



DATA! ... DATA! ... DATA!

Summer Field Work and the Plant Ecologist

By Alden Griffith, Assistant Professor of Environmental Studies

As February rolls around, many gardeners start to dream of their plans for the spring and summer. Once bulbs start bolting and lilacs start blooming, there's no time to lose! Although I eagerly await getting a jump start on my own vegetable garden every year, the ecologist in me focuses on the approaching spring and summer with only one thing on my mind: data.

Many great things come along with studying organisms in their outdoor environments: a fresh summer breeze versus stale laboratory air; the chirping of birds and the buzzing of bees versus the hum of fluorescent lights and equipment. The downside is that for much of the year there is often little to study. What if I realize my experiment isn't quite right, and I should have changed something right from the beginning? Well, I guess there's always next year. So unlike the laboratory scientist whose experiments don't usually depend on the weather, the life of a field ecologist tends to be a bit more bimodal: summer is synonymous with data! data! data!, whereas winter changes the focus to analyze! interpret! write!

Needless to say, the field work I get done in the summer is very important to me, and it is never too soon to start planning. This year is particularly exciting because I'm starting some brand new projects I hope will establish trajectories and gain momentum. So this brings us to the first stage of planning – what are my ecological questions? I am primarily interested in how local populations of plant species

increase or decrease through time, and what the driving factors are. I often think of myself as a plant demographer, keeping track of who lives, who dies, how much they grow, and how many seeds are produced, etc. Linking this type of information with data on soil conditions such as nutrient availability and moisture can be very powerful in understanding the dynamics of populations. These types of questions become particularly fascinating when dealing with invasive species: why do some populations explode and how are they affecting native plant populations?

One wonderful aspect of Wellesley College is its commitment to foster and encourage undergraduate research. An excellent manifestation of this is the Science Center's Summer Research Program. Each year students apply to do research with faculty members over the summer, keeping the Science Center a hub of activity all year round. Research lab teams resemble those of graduate students working with their advisor, and students are able to get a full sense of what academic research is all about.

For this summer, I am hoping to have funding enough to work with at least two students to address some of the questions outlined above, to lay the groundwork for ongoing research, and

of course, data! data! data! One project involves examining beach dune habitat on Cape Cod and the Islands. In the past, I have done a lot of work on the invasive grass, *Bromus tectorum*, also known as 'cheatgrass'. This seemingly innocuous annual plant from Eurasia is at the center of a dramatic ecological transformation out West – the conversion of tens of millions of acres from native sagebrush



Alpine ecology students marked plants in Glacier National Park last summer.

shrubland to fire-prone grassland. Its impact in the East has not been nearly so dramatic, and you're most likely to find cheatgrass as an occasional weed growing along roadsides. Yet I've now seen this little grass growing in natural sand dune habitats enough times to make me want to know what's going on.

This research will likely involve many trips to the coast and down to the Cape in order to characterize the distribution

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Notes from the Director – Spring '12

Hello from Wellesley! Since an October storm dropped several inches of snow on the campus, it has been a mostly snow-free winter. While the snowplows are getting a reprieve, we are hoping our layers of pine needles serve as enough of a blanket to prevent a lot of freeze-thaw cycles, particularly in newly planted areas such as the bog garden. With rain and bare ground in January, we may have an interesting spring in front of us. There were snowdrops (*Galanthus nivalis*) in bloom the first week of February in the Creighton Educational Garden!

Another newly planted area is a viewing garden surrounded on three sides by the new wing of the Whitin Observatory, with the fourth side open to the arboretum. Designed by Elise Mazareas and Emily Mueller de Celis of Michael Van Valkenburgh Associates, it includes a beautiful sweetbay (*Magnolia virginiana*), three *Franklinia* trees and several winterberry (*Ilex verticillata*), with a series of pitch pines (*Pinus rigida*) and sassafras (*Sassafras albidum*) making a connection to older ones nearby in the arboretum. One side of the garden is viewed through a series of floor-to-ceiling windows in the newly renovated classroom where I am teaching the Environmental Horticulture (Biology 108) class this spring. We will eagerly watch week by week as the garden awakens.

The horticulture class will be monitoring the Nut Grove in the Edible Ecosystem as it awakens this spring, with a new data collection “app” developed by Consuelo Valdes '11 and Michelle Ferreirae '13, working with Computer Science professor Orit Shaer. The class will observe the baby trees and their understory guilds, recording data on their health, growth, and animal visitors as well as the timing of their spring emergence. Summer interns will collect later-season data, which in future years will include yields of fruits and nuts! We will hold a spring workshop with Dave Jacke and Keith Zaltzberg on April 16 (see page 12), and another on September 8, to continue the implementation of this exciting garden.

A major focus this year is connecting art and science through plants. We are thrilled to have a site-specific art installation in the Margaret Ferguson Greenhouses, thanks to a partnership with the Jewett Arts Gallery and its director, Clara Lieu (see the article on Greenhouse Ghosts on page 3). The Davis Museum also offered a wonderful connection through their Global Flora exhibit, curated by Elaine Mehalakes. Featuring botanical art from several centuries of global exploration, the exhibit highlighted the integration of plants and culture. Elaine invited Ruth Rogers, curator of special collections at the Clapp Library, and myself to join her for an interdisciplinary gallery talk covering the historical and botanical contexts of the works of art. WCBG Assistant Director Gail Kahn took the science angle several

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A fall highlight of the bog was the blooming of helical spikes of ladies' tresses orchids (*Spiranthes cernua*), captured by Chemistry professor Flick Coleman in this photo before they were flattened by the October snow.

