long. The leaves of Columbia phlox are subulate, somewhat acerose, thinnish and dark green, sparsely ciliate and superficially pilose to glabrate with fine gland-tipped hairs, with a maximum length 7-12 mm and width 0.75-1.5 mm. The inflorescence is one- to three-flowered, its herbage copiously glandular-pubescent, with a maximum pedicel length 0.5-6 mm. The calyx is 7.5-11 mm long and united 1/2 to ca. 3/4 its length, the five spreading calyx-lobes linear-subulate with rather prominent midrib and cuspidate apex. The calyx membranes (thin, dry, translucent tissue occurring at the junction of the

sepals in the calyx-tube) are flat. The tube of the corolla is 10-14 mm long, glabrous or exceptionally pubescent, and the five spreading corolla-lobes obovate (average dimensions 7.5 by 5 mm). The corolla hue is lavender, pink or white. The style is 4-8 mm long, united to its tip, which is free for about a 1 mm. The flowering season of Columbia phlox is spring to early summer, April-May, into June.

#### Cushion-Forming Look-A-Likes

Columbia phlox is one of a number of cushion-forming phloxes occurring in Oregon that take careful observation to distinguish from each other. These

species share a tufted growth habit, with numerous short flowering shoots arising from a woody caudex in discrete clusters to form loose to dense mats, cushions, or mounds. The leaves of these species are small, narrow, and often rigid, and the flowers are solitary or in groups of two to three (up to six) together at the stem-tip. Within its range in Oregon, Columbia phlox is most likely to be confused with *P. austromontana* or *P. diffusa*, two species that share its more open growing, subshrub growth habit.

### Distribution and Habitat

As reflected in the common name, the distribution of Columbia phlox is concentrated on the Columbia Plateau, including the Walla Walla and Blue Mountain sections (western Idaho/eastern Oregon/eastern Washington), the Harney section of south-central Oregon, the Okanogan Highlands of north-central Washington and the northern Great Basin (northeastern California/southern Oregon/northwest Nevada). Within this region, Columbia phlox is associated with dissected plateaus, foothills, and mountains at elevations ranging from 1,000 to 7,000 feet.

Columbia phlox grows in dry habitats associated with escarpments, bluffs, scablands, ridges and the upper slopes of rolling terrain. Soils are medium- to coarse-textured, often stony and shallow to bedrock. Parent material is primarily basalt, but Columbia phlox also occurs in association with glacial outwash, pumice and other volcanic substrates, and outwash derived from the volcanic deposits.

In certain parts of its range, Columbia phlox occurs in habitat where the soil profile has a moderately to strongly structured, clayey B-horizon near the surface. The clay impedes water drainage, creating a perched water table with poor aeration in the rooting zone during the winter and spring. Columbia phlox is commonly associated with dwarf sagebrush (*Artemisia arbuscula*) in such habitat. The “*A. arbuscula* scab flats” of the Modoc Plateau of northeastern California, where Columbia phlox is a common species, are described as “virtually lakes in the spring when snow melts” due to the clayey soils (Young et al. 1977).

### Plant Community Associations

Columbia phlox occurs in conifer woodland, shrubland, shrub-steppe, grassland and rock outcrop communities. Throughout most of the northern portion of its range on the Columbia Plateau, Columbia phlox is associated with ponderosa pine (*Pinus ponderosa*) woodland and savanna. These open stands of ponderosa pine have an herbaceous layer typically dominated by a single species of xerophytic bunchgrass, either



*Phlox douglasii* in a Columbia plateau Western juniper (*Juniper occidentalis*) woodland.

