



MARCH 2006

WHERE HAVE ALL THE FLOWERS GONE?

The Mystery of the Disappearing Ecosystem

Emily Gonzales, Phd candidate at the Centre for Applied Conservation Research at UBC

National Parks play a key role in protecting our native species and natural spaces. Unfortunately, some forces continue to degrade ecosystems even after land has been protected. Large herbivores, such as deer, sheep, goats and cattle, can devour and trample native plants. Exotic plants invade and change the appearance and function of natural ecosystems. Emily Gonzales is studying the relative influence of herbivory and exotic grass competition in Garry oak ecosystems.

Garry oak ecosystems are one of the most endangered ecosystems in North America, but also one of the most beautiful, rich in a variety of plants and animals. Extending from central California to the southern coast of British Columbia, Garry oak ecosystems have been severely damaged or have disappeared due to extensive development in this populous region.

Abundant herbivores can also damage Garry oak ecosystems. Black-tailed deer and Roosevelt elk are native herbivores and an important component to the ecosystem. Deer, however, are very abundant on some islands while others have feral sheep and goats. The intensity of herbivory leads to cascading effects including the loss of native plants and the loss of habitat for native animals.

The Gulf Islands National Park Reserve (GINPR), announced in 2003, protects the most pristine examples of this ecosystem. The GINPR is comprised of dozens of islands, large and small. The smallest islets have no herbivores and few exotic grasses. They are bright jewels in the spring with abundant wildflowers. These islets act as refuges for many rare and endangered plants, but exotic grasses and human activity are threatening these last vestiges of Garry oak ecosystems.

Emily is working with Parks Canada to develop baseline data for this new park, to measure the effects of change. Change is coming in the form of more visitors to the islands, as many people are discovering the beauty

of the Gulf Islands but not all are aware that they need to tread carefully and dispose of waste responsibly. Change is also coming through the further invasion of exotic grasses and the decline of native species. Change may also occur in the Park for the better as management and restoration works to restore the Garry oak ecosystems to their natural state. Emily's experiments and analyses will help us understand the relative and quantitative effects of herbivores and exotic plants in Garry oak ecosystems. Understanding Garry oak ecosystems will help us better protect, manage, and appreciate these unique natural spaces.

The invasion of exotic grasses is a global problem that has reduced the abundance of native plants in natural ecosystems. Ungulates also affect the composition of plant communities, but their effects are variable and depend on the characteristics of ecosystems and the intensity of herbivory. Emily examined the effects of shading and litter accumulation by exotic grasses and herbivory by native and feral herbivores on native plants in endangered oak meadows.

First she compared patterns of plant community composition in an archipelago of islands with different densities of native black-tailed deer to test if the intensity of herbivory explained native plant richness and abundance. Her results showed that native plant richness and abundance in the southern Gulf Islands of BC increased with moderate herbivory, but declined precipitously with high herbivory. Next she tested if exotic grasses and herbivores influenced the establishment of native seeds, or the productivity of native plants, by comparing their performance in experimental plots with or without grass and herbivores. Eight native seed species were added to plots on three islands with native deer and >50% exotic grass biomass. The deep soil site had no other herbivores present but the two shallow soils sites also had feral herbivores, one with goats and the other with sheep. she found that herbivory had no significant effect on the

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establishment of native forbs. Although exotic grasses had no effect on the establishment of native forbs at the shallow soil sites, four species established at lower rates in the presence of exotic grasses in the deep soil site. She planted established native plants on an island with sheep and deer and found that herbivory reduced the growth and flower production of native forbs but had equivocal effects on native trees. The presence of exotic grasses facilitated the growth of the forbs but had no effect on the trees. Exotic grasses now dominate most oak ecosystems, but their invasion may not be driven solely by competitive exclusion because herbivores can reduce the growth and fitness of native plants. They may also facilitate the spread of exotic grasses by reducing seed production and mediating competition in ecosystems already compromised by fragmentation and development.

- Non-native grasses now dominate most oak ecosystems, but their invasion may not be driven solely by competitive displacement
- Ungulates reduce the performance of native plants
- Competition reduces establishment of native plants in productive (deep soil) sites
- Landscape structure exacerbates stressors on native species
- Ungulates may also facilitate spread of non-native species through their feces
- Restoration actions include augmenting with native plants, removing non-native biomass, and fencing from herbivores.

MIX NATIVE & EXOTIC PLANTS IN GARDENS?