Help Us Fund Student Interns!

Your contributions are an important source of funding for summer research opportunities. Please consider earmarking a gift to the Friends for summer internships. This could be an additional gift, a class gift, or a gift in memory or in honor of an important person in your life.

Hands-on research and learning opportunities, a hallmark of science education at Wellesley, make an incredible contribution to the lives of young women and the topics they study. In addition to the research that Alden Griffith describes in this newsletter, Botanic Gardens Director Kristina Jones is overseeing six summer internships at the botanic gardens including the Edible Ecosystem Garden and the Kitchen Garden, and at the student farm, Regeneration. Interns will engage in hands-on learning about environmental horticulture and sustainable agriculture.

Please make your check payable to WCFH, and note in the memo field “Summer Interns 2012.”

You can send your gift to:

Wellesley College Friends of Horticulture
106 Central Street
Science Center
Wellesley, MA 02481

**Thank you for your support of students
and research at Wellesley College!**

From 'Horticulture' to 'Botanic Gardens'

Changing Our Name

Since our founding in 1983, we have been known as the Friends of Horticulture. After a bylaw change and official announcement at the Friends' annual meeting on June 4, we will become the Friends of the Wellesley College Botanic Gardens. If you look at the bottom of this newsletter page, you will see our new email address, wcbgfriends@wellesley.edu, and our new web address, www.wellesley.edu/wcbgfriends.

So why would we change our name after almost 30 years? This is a question with a number of answers from the practical to the philosophical. At the Friends' Steering Committee meeting last November where the decision to change or not was discussed at length, members pointed out the actual work of the Friends has always been in support of the Botanic Gardens, whether supplying docents for greenhouse and arboretum visitors or volunteers to help with gardening and program activities or raising funds for outreach, research and teaching. Changing our name requires no change at all in the Friends' purposes or mission as spelled out in our

bylaws. In fact, it clarifies them because the name is more specific. Since there is a sign on campus pointing the way to the Botanic Gardens, one docent quipped, "maybe the new name will help keep visitors from getting lost." In addition, last year the Friends' Administrative Manager, Gail Kahn, expanded her role and took on a new title, Assistant Director of the Botanic Gardens (see Fall 2011 News, page 3).

The change is happening now partly because Wellesley College has been working on its visual identity, inventing a striking new "W" as a logo for the college. Each of the four Friends Groups has been encouraged to identify itself more closely with the campus resource it supports. Friends of Horticulture started this process last summer when we changed our website to resemble that of the Botanic Gardens. Eventually this rethinking will result in a new logo for the Friends of the Wellesley College Botanic Gardens. In July we officially get our new name.

When you call us and hear, "Friends of the Botanic Gardens," don't hang up—that's the new us.



Greenhouse Ghosts

by Andrea Thompson

The Ferguson Greenhouses' first site-specific installation is a result of Andrea Thompson's proposal for artwork relating to the WCBG plant collection. "We are thrilled to be able to present her work at the Margaret Ferguson Greenhouses," says Director Kristina Jones. The ghosts will be in residence at least through mid-June.



Andrea Thompson explained her concept at the exhibit reception.

In Greenhouse Ghosts, a series of animals have taken up residence in the Wellesley College Botanic Gardens. Each life-sized silhouette represents an endangered animal species that is dependent upon a plant species currently growing in the greenhouses.

The stark white figures stand in contrast to the lush abundance of their surroundings, drawing attention to their own potential absence. They introduce a note of urgency within the peaceful greenhouse setting, and yet the story they reveal is ultimately an optimistic one: these species are not yet lost, and can be saved with careful intervention.

Greenhouses have traditionally been centers for botanical research, concentrating on the study and classification of individual species. Our modern understanding of plants takes an expanded view, viewing nature as a dynamic system of relationships and interdependencies. These ghosts help us reconsider the plants' roles



A red-crowned crane, a "ghost" beneath the Durant camellia.

—as well as the greenhouse's role—in a larger ecologic context.

See www.andreathompsonart.com for more about the artist and go the WCBG website, www.wellesley.edu/WCBG, for more about the featured animals. Look under "What's New."



Building Wellesley's First Aquaponics System

by Katie Byrnes '12

I first learned about aquaponics in my horticulture class last spring at Wellesley, BISC 108 with Professor Kristina Jones. Fascinated by aquaponics' inherent sustainability in terms of conserving water and reducing pollution, I loved the fact that it seemed to mimic real symbiotic relationships in nature, while still growing food for people to eat. When I found myself coming up a half credit short during class registration, I realized that maybe I could turn this fascination into Wellesley's first aquaponics system. I talked to Kristina Jones, and she agreed to be my advisor for an independent study project. My goal: to construct a small-scale aquaponics system in the Wellesley greenhouses. As a guide, I used the "Farm in a Barrel" DIY manual from Earth Solutions, www.earthsolutions.com, choosing to build the "flood and drain" style system, which pumps nutrient-rich water up to fill the grow beds several times a day.



The big blue barrels of the aquaponics system are designed to sustain both fish and plants.