Photo: James Locklear

bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), or needle-and-thread (*Hesperostipa comata*), with a rich diversity of forbs. Along with Columbia phlox, typical forbs in these communities include arrowleaf balsamroot (*Balsamorhiza sagittata*), yellowbells (*Fritillaria pudica*), bulbous woodlandstar (*Lithophragma glabrum*), silky lupine (*Lupinus sericeus*), sagebrush buttercup (*Ranunculus glaberrimus*), and Douglas’ blue-eyed-grass (*Olsynium douglasii* var. *inflatum*). These communities often border more densely forested areas of higher elevations, as in the Blue Mountains of northeastern Oregon.

In central Oregon and extending into extreme northeastern California, Columbia phlox occurs in western juniper (*Juniperus occidentalis* var. *occidentalis*) woodland. These open stands of western juniper, the most xeric forested community in the Pacific Northwest, occur with a shrub understory of Wyoming big sagebrush (*A. tridentata* subsp. *wyomingensis*), dwarf sagebrush, or antelope bitterbrush (*Purshia tridentata*), along with an herbaceous layer dominated by bluebunch wheatgrass or Idaho fescue. Columbia phlox is often a prominent forb in the herbaceous layer

of juniper woodlands, notably in the Ochoco Mountains of central Oregon and the Warner Mountains of northeastern California.

Columbia phlox occurs in several types of shrubland and shrub-steppe on the Columbia Plateau and northern Great Basin. It is strongly associated with dwarf sagebrush in stony, shallow-soil habitat. These communities occur in open scabland, sometimes in a complex mosaic of openings within woodland, shrubland and grassland communities. In the Hart Mountain National Antelope Refuge in southcentral Oregon, Columbia phlox is associated with extensive stands of dwarf sagebrush on upland flats. It also occurs in shrublands and shrub-steppe dominated by antelope bitterbrush and, less commonly, big sagebrush.

Columbia phlox is a component of grassland communities throughout its range on the Columbia Plateau. It is particularly common in the bunchgrass communities of the watershed of the Spokane River in eastern Washington and adjacent

Idaho dominated by Idaho fescue or bluebunch wheatgrass. David Douglas appeared to be writing of Columbia phlox in his journal while in the vicinity of present-day Spokane, Washington, on 10 May 1826, when he noted a “small beautiful species of Phlox which I found some time since on the Columbia gave the whole open places a fine effect.”

Columbia phlox is often a dominant element in the flora of xeric rock outcrop and scabland and coulee habitat in the Pacific Northwest. It is very common along the rim-rock edges of the basalt plateaus that form the spectacular canyons of the Deschutes and Crooked Rivers in northcentral Oregon. It also is one of the showiest forbs growing on the comparatively recent volcanic substrates in Lava Beds National Monument on the Modoc Plateau in northeastern California. Columbia phlox is a dominant plant in the sparsely vegetated badland habitat derived from eroded volcanic ash and tuff deposits of the John Day and Clarno formations in central Oregon. In northeastern Washington, it occurs on rocky mounds and rock stripes in patterned ground habitat (biscuit and swale).

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# The Plant List weeds out naming duplications

As the 2010 United Nations International Year of Biodiversity drew to a close, the Missouri Botanical Garden and the Royal Botanic Gardens, Kew announced the completion of The Plant List, a working list of all land plant species, fundamental to understanding and documenting plant diversity and effective conservation of plants. (To see it, go to [www.theplantlist.org](http://www.theplantlist.org))

"The Plant List provides us with a benchmark of our current knowledge of the names of flowering plants, gymnosperms, ferns and bryophytes," noted Bob Magill of the Missouri Botanical Garden. "As more information is accumulated about these plants, the list will undoubtedly change, but we now have a fixed point to track changes and monitor relationships among the vegetation around us."

"The website will provide everyone interested in plants access to a defined list of the world's plants that will enhance



*Lilium columbianum* (tiger lily) is known by at least nine other synonyms. Photo: Dawn Hanna

the study of botany and positively impact conservation, planning and climate change effects on plants."