A bad cold kept me from my reporter duties at the February meeting, so I am going to have to give a personal perspective on this question, having not had the chance to hear others comments. Short answer? Yes. It's a garden and I don't think we should be fooling ourselves that we are recreating ecosystems, at the very least the scale is too small.

However, it is all to the better to plant as many native species as possible and any non-native

species should never exhibit invasive tendencies. It's fine to want some extra colour in the summer and fall, we have very few native plants that bloom in those seasons although our native asters (*Aster* sp), gumweed (*Grindelia integrifolia*) and pearly everlasting (*Anaphalis margaritacea*) are a great



nectar treat for those end of season butterflies and pollinators. Exotic species can help nectar feeding insects and birds during the time our natural ecosystems become virtual nectar deserts.

I was visiting a home in Fairfield last fall and saw quite a few butterflies happily fluttering from flower to exotic flower. My rocky hillside in Metchosin meanwhile hadn't seen a butterfly in quite a while.

In the converted and manipulated environments that are our urban and suburban homes, we have many choices that we can make that will increase the habitat potential for the native creatures that we displace. Ponds (without fish) for dragonfly larvae and amphibians, piles of rocks for snakes and lizards, rotten logs for salamanders, hedgerows and trees for birds, leaves left unraked, pesticides left unused, mason bee and bird houses as well as (non-invasive) nectar producing plants all contribute to a much different but still habitable urban landscape that can support some less particular native species.

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SUN-LOVING FERNS

When we speak of ferns we are generally speaking about the shade loving plants of our coastal forests. What is more majestic than a hillside covered in sword ferns (*Polystichum munitum*), those evergreen, workhorse ferns that tolerate and thrive on all sorts of abuse? Or perhaps you think of the delicate and ethereal maidenhair ferns (*Adiantum aleuticum*), on their weeping cliff faces.

Many people are not familiar with our sun-loving ferns. Anecdotally, all the following ferns seem to prefer sunny, open areas, at the base of rocks, often under an overhang and they are all members of the Pteridaceae family of ferns.

Pod fern or Indian's-dream fern (*Aspidotis densa*) is a small, evergreen fern which grows abundantly on my west facing rocky hillside in a winter seepage area and it is said to favour limestone or *serpentine conditions. It produces both fertile and sterile leaves that are different from each other. Both fronds are considered broadly diamond shaped with the sterile leaf segments wider than the fertile segments. The stipes or frond stems are a stiff, shiny dark chestnut brown.

Parsley fern (*Cryptogramma acrostichoides*) is another small, evergreen fern with both sterile and fertile leaves, whose sterile leaves appear similar to parsley. The fertile leaves are narrow and inrolled and the stipes are stiff and straw-coloured. I have only seen this fern very occasionally and not in abundance.

When I first started noticing our rocky-terrain sun-loving ferns, the appearance of a goldenback fern (*Pentagramma triangularis*) was cause for great delight. It took my eyes awhile to begin to see them in many locations, hidden beneath overhanging rocks, not really sun-loving as the overhangs protect from most of the sun's rays. They are small and evergreen with a somewhat triangular shaped frond, which when dry, curls over to show the golden coloured powder that covers the underside. The stipes are a wiry, shiny brown.



Pod Fern and Parsley Fern



Lace fern (*Cheilanthes gracillima*) is a rare, small, evergreen fern that can be found in acid igneous rocky areas. Pojar and MacKinnon describe the leaves as twice branched and cinnamon-felted on the underside. The Illustrated Flora of BC show the fronds as narrow and only marginally narrower at the top than throughout the length. This is a plant I can still look forward to finding.

*NOTE: Serpentine is a group of common rock-forming hydrous iron phyllosilicate minerals and is found as a constituent in many metamorphic and weather igneous rocks. It often colors many of these rocks green and most rocks that have a green color probably have serpentine in some amount. Soils derived from serpentine are toxic to many plants due to their high mineral content, and the flora is generally very distinctive, with specialised, slow-growing species. Areas of serpentine-derived soil will show as strips of shrubland and open, scattered small trees (often conifers) within otherwise forested areas.

The NPSG meets the 3rd Thursday Sept-May (excluding Dec) at 7:00 pm in Room D116, MacLaurin Bldg, UVic.

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SCHEDULE OF SPEAKERS

April 20th **Stu Crawford**

A story of lichens and people, and Secwepemc lessons on how to eat black tree lichen

Biography: Stu is an ethnobotany student currently working with a Secwepemc community near Salmon Arm. He has been working on an ongoing, community-directed research project to monitor the effects of different logging practices on traditional-use plants in Secwepemc territory. He is currently finishing up his MSc. thesis on the human uses of lichens, particularly the Secwepemc use of black tree lichen (*Bryoria fremontii*) for food.