My timeline for the project changed numerous times. Things generally take longer than you think they will, and

for this project that was especially true. Getting my hands on two 55-gallon plastic drums to construct the grow beds and fish tank was difficult enough—I must have called every soda bottling facility within a 50-mile radius, and we still had to order them online. The expanded clay pebbles make an excellent lightweight, pH neutral growing medium, but only after I spent many hours rinsing a seemingly endless amount of reddish brown dust off of them. Even with the invaluable help and expertise of Wellesley's Machining Instructor Estuardo Rodas, construction took a couple of weeks longer than I had anticipated. Then there were the fish. I had originally hoped to use tilapia in the system, but due to licensing constraints, I settled on goldfish instead. Of course, the goldfish also had to be approved by Wellesley's Animal Care and Use Committee, which took another few weeks. I had also intended to try growing a number of different plants, but I only had time to get some basil seedlings going before the semester came to a close.

In spite of some roadblocks, I consider the project a success. The system is built and running smoothly, and the fish and basil are getting bigger every day. My hope is that another Wellesley student will be interested in taking over the project now that I'm graduating, perhaps experimenting with different growing media or fish food, a solar-powered pump, or a greater variety of edible plants. Until then, I hope that many visitors are able to stop by the greenhouses to check out this exciting, sustainable growing method—and maybe grab a snack of basil in the process! 🌱



Katie Byrnes '12 built an aquaponics project in the greenhouses.

Aquaponics

Aquaponics is the cultivation of fish and plants in a recirculating system. The word comes from a combination of aquaculture (fish cultivation) and hydroponics (growing plants without soil). But unlike aquaculture, which generates ammonia-filled wastewater, and hydroponics, which requires the eventual disposal of nutrient solutions, aquaponics combines the two in a way that benefits both fish and plants. The fish waste provides nutrients that are essential to the plants' growth, and the plants, with the help of beneficial bacteria that transform the ammonia into nitrite which then cleans up the water for the fish. Because the water moves through the system at regular intervals, it is rich with the oxygen that the fish need. When an aquaponics system is working properly, it should require little maintenance. The only inputs needed for a basic system are energy for the pump and food for the fish.

Seeing Spots: QR Codes Come to the Botanic Gardens

Have you noticed those little spotted squares increasingly appearing in advertisements and on signs? Like the one in the illustration to the right? They are QR codes, a kind of bar code readable by smart phones and other devices equipped with the relevant apps to interpret them. You can scan the code with your smart phone and quite quickly, without entering a long web address, the related web site will pop up on the screen. Imagine finding a QR code on the sign at the new bog garden. Scan it to call up images and descriptions of the plants. We aren't quite there yet says Botanic Gardens Director Kristina Jones, although students developed some codes for this year's Light Show. Those QR codes required specific apps not available to the public though. The QR code on the right is an actual working example using standard apps. If you have the appropriate device and a QR reader app, scan it. It will bring you to the Friends' web site. Think about other ways QR codes might enrich your appreciation for plants in the future.



Soil: Where Geoscience Meets Botany

by Janet McDonough, Senior Instructor of Biological Sciences, Wellesley College

This talk, given in January, explored the origin of New England soil and taught listeners forensic skills to examine their own soil.

As mineral matter in soil weathers mechanically and chemically and becomes integrated into a milieu with the organic matter of plants and animals, interactions with water and microorganisms slowly establish a product that supports more complex plant and animal life. Lowly soil is truly “the bridge between life and the inanimate world.”

The mixture of mineral matter (45%), air (25%), water (25%), and organic matter (5%) that we call soil is a critical yet incredibly thin layer on the surface of the earth formed surprisingly recently in geologic time and directly related to a serendipitous 2 million years of glaciations. Continental glaciations required snow depths greater than 165 feet in areas called zones of accumulation. The increasing weight of the mass of ice and snow (30 tons per square foot for every 1000 feet of accumulation.) compacted and compressed lower layers. Under this immense pressure deformable ice began to flow, creeping forward in all directions and carrying the upper layers of snow and ice like a backpack. As the glacier crept, it scoured the landscape. Animals fled or died, plants were destroyed and then decayed, and organic matter was lost. The landscape was plucked and scoured until all the loose particles, large rocks, and boulder size pieces of bedrock were incorporated into glacial ice. Accumulated soil was destroyed; the materials, large and small, incorporated into the glacier were moved and dropped in other locations. At the terminus the load was dropped in an unsorted collection of mixed sizes, from clay to large boulders. The material was also deposited by torrents of meltwater in a manner somewhat analogous to the way today’s rivers carry materials and drop them, sorted by size.

The most recent advance of glacial ice in New England began about 60,000 years ago, peaking about 22,000 years ago from a zone of accumulation approximately 2000 miles away from New England. As the glacier retreated because of a warming climate, the remodeled landscape was covered with both sorted and unsorted deposits. The valleys and low areas were filled and topographic relief was reduced leaving our gently rolling hills and

flattened expanses. Landscape features such as drumlins and moraines are direct evidence of deposits from glacial ice, while outwash plains and eskers are features associated with meltwater. Most of the bedrock of the crustal rocks in New England is buried under 10-40 feet of glacial materials. Cape Cod deposits are 100 to 1000 feet thick! This partially weathered material is the source of the mineral matter (sand, silt, and clay) forming the young soil profile of New England.



A streak test indicates the ratio of sand, silt, and clay in soil.