Without accurate names, understanding and communication about global plant life would descend into inefficient chaos, costing vast sums of money and threatening lives in the case of plants used for food or medicine. The Plant

List provides a way of linking the different scientific names used for a particular species together, thus meeting the needs of the conservation community by providing reliable names for all communication about plants and their uses.

The Plant List includes 1.25 million scientific plant names, of which 1.04 million are names of species rank. Of the species names included in The Plant List, about 300,000 (29 percent) are accepted names for species and about 480,000 (46 percent) are recorded as synonyms of those species. The status of the remaining

260,000 names is "unresolved" since the contributing data sets do not contain sufficient evidence to decide whether they should be accepted names or synonyms.

The Plant List includes a further 204,000 scientific plant names of infraspecific taxonomic rank linked to those species names. These numbers will change in the future as data quality improves.

## Phlox, continued from page 11

Interpreting ecological literature in relation to *P. douglasii* is made difficult by the confused nomenclature surrounding this species. Ecological literature pertaining to *P. douglasii* in Oregon includes the following references: Culver 1964 (as *P. diffusa*); Driscoll 1964a, 1964b; Eckert 1957 (as *P. diffusa*); Hall 1967. These names have been repeated where these studies are cited in the important ecological reference, *Natural Vegetation of Oregon and Washington* (Franklin and Dyness 1988).

## Horticulture: Mistaken Paternity

The name *P. douglasii* and the term "*Douglasii* Hybrids" have been used in European horticulture for decades in connection with the many cushion phlox cultivars that have been selected, named, and introduced into commerce, particularly in England. The association of cultivars with the name *P. douglasii* occurred as early as 1931 in an article on "alpine phlox" in cultivation at the Royal Horticultural Society's garden at Wisley. Some of these cultivars, such 'Crackerjack', are among the most popular and most easily grown cushion phlox in Europe, and several have received the Award of Garden Merit from the Royal Horticultural Society.

Whatever the original source of this material, it was not David Douglas

himself, and most likely was not true *P. douglasii*. Careful review Douglas' journal discloses that, while he collected herbarium specimens of a number of phloxes in the Pacific Northwest, the only species from which he actually collected seed was *P. longifolia*. This is in fact the only phlox included on the list of plants introduced by Douglas, as compiled and published by the Royal Horticultural Society in 1914.

Of the many cultivars circulating under the name "*Douglasii* Hybrids," at least some are suspected to represent hybrids involving spontaneous garden crosses between *P. bifida*, *P. nivalis*, or *P. subulata*, or between one of these eastern mat-forming phloxes and one of the western cushion-forming phloxes. *Phlox diffusa* is the suspected westerner because, like the cultivars in question but unlike most of the western cushion-forming phloxes, it is relatively easy to propagate.

The only reliable report of the cultivation of Columbia phlox is found in Gabrielson's *Western American Alpines* (1932) where it is apparent from his description of its attributes and ecology that he was referring to true *P. douglasii*. Gabrielson noted the plant was "in cultivation on the Pacific coast, both in Canada and the United States, and... available in a limited way commercially." Columbia phlox is a showy species with

potential not only as a subject for the rock garden but also as a drought-tolerant landscape plant for drier portions of the Pacific Northwest. It should be grown in full sun to light shade in dry, well-drained soil.

## Acknowledgements

I thank the Native Plant Society of Oregon for providing a grant that assisted with my field research on the genus *Phlox* in the Pacific Northwest. This research was also supported by a grant from the North American Rock Garden Society. Thanks also to the curators and staff of the herbaria of the University of Oregon (ORE) and Oregon State University (OSC) for providing data from herbarium specimen labels.

## References

The list of references is too long to reproduce here. To obtain the list, please send an email to the editor at [dawnhanna@telus.net](mailto:dawnhanna@telus.net)

## Author Bio:

Jim Locklear is a botanist and horticulturist living in Lincoln, Nebraska, and is director of conservation for Lauritzen Gardens in Omaha, Nebraska. He recently completed work on a book on the genus *Phlox* that will be available from Timber Press in 2011.