May 18th **Ted Lea**

Historical Garry Oak ecosystem mapping for southern Vancouver Island

Biography: Ted Lea is a Vegetation Ecologist with the Ecosystems Branch of the BC Ministry of Environment. He has been involved with ecosystem mapping throughout the province for over 25 years, and has recently mapped historical (pre-settlement) ecosystems for Garry oak ecosystems and the Okanagan Valley. His present position is dealing with recovery planning for plant species at risk in the province

VOLUNTEER OPPORTUNITIES

As part of the Centennial Trail, the Brighton Ave. Walkway is undergoing a restoration project. Contact Carol Davies (475-4412 or ecdavies@uvic.ca) if you would like to volunteer.

Contact Susanna Solecki at sannasolecki@hotmail.com if you would be willing to spend 1.5 hours in May teaching a group of interested kids in the Young Naturalist Club about mosses - or some other botanical event?

The yellow blooms taunt
Invasive and pernicious
Your genes spell success.

PLANTWATCH

PlantWatch is part of the national NatureWatch series of volunteer monitoring programs designed to help identify ecological changes that may be affecting our environment. The goal is to encourage Canadians of all ages to get involved in helping scientists discover how, and more importantly why, our natural environment is changing.

The PlantWatch program enables "citizen scientists" to get involved by recording flowering times for selected plant species and reporting these dates to researchers through the Internet or by mail. When you submit your data electronically, it's added instantly to Web maps showing bloom dates across Canada, so your observations make a difference right away!

Plant species for which information is requested in the Victoria area are:

Aspen (*Populus tremuloides*), Kinnikinnick (*Arctostaphylos uva-ursi*), Common lilac (*Syringa vulgaris*), Dandelion (*Taraxacum officinale*), Shore pine, (*Pinus contorta*), Saskatoon (*Amelanchier alnifolia*), Twinflower (*Linnaea borealis*) and wild strawberry (*Fragaria virginiana/vesca*).

Go to www.plantwatch.ca for further information.

EVENTS AND OUTINGS

CRD Parks

March 19th Sunday at 1 pm at Lone Tree Hill. Hike to view wildflowers and scenic views

March 25th Saturday at 1 pm at Devonian. Of Horsetails and Skunk Cabbage

Victoria Natural History Society

(Call Agnes at 721-0634 for more information)

March 19, Sunday. Satinflowes at Mount Wells with Chris Gilbert and Agnes Lynn.

Please note the trail is steep and challenging but will be taken at a leisurely pace to enjoy the habitat. Take the up-island highway towards Goldstream Park. Turn left on Sooke Lake Road shortly before you get to Goldstream. Turn left on Humpback Road at Ma Millar's

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pub. At the intersection with Irwin Road, stay right. Follow Humpback Road to the park entrance. Meet at the parking lot at 10:00 a.m. Bring a lunch and drinks. No pets please.

March 21, Tuesday. BOTANY NIGHT - Agnes Lynn: Chasing the Seasons through 2005 Part II. Swan Lake Nature House, 7:30 p.m., everyone welcome.

April 1, Saturday. Oak Haven and Gore Parks. Meet at 10:00 a.m. at the entrance to Oak Haven Park on Garden Gate Drive, off Wallace Drive and just south of Benvenuto Avenue. Bring a snack and a drink. No pets please.

April 2, Sunday. Wild About Wildflowers Mill Hill. Meet at the Mill Hill Regional Park information kiosk in the parking lot off Atkins Avenue. 11:00 a.m. Admission by donation to RPBO Society strongly encouraged!

April 9, Sunday. ***FREE***WORKSHOP - Field Trip Leaders Workshop
Swan Lake Nature Centre 9 a.m. – 12 p.m. Lunch and an optional nature walk around the Sanctuary to follow. Call 478-9414 to pre-register (required).

April 14 Jocelyn Hill If time permits, we will also go up nearby Lone Tree Hill. Follow the Trans-Canada Highway to Millstream Road exit. Turn right on Millstream Road and continue to the junction of Millstream Lake Road. Turn left to continue on Millstream Road. Go past Lone Tree Hill Park on your right and watch for Emma Dixon Road and a large Stonecrest sign on the left. Park on the right hand side of the road. Meet there at 10:00 a.m. Please note the trail is steep and challenging but will be taken at a leisurely pace to enjoy the habitat. Bring a lunch and drinks. No pets please.