Each mineral particle contributes to a unique fingerprint of soil structure and texture. Sand, with sizes ranging from 0.06 to 2 mm, is not very reactive but provides large pore spaces for infiltration and storage of water. Silts (0.002 to 0.06 mm), though small, have a shape that can also form tiny connected pores. Silt particles can absorb water and release it to plants. Clay (particles smaller than 0.002mm), however, is more reactive and is a good source of minerals that plants need. Because clay structure is plate-like, tiny pores between the particles are not well connected and water flow is blocked. Wet clay holds onto water tightly. The combination and arrangement of sand, silt and clay determines how easily water can infiltrate soil, how long and how much water the soil will hold and how available the water is for plants. The home-gardener can test the ratio of sand, silt, and clay in soil easily by streaking a



Senior Instructor Janet McDonough answered questions following her talk.

damp soil sample on white paper. If the sample is primarily sand, a watery short streak will develop. If that streak is dark, the soil contains clay, silt and/or humus. Wet a palm size amount of soil that gives such a dark streak and then squeeze the soil between your thumb and index finger. Look for the formation of a ribbon: the longer the ribbon, the more clay the soil contains. The arrangement of the particles is important; you can end up with impermeable “cement” if the smaller particles block pore spaces.

A soil profile reflects the length of the process of soil formation. Rates of formation for soil are very slow--probably, on average, 1 inch for every 200-500 years under ideal conditions. At that rate, young New England soil should be about 3 feet deep. If your backyard soil is not that deep it is likely due to factors other than time that control the rate of soil formation. These factors include slope of the land, parent material, climate, and types of plants and animals. If you do an on-line search for our state soil, which is called Paxton Soil, you will find an example soil profile that you can compare to the layers of your garden soil profile. See if you can identify the parent material as unconsolidated mineral matter deposited by the glacier or perhaps the muddy-silty soil of a riverbed. Older soils, such as those in America’s bread belt mid-west are much thicker than those found in New England and show a well-developed soil profile rather than a young one. 🏠

Ants on the Roof

News flash! PhD student at UC Riverside and recent Wellesley graduate Bracha (known to all as Brachi) Schindler '11 had the paper resulting from her senior thesis published in *Cities and the Environment: The Electronic Journal Dedicated to the Ecology of Urban Communities* <http://digitalcommons.lmu.edu/cate/vol4/iss1/5/>

Here is the abstract:

FACTORS INFLUENCING ARTHROPOD DIVERSITY ON GREEN ROOFS

Bracha Y. Schindler, Wellesley College, Alden B. Griffith, Wellesley College Botanic Gardens, Kristina N. Jones, Wellesley College Botanic Gardens

Green roofs have potential for providing substantial habitat to plants, birds, and arthropod species that are not well supported by other urban habitats. Whereas the plants on a typical green roof are chosen and planted by people, the arthropods that colonize it can serve as an indicator of the ability of this novel habitat to support a diverse community of organisms.

The goal of this observational study was to determine which physical characteristics of a roof or characteristics of its vegetation correlate with arthropod diversity on the roof. We intensively sampled the number of insect families on one roof with pitfall traps and also measured the soil arthropod species richness on six green roofs in the Boston, MA area. We found that the number of arthropod species in soil, and arthropod families in pitfall traps, was positively correlated with living vegetation cover. The number of arthropod species was not significantly correlated with plant diversity, green roof size, distance from the ground, or distance to the nearest vegetated habitat from the roof. Our results suggest that vegetation cover may be more important than vegetation diversity for roof arthropod diversity, at least for the first few years after establishment. Additionally, we found that even green roofs that are small and isolated can support a community of arthropods that include important functional groups of the soil food web.



Brachi Schindler '11 working on a green roof.



Volunteer Emerita Eleanor Viens Turns 100!

For many years Friends have been enriched by the efforts of Eleanor Viens '33. As a volunteer staffing the Visitor Center, she put her interest in writing and knowledge of botany to use in a "Plant of the Week" display. Every Monday morning, she selected the appropriate plant and set an information sheet beside it. She spent much time researching her topics, and her text was an appealing combination of scientific and anecdotal material.



In 2005, Eleanor sat with fellow volunteers to reminisce about her undergraduate years as a Botany major at Wellesley College. During her introductory botany course labs, she remembered planting in the student gardens, located in what is now the Wedding Area of the Hunnewell Arboretum. Her fondest memory was when the students went out

to identify marked plants in the meadow for an exam. At the end was a catered picnic including strawberries. Eleanor took classes primarily with Mary Bliss although Margaret Ferguson was still giving lectures. When Margaret Ferguson retired, Eleanor recalled, "She didn't retire easily." The year after her retirement, when classes started, Miss Ferguson popped her head in the door and said, "How are things going?"

Like Miss Ferguson, Eleanor didn't easily retire. She reluctantly left her post in her late 90's, when she determined that she shouldn't be driving anymore. Her legacy of engaging visitors with plants through interpretive materials continues to this day. We salute Eleanor on her special birthday and thank her for her many years of dedication.

Plant of the Week by Eleanor Viens '33

Plume Asparagus
Asparagus meyeri Liliaceae

(Note: We no longer have *A. meyeri* in the Ferguson Greenhouses, but we grow two similar species: *A. densiflorus* and *A. setaceus*.)

Plume asparagus is a type of asparagus which has densely leaved branches resembling plumes up to 2 feet long. It makes a handsome houseplant. Small white flowers are followed by small red fruit.

The genus *Asparagus* is an Old World perennial with many branches, stems and miniscule leaves. Often referred to as "asparagus fern," it is not a fern at all (it has flowers!) but a member of the lily family. There are as many as 300 species of asparagus including herbs, woody vines and shrubs.

A. officinalis is the one whose tender shoots are used for food, at least since Roman times. It is native on the seacoasts of Europe, North Africa and Asia. Eaten green in the United States, in Europe it is preferred white or blanched. The shoots are kept covered with soil to prevent the development of chlorophyll, a process once common in the handling of celery.