# Coming events

NATIVE PLANT SOCIETY OF BC

## SOUTH COAST NATIVE PLANT STUDY GROUP

(A subgroup of the Native Plant Society of BC)

Evening presentations

February 3

### Edible and Medicinal Plants of BC Andy MacKinnon

British Columbia is home to a wide diversity of plants that people have used as food, and for their healing properties for thousands of years. Come learn more about these grasses, wildflowers, ferns, shrubs and trees, what their uses are (or have been), and how to recognize them. Please also come prepared to share information about your favourite edible and medicinal BC plants.

Andy MacKinnon is the co-author of *Edible and Medicinal Plants of Canada as well as Plants of Coastal British Columbia*.

March 3

### Flora of the White Lake Basin, Okanagan Valley

Dr. Terry McIntosh

This presentation will introduce you to the myriad of plants and associated habitats that are found in the White Lake Basin southwest of Penticton. The basin is an isolated open area dominated by sagebrush steppe and grasslands. Numerous rare species, both vascular plants including showy phlox, and mosses, such as

rusty cord-moss, are found here. The talk will focus mainly on vascular plants (with lots of photos) but will also introduce you to the ecological dilemma that faces this mainly federally owned land.

Dr. Terry McIntosh is a botanist (and well-known *bon vivant*) whose main botanical interests are rare habitats and species, bryophytes (mainly mosses), and biological crusts of arid ecosystems. He has an intimate knowledge of the White Lake area.

April 6

### Pink Mountain: A conservation crisis Ron Long

You may have heard photographer Ron Long speak about the rare and unique plants of Pink Mountain in the past. This year he was horrified to learn of plans to establish wind towers and, in so doing,

wipe the plants off the mountaintop. Because it is so far north, Pink Mountain tends to be out of sight and out of mind of conservationists so government and industry can more easily exploit its resources for profit regardless of the cost to the unique biodiversity of this area. Ron's talk will provide new information about this amazing plant community as well as the birds and animals of Pink Mountain, and then move on to the looming threat and a possible solution.

Ron Long is a long-time photographer and director of the Native Plant Society of BC.

All meetings are held at 7 p.m. in the Cedar Room at VanDusen Botanical Garden, 5251 Oak Street (37th & Oak St.), Vancouver. Admission is free for members, \$2 for drop-ins.

For more information, please check the NPSBC website at [www.npsbc.org](http://www.npsbc.org) or email [npsbc@telus.net](mailto:npsbc@telus.net) or call (604) 831-5069.

## VICTORIA NATIVE PLANT STUDY GROUP

The speakers series has resumed, with sessions being held at 7 p.m. at the University of Victoria's MacLaurin Building, Room D-116. Non-member drop-in fee is \$3. Please check the NPSG website at [www.npsg.ca](http://www.npsg.ca) for information as it becomes available.

## VANDUSEN BOTANICAL GARDEN

Cedar Series Lectures

February 10

### Recent Trends in Botanical Field Research in British Columbia, Dr. Terry McIntosh

Despite a long history of plant collecting in BC, many areas have not been thoroughly inventoried and botanists continue to make new discoveries. Dr. McIntosh will discuss the newest trends in botanical exploration, and some of the latest finds. He will also address some of the issues surrounding conservation of rare plant species and biodiversity-critical habitats.

March 10

### From Here to 100: the next six years in the garden that John Davidson built Patrick Lewis, Director of the UBC Botanical Garden

Provincial Botanist John Davidson began collecting in BC in 1912. In 1916, the arboretum he established at Essondale was moved to the University of BC. The Garden he began is now approaching 100,

an important crossroads where its mandate of education, research, conservation and outreach intersect.

The Cedar Series Lectures are held at 7:30 p.m. in the Floral Hall. Tickets are \$10 for members, \$15 for non-members and are available in advance from the administration office as well as the door.