April 15, Saturday, Lake Cowichan Meet at Helmcken Park and Ride at 9:00 a.m. to car-pool. Bring a lunch and drinks for the day-long outing. No pets please.

April 17 Thetis Lake Park with botanist Hans Roemer Meet at the main parking lot at 10:00 a.m. Bring a snack and a drink. No pets please.

April 18, Tuesday. BOTANY NIGHT - Haida Gwaii (Queen Charlotte Islands). Swan Lake Nature House, 7:30 p.m., everyone welcome.

April 29, Saturday. Mount Tzouhalem Ecological Reserve with botanist Hans Roemer. Meet at Helmcken Park and Ride at 9:00 a.m. to car-pool.

Bring a lunch and drinks for the day-long outing. No pets please.

April 29, Saturday. ***FREE***WORKSHOP - Field Trip Leaders Workshop
Swan Lake Nature Centre 9 a.m. – 12 p.m. Lunch and an optional nature walk around the Sanctuary to follow. Call 478-9414 to pre-register (required).

May 6, Saturday. FIELD TRIP - Camas Day in Beacon Hill Park. Birding walk with Tom Gillespie at 9:00 a.m., Archaeology Walk at 11:00 or 1:00 with Grant Keddie, Wildflower Walk with Adolf Ceska and Brenda Beckwith at 11:00 and 1:00. Meet at the flag pole atop Beacon Hill.

March 18, 11:00 to 12:00. Four consecutive Saturdays. Oak Bay Native Plant Garden. Come visit Oak Bay's hidden gem and discover native plants for your garden. Meet at the garden entrance, corner of Margate and Beach Drive opposite the Oak Bay Beach Hotel. Free to all.

Mar. 25, 9:30 a.m. to 1:00 p.m.
Landscape Design with Native Plants with Pat Johnson and Christina Nikolic at Swan Lake Christmas Hill Nature Sanctuary, Victoria, B.C. Pre-registration required.
Cost - \$40, Friends of Swan Lake \$36.

The Land Conservancy's Nature Lecture Series with Dr. Briony Penn
Islands of the Salish Sea: a Community Atlas
March 22, 7:30 pm at 1964 Fairfield Road
Please call (250) 598-8096 to register. \$10 per person

April 12-14, 2nd Biennial Biodiversity, Education and Conservation Colloquium (Vancouver), 2006. For more information, contact laurel.mcivor@bgci.org (514-872-5420).



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SUMMARY OF GOERT GUIDELINES FOR WILDFLOWER PROPAGULE COLLECTION

1. Positively identify the plants before collecting seeds or cuttings.
 2. Use caution when collecting seeds or taking cuttings of native plants in natural areas as any collection is potentially damaging to native plant communities and habitats.
 3. Collecting must never endanger a plant population: collect seeds or cuttings, never whole plants; whole plants should never be dug up from natural areas, except when salvage becomes a last resort; remove only as much seed or plant material as required.
 4. Do not collect intensively from the same area year after year, and avoid collecting from small, isolated populations.
 5. Collect no more than 5% of the fruit, seeds or cuttings from any one plant. To maintain genetic diversity, collect seeds and/or cuttings from many plants of large populations (e.g. from at least 10 widely spaced plants).
- Summarized from Garry Oak Ecosystem Recovery Team (GOERT) website: www.goert.ca

IF YOU WOULD LIKE TO RECEIVE THE NPSG NEWSLETTER ELECTRONICALLY. PLEASE CONTACT: moralea@telus.net

BROOM

Laugh at our efforts
With your mocking spring flowers
Our resolve is firm



NATIVE PLANT STUDY GROUP

(Sub-group of the Victoria Horticultural Society)

The NATIVE PLANT STUDY GROUP is a non-political group dedicated to learning about B.C. native plants, as wild populations and in garden settings, and to supporting conservation of native plants and their habitats. The group is guided by a volunteer steering committee. Members are encouraged to volunteer for this committee. Participation in outside events, by the group, or by individual members using the NPSG name, is dependent on approval of the steering committee or, where indicated, by the at-large membership. Activities requiring funding must receive approval by the general membership.

References for Fern Article:

From: <http://mineral.galleries.com/minerals/silicate/serpenti/serpenti.htm>
<http://en.wikipedia.org/wiki/Serpentine>
Plants of Coastal British Columbia, Pojar and MacKinnon
and Illustrated Flora of British Columbia, Volume 5