Learning Exhibit Development Skills

or How I Came to be Standing in the Huntington Botanical Gardens Inviting Visitors to Smash Flowers with a Rolling Pin

by Gail Kahn, Assistant Director, Wellesley College Botanic Gardens

“Oh no, I’m a failure!” joked the woman as she examined her handiwork: a smear of nasturtium, calendula and snapdragon petals on a piece of white paper.

My partner Elyse Dean and I looked at each other in dismay. We were testing an exhibit prototype on visitors to the Huntington Botanical Gardens in San Marino, CA. Elyse was developing a “Practical Plants” exhibition at her children’s garden in Dayton, OH, and we were using a concept that I had worked on with Wellesley College students: transferring plant color onto paper with a mallet, or in this case, a rolling pin. We hoped the activity would be fun and engaging for a range of ages, and provide an easy way to demonstrate the concept of plant pigments. Failure was not the message we wanted to communicate.

Elyse and I, along with eight other participants from botanic gardens, public parks, and children’s museums across the country, had been invited to participate in a week-long workshop in exhibiting skills underwritten by a grant from the Institute of Museum and Library Service and offered at the Huntington under the direction of Strategic Initiatives Manager Kitty Connolly, Botanical Education Manager Rachel Vourlas, and noted museum interpretive specialist Beverly Serrell. I was eager to bring these skills back to Wellesley. Although our botanic gardens have long been interpreted by volunteer docents, interpretive labels and exhibits are areas we can better utilize to connect our visitors, including students, parents and alumnae, to our unique resource.

The workshop involved an intensive hands-on study of all aspects of exhibit development, from understanding the motivations of visitors to our gardens, to developing the “Big Idea” behind an exhibition, building and testing an exhibit prototype, developing criteria for measuring an exhibit’s effectiveness, and the issues involved in maintaining exhibits in a greenhouse environment. Prototyping is probably the



Gail Kahn ready to test her prototype exhibit.

most vivid memory all the participants have carried away. Kitty and Rachel assembled a plethora of materials for use in mocking up exhibits: scientific instruments, test tubes, sample bottles, squirt bottles, jars, tools, scent samples, wood slices, dried bees, stands for signs, and every kind of crafting supply imaginable. Plant material from the gardens was also available for our use.

Elyse and I paired up for exhibit development. We wrote an exhibit label explaining plant dyes, and an instruction label for completing the activity. We made many decisions to simplify the activity: Isn’t a rolling pin safer than a mallet? Can we eliminate the plastic over the flowers, and just fold the paper instead? Testing by the workshop participants revealed some room for improvement but showed that we were on the right track.

We set ourselves up in the herb garden on a lovely Saturday when the Huntington was full to bursting with visitors for the Chinese New Year celebration. Passing visitors were recruited to try our exhibit. Elyse and I kept silent while we watched them perform the activity, then asked some questions to test how well we had explained the concept and activity. It very soon became clear that visitors were comparing their results to the examples we had created in our development process. Since different flowers and techniques were used in the examples, they looked better to visitors. After hearing the word “failure,” we removed our original examples and put up the results of a visitor. After making that simple change, people seemed happier with their creations. The visitors were generous with their time and feedback, and we received many helpful comments. Elyse has a great start on an exhibit for her garden, and we all learned the value of the prototyping process. Since I have made a commitment to create three exhibits at the Wellesley College Botanic Gardens in exchange for the free training, you may find me soliciting your feedback on a mocked-up exhibit if you visit us over the next year. 🏡



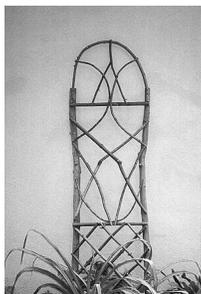
A little visitor and her helper smashing flowers.

Programs

- All classes are held in the WCBG Visitor Center unless otherwise noted.
- For classes over the lunch hour: Bring your own lunch or walk to local shops.
- Full course descriptions and material lists may be found on our website.
- Parking on campus is restricted. Use of the Davis Parking Garage or car pooling from off campus is encouraged.

To register for classes, use the form on page 11 or visit www.wellesley.edu/wcbgfriends and print a registration form.

Rustic Trellis Building Workshop



Learn how to construct a garden gate, trellis or side table in this hands-on workshop with Craftsman Frank Hamm. Take home a terrific addition to your garden, home or yard. Wood/building materials supplied.

(Log on to www.frankhamm.com for ideas.)
Sat., April 28 (Rain Date: Sun., April 29)
1:00 – 5:00 p.m. **HOR 12 120**
Members \$75 / Non-Members \$95

Watercolor Landscapes

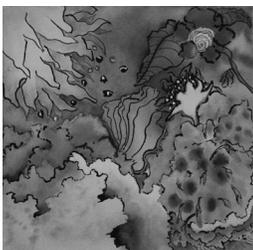
Susan Swinand teaches adults at all levels of experience how to solve those awkward problems of painting on location. One-on-one instruction and weekly group critiques further your progress with design and technique as you explore what makes a painting work.



7 Wed.: May 2, 9, 16, 23, 30; June 6, 13
1:00 – 4:00 p.m. **WCC 12 203**
Members \$200 / Non-Members \$250

Painting Forms with Watercolor

This one-day workshop with Nan Rumpf is designed to develop skill in rendering a three-dimensional form on paper. Start by constructing intriguing 3-D forms using white paper and cardboard. After setting up lighting to best show the forms, draw them on watercolor paper, then create a painting of



our structures using a variety of edges and shadow values to enhance the 3-D effect.