Other

February 26

### Seedy Saturday

10 a.m. to 4 p.m. in Floral Hall

A celebration of heritage varieties and organic gardening featuring more than 30 growers, seed companies and exhibitors and Heritage Seed Swap. Admission by donation.

Presented by the BC Master Gardeners Association

March 20

### Medicine Wheel Ceremony

12 noon to 3 p.m. at the First Nations' Medicine Wheel in the Canadian Heritage Garden.

You are invited to join elders from the First Nations community in a spiritual ceremony to mark the changing of the season. Wear clothing appropriate for the weather, bring a small stone to bless and leave at the wheel as well as a food item to share at the potluck meal at the conclusion of the ceremony.

Information: Contact VanDusen's Librarian Marina Princz at [library@vandusen.org](mailto:library@vandusen.org) or 604.257.8668

## UBC BOTANICAL GARDEN

All events take place at the UBC Botanical Garden, 6804 SW Marine Dr.

Courses

March 6

### Basketry – Pacific Northwest Naturals Basket with Joan Carrigan

Weave a basket with a selection of materials found in the Pacific Northwest, such as red cedar bark, willow bark, wild cherry bark, west coast sweetgrass and beargrass. A variety of weaving techniques and patterns will be covered including plaiting, variations of twining, and twill weave.

12 people maximum. \$134 for non members, \$124 for garden members. For more information, go to [www.ubcbotanicalgarden.org](http://www.ubcbotanicalgarden.org) and look under Education and Outreach or call (604) 822-3928.



*Balsamorhiza sagittata*

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*Events, continued from page 13*

March 5 and 6

**Compelling Garden Photography with Daniel Mosquin**

Join UBC Botanical Garden's Daniel Mosquin for this course on visual design in garden photography. This course will combine an indoor lecture on composition and visual design with outdoor teaching on "how to see" in photography, using the beautiful plants of UBC Botanical Garden. To ensure one-to-one time spent with the instructor, the class will be split into two groups on Sunday, with half attending in the morning and the other half attending in the afternoon. Please state your preference when booking the course. 8 people maximum. \$105 for non-members, \$95 for members

March 26 and 27

**Botanical Watercolour with Alison Watt**

Join botanical painter Alison Watt in the Garden Pavilion for this introductory course to Botanical Painting. The class will cover watercolour materials (brushes, paints, and paper) and basic watercolour techniques (mixing, glazing, wet-in-wet, masking). Special attention will be given to the concerns of plant painting (greens, whites, darks, stems, leaves, etc.). 15 people maximum, \$139 for non-members, \$129 for members

April 6, 13, 20 and 27

**Botanical Printmaking with Phyllis Greenwood**

Students will cut one or more block prints, using imagery from their sketches or from the plants provided. Students will decide on a scientific or expressive approach to their work. All materials are included: blocks, tracing paper, cutting tools, inks, inking plates, rollers, printing paper and plants. The instructor will demonstrate all processes.

10 people maximum  
\$155 for non-members, \$145 for members

*Noon-hour Lectures*

March 28

**Cycling the Kettle Valley Rail Trail with Nadine Diner**

In 1915, the Kettle Valley Railway, known by some as the most expensive railroad ever built, opened. The railway of over 500km connected the Kootenay region to BC's coast across mountain ranges considered among North America's most difficult terrain. Between 1961 and 1989, the Kettle Valley Railway was abandoned as highways became established, and today much of the original route has been converted to a recreational trail known as the Kettle Valley Rail Trail. Join Nadine Diner as she shares her brief cycling trips

to the Myra Canyon and Naramata regions of the Kettle Valley Rail Trail, and her hopes to return and explore additional stretches of this fantastic and local wonder complete with expansive trestle bridges, tunnels, panoramic views, history and stories of human innovation, along with botany and wildlife.

Noon to 1 p.m. Cost: \$5. Bring a bag lunch. Coffee and tea provided.