Saturday, May 5
9:00 a.m. – 4:00 p.m. **WCC 12 070**
Members \$75 / Non-Members \$95



Walk Through the Hunnewell Pinetum

Enjoy the glories of spring as we walk to the shores of Lake Waban and the Walter Hunnewell Estate. There David Dusenbury, Superintendent of the property, will lead us on an approximately 90 minute walking tour of the historic Pinetum.

Sat., May 19 1:30–4:00 p.m. **HOR 12 130**
Members \$20 / Non-Members \$25

Defining Gardens: A Global View

Professor Emerita Mary Coyne is our guide as we armchair-wander to the Arctic, Europe, Asia, South and North America, and Africa to peek at gardens old and new.

Monday, May 21 **HOR 12 140**
2:00 p.m. tea, 2:30 p.m. lecture
Members \$10 / Non-Members \$15

WOW - Botany is Exciting!

Love plants? Carol Govan introduces botany to you using basic terminology, direct observations, dissecting flowers, fruits and seeds, and journaling to explore seeds, roots, shoots, flowers, and fruit.

Saturday, June 9
9:30 a.m. – 2:30 p.m. **BAC 12 020**
Members \$60 / Non-Members \$75

Realizing the Color

Bring realism to your colored pencil work by amplifying the color intensity and detail under the guidance of award-winning artist D.L. Friedman. Learn new techniques for using multiple layers for transparency while creating maximum color saturation and intensities.

Tuesday, June 26
9:30 a.m. – 3:30 p.m. **BAC 12 042**
Members \$75 / Non-Members \$95

BOTANICAL ART & ILLUSTRATION

More classes of interest ... complete details online, in our program brochures, or contact the Friends office.



ESPECIALLY FOR BEGINNERS

Plant Drawing for the Petrified

In a relaxed atmosphere, Sarah Roche, experienced botanical artist and instructor, guides you through the elementary stages of illustrating plants.

4 Wednesdays: May 2, 9, 16, 23
9:30 a.m. – 12:30 p.m. **BAC 12 010**
Members \$125 / Non-Members \$150

Beginning Botanical Watercolor Skills

Sarah Roche introduces you to watercolor paints and papers and guides you through a series of fun beginning botanical watercolor exercises.

4 Wednesdays: June 6, 13, 20, 27
9:30 a.m. – 12:30 p.m. **BAC 12 015**
Members \$150 / Non-Members \$200

Register for both Plant Drawing for the Petrified and Beginning Botanical Watercolor Skills to take advantage of special combo-pricing:
Members \$250 / Non-Members \$325

Introduction to Botanical Art

Explore the world of botanical art over five days in this course designed especially for you – the beginner. Sarah Roche guides your experience through structured exercises, projects, and demonstrations.

5 days: Monday, Aug. 13 – Friday, Aug. 17
9:30 a.m. – 2:30 p.m. **BAC 13 101A**
Members \$250 / Non-Members \$300



TRAVEL ON THE ROAD WITH THE FRIENDS: Gardens of Rhode Island Master Gardeners



Wednesday, June 27, 2012 8:00 a.m. – 6:30 p.m.

Day trip from Wellesley College by car south to Coventry, Rhode Island. We will visit the private gardens of three Master Gardeners and the Coventry Community Gardens, designed and maintained by the University of Rhode Island Master Gardeners Program. Lunch included overlooking Johnson's Pond (Flat River Reservoir).

See our website for more details or contact the Friends office.

Members \$48 / Non-Members \$60

TVL 12 100

Plant Ecologist *Continued from page 1*

and population dynamics of this grass. Are these populations growing? How fast and how consistently? Can we determine which particular conditions are most favorable and how this might overlap with habitat for native populations living in the dunes? Dune systems are fascinating and are always in constant motion. I'm excited to start exploring.

Another topic that interests me is the phenomenon of plants helping plants, often known as facilitation. Any farmer or gardener knows that plants tend to compete with each other. For example, if you don't thin your lettuce seedlings you'll end up with lots of small lettuce plants without any room to grow instead of a row of big bushy lettuce heads. And of course those weeds! You might pull them out because you find them unsightly, but you also know they're taking water, light, and nutrients you would rather provide for your garden plants. So how do plants help each other and how much does it



Cheatgrass, the scourge of the West, also shows up in eastern sand dunes.

matter? To help answer this question, I'm planning to take my two summer research students with me to Glacier National Park to examine plant facilitation at high elevation. Aside from being stunningly beautiful and sublime, why go all the way to Montana to study plants?

Let us imagine life as a plant near 10,000 feet on the rocky slopes of Glacier National Park. Most of your life is spent

snugly (relatively) buried under protective snow. When the snow finally melts you now have to deal with cold, drying, and incessant wind, temperatures spanning from below freezing to downright hot and sunny, thin soil that barely holds water and nutrients, and a thin atmosphere that can increase damaging ultraviolet light exposure by up to 50 percent. And one more thing – you've got only a couple of months before the growing season ends and the snows come again. Wait a minute, didn't the growing season just begin?!

While these harsh conditions might not be all that much fun for a plant, they are great for ecologists! Studying alpine plant communities and ecosystems has actually contributed a great deal to our broader understanding of ecological systems. There are two main reasons why alpine systems are so useful: First, they are relatively simple in their plant composition and structure. Ecology is often like trying to find a needle in a haystack. Ecosystems are so complex it's hard to tease apart what

Continued on page 10

FAMILY PROGRAMMING with Katie Griffith

ALL ABOUT! ... Flower Shapes And Colors

Saturday, June 16 9:30 a.m. – 12:00 noon

The color, shape and fragrance of flowers are a plant's advertisement. We'll explore how a flower attracts the right pollinator for the plant. we'll finish by creating flower planters to bring home. **All About!** is a free series of family explorations led by Katie Griffith with a multi-faceted approach designed to appeal to all ages. All children must be accompanied by an adult.