April 11

**Your Garden and Climate Change – You Can Help with Fred Bunnell**  
*(Part of the Gardening/UN2011 International Year of Forests)*

Climate change already is impacting ecological systems in British Columbia. Some of these impacts are described. There are major barriers to an effective response and there is no way we can evade ever-greater impacts for a long time yet. We cannot become "climate proof" so must become climate resilient. Increased resilience will come through mitigation and adaptation. Gardeners have an important role to play.

Noon to 1 p.m. Cost: \$5. Bring a bag lunch. Coffee and tea provided.

**NATURE VANCOUVER BOTANY SECTION**

The evening programs of the Botany Section are held on the third Thursday of each month at 7:30 p.m. at the Unity Church, 5840 Oak St, Vancouver. For more information, go to [www.naturevancouver.ca](http://www.naturevancouver.ca)

Thursday, February 17

**Haida Gwaii: The Canadian Galapagos**  
**Dr. Rolf Mathewes**

This powerpoint talk will focus on the environmental history of the "Canadian Galapagos", with emphasis on controversies about the glacial history, human history, and the postglacial history of plants and animals. It summarizes scientific findings by the speaker and colleagues over the past 30 years on Haida Gwaii regarding its past, present, and future. Rolf Mathewes is a full professor of Biological Sciences and associate dean of Science at Simon Fraser University. He has a PhD in botany from the University of British Columbia, and has researched vegetation history in Europe as well as his main region of interest in Western Canada, especially Haida Gwaii. He has published more than 100 scientific papers and co-edited a book on Haida Gwaii for UBC Press. His interests extend from environmental history using fossil pollen and plant macro-remains to geology, archaeology, and most recently, forensic botany.

**VOLUNTEER OPPORTUNITIES**

**Jericho Park, Vancouver**

Second Sunday each month  
(February 13, March 13, April 10)  
9 a.m. to 1 p.m.

Help remove invasive plants and replant native plant species to restore and enhance habitat at Jericho Park in Vancouver. Tools and gloves provided. Meet at the wooden bridge over the pond. For more info, go to [www.jerichostewardship.ca](http://www.jerichostewardship.ca)

**Iona Beach Regional Park, Richmond**

Third Sunday each month  
(February 20, March 20, April 17)  
10 a.m. to 1 p.m.

Help remove invasive plants and restore rare sand dune habitat at Iona Beach Regional Park in Richmond. Tools and gloves provided. Meet at the washroom building. For more info, go to [www.parkpartners.ca/partners/IonaBeach/iona.htm](http://www.parkpartners.ca/partners/IonaBeach/iona.htm) \*

**Mark your calendars for the**

**Native Plant Society of BC**

**Spring 2011  
Wildflower Fling  
and AGM**



being held in Penticton  
May 27 to 29

*Watch for details in the  
spring issue of Menziesia  
and on the website at  
[www.npsbc.org](http://www.npsbc.org)*



# Are plants more intelligent than animals?

Our view of plants is changing dramatically away from seeing them as passive entities – merely subject to environmental forces and designed solely for accumulation of photosynthate.

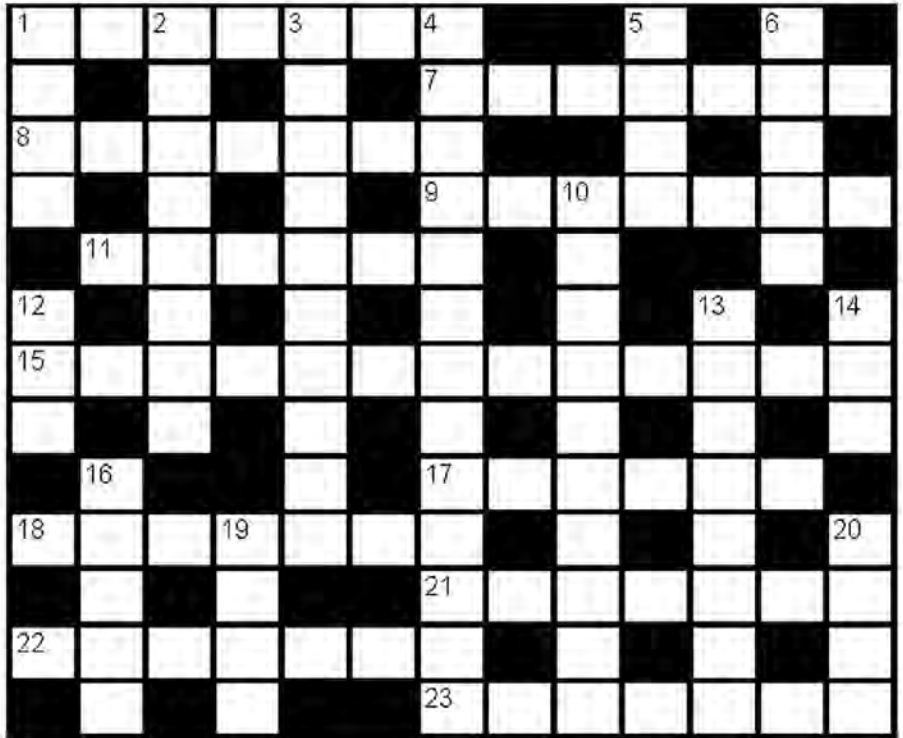
“In contrast, plants are dynamic and highly sensitive organisms that actively and competitively forage for limited resources, both above- and below-ground organisms that accurately compute their circumstances, use sophisticated cost-benefit analysis, and that take defined actions to mitigate and control diverse environmental insults. Moreover, plants are also capable of a refined recognition of self and non-self and are territorial in behavior.

“This new view sees plants as information processing organisms with complex communication throughout the individual plant. Plants are as sophisticated in behavior as animals but their potential has been masked because it operates on time scales many orders of magnitude less than that operating in animals.”

~ Dr. Stefano Mancuso, director of of the Laboratorio Internazionale di Neurobiologica Vegetale in Florence, Italy, as quoted in a recent interview

Dr. Mancuso and his team are researching plant neurobiology. To find out more about Dr. Mancuso’s work, you can watch his 14-minute presentation “The Roots of Plant Intelligence” at TED ([www.ted.com](http://www.ted.com)) or visit [www.lin.v.org](http://www.lin.v.org)

## Cannings’ Cryptic Crossword



By Richard Cannings



### ACROSS

1. Gym pointers for members of the Aster family (7)
7. Flowering shrubs in Arizona brewed as ale (7)
8. A north cent includes one like an old-growth forest with rich lichen diversity (7)
9. Dig up disoriented haunter (7)
11. Glass-cutter, etc., took her (6)
15. All right, a horse took a northern flower for Interior watercourse. (8,5)
17. Sirens confused finches (6)
18. Two-legged, piebald jumble (7)
21. Beer woman fish (7)
22. Young woman takes particle in Fraser Valley town (7)
23. Spanish duos separated by a dance move (3-1-3)

### DOWN

1. Time period within tiny earth (4)
2. Processed Arctotis to make cheese (8)

3. Highly agitated above, he consumed 500 (10)
4. Crazy Austrians land at coastal BC site (7,6)
5. Seaweed found in foul vacuum (4)
6. Desert plants created in atomic action (5)
10. Revenges, er, damaged conifers (10)
12. Odds of broлга being found in a marsh (3)
13. Songbird at home in the kitchen? (8)
14. Desert-like initially, drought recurring yearly (3)
16. Good pelvic bones flower (5)
19. Direction to each street (4)
20. Bow sources heard as utilize (4)