Pre-registration by noon Friday, June 15 is required.

In your RSVP, please give the ages of all children accompanying you. Space is limited.

Call 781-283-3094 or email wcbgfriends@wellesley.edu.

Plant FBI: Exploring Spring at Wellesley

Saturdays: March 31; April 14, 28; May 12
9:30 a.m. – 12:00 noon **CHP 12 300**

In this 4-session course, we'll follow the progress of spring from the first crocus in March to the full flowering of trees. Families will track the progress of their favorite plants from bare twigs to the unfurling of leaves and blossoms with environmental scientist Katie Griffith. For families with children aged 3 & up, accompanied by at least one adult.

Dress appropriately for going outdoors into the Botanic Gardens.

*Members \$125 / Non-Members \$150
Fee covers one child & one adult partner.
Additional family members, \$60 per person*



you're interested in from the multitude of other factors at work. By working in a simplified system, we increase the chances we will be able to find a signal amid a sea of noise.

Secondly, alpine ecosystems are often where we find that the positive effects plants have on each other outweigh the negative effects. In other words, when the going gets tough, plants often benefit from the presence of each other. This understanding of how overall relationships among plants may switch from competitive to facilitative as environmental conditions become more stressful has made an important contribution to the field of plant ecology; and some of the most important work has



Forming tight clumps helps alpine plants like *Silene acaulis* combat harsh conditions.

been done in alpine systems. However, there has yet to be a great deal of research that examines the population-level consequences of plant facilitation. By looking at the entirety of plant life-cycles,

we can start to build a better picture of how 'a little help from our friends' might actually lead to changes in plant numbers.

What comes to mind when you think of the word cushion? Soft and warm?

Pleasant and comfortable? It turns out plants in alpine systems tend to feel the same way about cushions. However, the 'cushions' at the top of mountains are plants themselves: tightly clumped, low-lying lying plants that look like little green pillows spread out across the rocky ground (*Silene acaulis* is a great example). Cushion plants are often good facilitators, and you'll likely

find other plants poking out of them. In some cases you'll find an entire garden of plants growing within the small canopy of cushion plant. From a plant's point of view, conditions are much more agreeable in the cozy environment provided by the cushion plant instead of the harsh conditions on the bare rocky slope. This is the basis for the research I am conducting along with my collaborator Ray Callaway at the University of Montana. Last year, Ray and his alpine ecology class marked plants both inside and outside of cushions in order to begin to track their demography. This year, my students and I will have the opportunity to "piggy-back" along with Ray's fascinating alpine ecology course, as well as spend some dedicated time expanding our research on plant facilitation.

As much as it is sometimes hard for me to think much beyond the next few days while in the midst of a busy semester, thoughts of spring and summer research keep going through my head. My biggest goals are twofold: my students will have gained great experiences and insight, and we'll come away with a nice harvest of interesting and useful ecological data to last us through next winter. 🏠

Remembering Ann Howkins

We acknowledge the passing of Volunteer Emerita Ann Lord Howkins '44 in December 2011. One of the founding group of women who established the Friends in 1983, Ann developed and managed our first membership system, acted as Chair of Membership, served on our first Steering Committee, and worked on our by-laws. An active docent for over 15 years, Ann led many tours of the greenhouses. In 1992, she reported on one such tour: "Very enjoyable time. Students very interested. The high point was the discovery of a young rabbit munching away in the Fern House!" Ann also had an interest in the outdoor gardens, helping to create a tree and shrub inventory and developing an arboretum tour that could be covered in an hour's time. Her commitment and

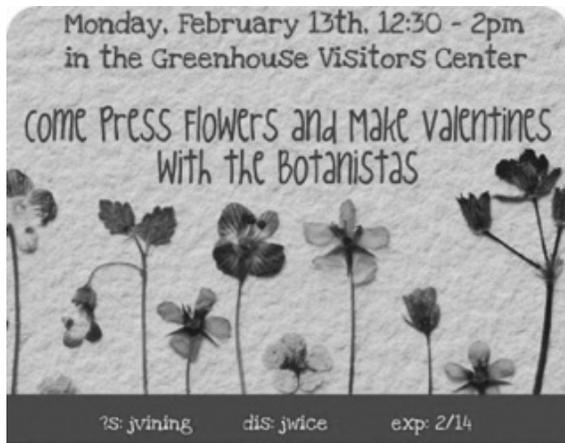


vitality helped shape this organization and energized everyone who came to visit.