Answers on page 16

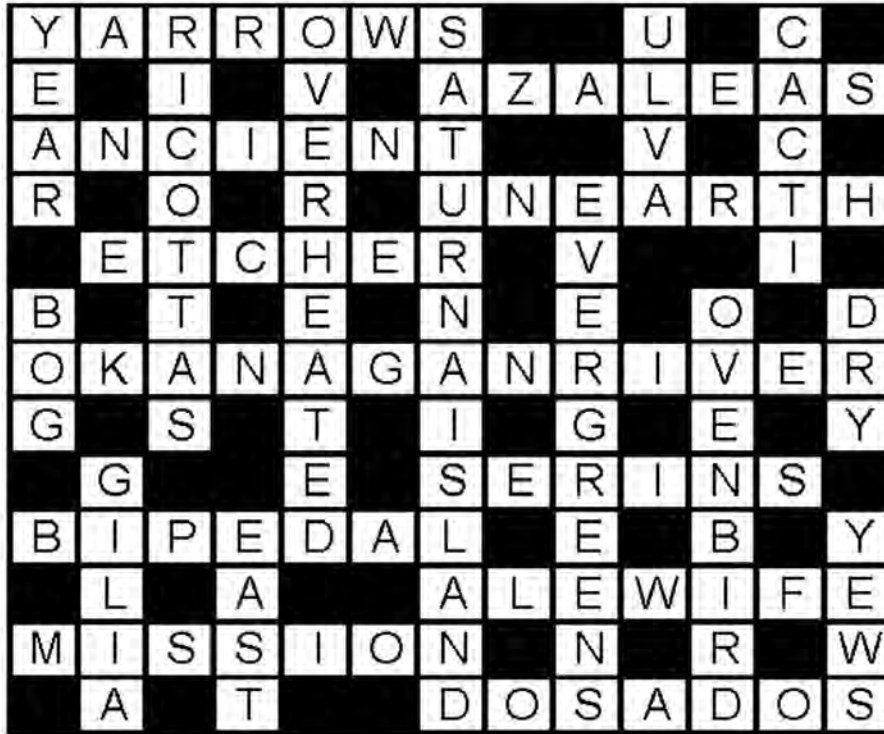
### How it works

Every clue contains the definition of the answer plus a cryptic clue to the word or the letters that form it. Some examples:

1. Back an Oz IRA for snowbird destination? (7) Answer: ARIZONA (an Oz IRA backwards)
2. Echo loses hot, lethargic feeling for environmental study. (7) Answer: ECOLOGY (echo loses H (hot) + logy (lethargic feeling))
3. Mashed pea seed for fishing or diving (4,3) Answer: DEEP SEA (anagram of pea seed; watch for words like confused jumbled, crazy, mashed -- they often signal an anagram.)

# Cryptic crossword answers explained

from puzzle on page 15



## ACROSS

1. Yarrows (Y + arrows); 7. Azaleas (AZ + as ale anagram); 8. Ancient (A + N + CiENT); 9. Unearth (haunter anagram); 11. Etcher (etc +her); 15. Okanagan River (OK + A + NAG + N, flower=river [I've resisted using this common cryptic crossword use of the word flower, but thought it appropriate here]); 17. Serin (siren anagram); 18. Bipedal (piebald anagram); 21. Alewife (ale + wife); 22. Mission (miss +ion); 23. Dos-a-dos (dos + a + dos).

## DOWN

1. Year (hidden in tinY EARth); 2. Ricottas (Arctotis anagram); 3. Overheated (over + he + ate + D); 4. Saturna Island (Austrians anagram + land); 5. Ulva (hidden in foUL VAcuum); 6. Cacti (hidden in atomiC ACTIon); 10. Evergreens (revenge er anagram); 12. Bog (odd letters of broлга); 13. Ovenbird (oven + bird); 14. Dry (initial letters of Drought Recurring Yearly); 16. Gilia (G + ilia); 19. East (EA + ST); 20. Yews (sounds like use).

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