Her sister-in-law, Mary Ball Howkins, says this about Ann: "Sometimes in your life someone quietly enters, on long narrow feet, tall like a pole, with the grace and majesty of a swan. When you talked to Ann, she put you at the center of her world; you levitated, buoyed by her caring and her desire to learn, as if every word you uttered was a prized or brilliant thought. Books piled in every corner: novels, museum catalogues, books about Boston, books about the forgotten in south Boston, or faraway places, about Japan and the richness of Japanese culture. A woman of profound faith, she drove her car laden with bread for those who needed it." Ann's volunteer service changed many lives, and we remember her with fondness and great gratitude. 🏠

Notes from the Director *Continued from page 2*

steps further by developing a companion exhibit in the greenhouses and Visitor Center exploring the scientific aspect of botanical art, and Julie Vining '12, our Dorothy Thorndike Intern, made informational signs identifying greenhouse plants that were featured in Global Flora. Several tours, including school groups, visited the paired exhibits. Partnering with Elaine and the Davis was great for us, and we hope to do it again! And in the fall, the Italian Kitchen Garden behind the greenhouses was a great resource for the first year seminar that I team-taught with Art History professor Jacki Musacchio: The Art and Science of Food in Italy. I learned so much about art (and about history) and know that we have brought new audiences to the Botanic Gardens through these collaborations. Our Greenhouse Light Show made it into the Arts Calendar for the campus, which certainly contributed to the great turnout and enthusiastic reception as hundreds of people came to the show over its two-day run, and cameras were out everywhere! You can see photos on our website or Facebook page.



The poster for the Botanistas' Valentine's Day event.

At the Light Show were several students wearing sparkly sequined hats to identify them as docents for the show – these were members of our Botanic Gardens Student Advisory Council, recently renamed the Botanistas. Thorndike Intern Julie Vining is the leader of the group, which continues to grow both in size and enthusiasm. The Botanistas have put together some plant-related events for students (see Julie's ad above) and have more planned to get students out into the gardens come spring. It's fantastic to have students multiplying our outreach efforts!

Kristina Niovi Jones, Director
Wellesley College Botanic Gardens
kjones@wellesley.edu 781-283-3027

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PHONE: Home: _____ **Work/Cell:** _____

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_____ I would like information on volunteering at WCFH.

Mail this completed form and your payment to :

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106 Central Street, Wellesley, MA 02481-8203

COURSE REGISTRATION

See programs and classes information and cancellation policy

Course ID#	Class title	Fee
_____	_____	_____
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SEPARATE CHECK FOR PROGRAM FEES \$ _____

made payable to: *Wellesley College Friends of Horticulture*

WCFH cannot accept credit cards for course fees. Checks or cash only please.

MEMBERSHIP IN THE FRIENDS

(for the academic year July 2011-June 2012)

My membership gift for the current academic year \$ _____

Membership Gift Payment Type (circle one):

CHECK or MasterCard / Visa / AMEX

Account number: _____

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Membership Levels

Patron:	
Durant Society	\$2500+
Alum (6-10 yrs out)	\$1000
Alum (1-5 yrs out)	\$500
Benefactor:	\$1000
Supporter:	\$500
Donor:	\$250
Sponsor:	\$100
Contributor:	\$50
Alum (1-5 yrs out):	\$15

or **SEPARATE CHECK FOR MEMBERSHIP GIFT**

made payable to: *Wellesley College Friends of Horticulture*

LOGO ITEMS FOR SALE (more details online)

WCFH Tote Bags _____ at \$15 each tote bag = \$ _____

WCBG / WCFH Mugs _____ Pair(s) of mugs at \$15 = \$ _____

WCBG Recycled Fleece Vest _____ at \$40 each = \$ _____

_____ Women's Medium _____ Men's Medium

_____ Women's Large _____ Men's Large

_____ Women's Extra Large _____ Men's Extra-Large

Shipping / Handling at \$5 for each vest, tote, pair of mugs = \$ _____

SEPARATE CHECK FOR LOGO ITEMS. TOTAL = \$ _____

made payable to: *Wellesley College Friends of Horticulture*

WCFH cannot accept credit cards for merchandise. Checks or cash only please.

Wellesley College Friends of Horticulture

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EDIBLE ECOSYSTEM SPRING WORKSHOP with Dave Jacke

Monday, April 16 (Patriot's Day), 9:00 a.m – 5:00 p.m.

Join garden designer and permaculture expert Dave Jacke and his team in our Edible Ecosystem Garden for an informative, hands-on day of volunteer service. Learn skills you can use in establishing your own forest garden while you help us with spring cleanup and planting tasks.

We will be working in the garden from 9:00 a.m – 5:00 p.m.; join us for as much of the day as you like. The garden is located on the slope below the Whitin Observatory.

Note: Route 135 will be closed for the running of the Boston Marathon. Use Wellesley College's Route 16 entrance and plan your route accordingly.

Copies of the WCBG Edible Ecosystem Garden Design Report and Implementation Plan will be available for purchase.

Call the Friends to sign up and for suggested directions.

ANNUAL MEETING

and Awards Ceremony of Certificate in Botanical Art and Illustration

Monday, June 4 3:00 p.m. Reception 4:00 p.m. Lecture

Art Meets Science in the Botanic Gardens — Kristina Jones, WCBG Director

Kristina Jones will provide a sneak peek at the range of programming for students and the public, and you will have a chance to visit the Greenhouse Ghosts installation.

CBA Artist Exhibition

May 15 to June 30 Wellesley College Botanic Gardens' Visitor Center

TRAVEL

Gardens of Rhode Island Master Gardeners

Wednesday, June 27

8:00 a.m.– 6:30 p.m.

Day trip from Wellesley College by car south to Rhode Island.

See Page 9 for details.

VOLUNTEER

Share your love of nature and gardens with others by becoming a volunteer for the Ferguson Greenhouses and outdoor gardens.

Free training sessions:

Mondays, May 7, 14, 21

9:30 a.m. – 12:00 noon.

Pre-registration is required.

For more information, contact us!

FOR FAMILIES

See Page 9 for details.

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Sat., March 31; April 14, 28; May 12

9:30 a.m. – 12:00 noon

Flower Shapes And Colors

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