Botanic Garden and botanical garden are often used interchangeably and do not have different meanings. Botanic, however, is the older term and is often associated with earlier gardens such as Smith’s. Defining a botanic(al) garden is not an easy task. While plant collecting goes back to ancient times, the first organized botanic gardens in Europe date back to only the 16th century. Their roots are in the herbal manuscripts of antiquity. In a time when synthetic medicines did not exist, botanists and doctors were one and the same, and large numbers of plant species were collected for their scientific rather than aesthetic merit. Obviously, times have changed and our perception of gardens and plant collections has evolved and grown.

One constant, however, is the lack of clarity about what defines a botanic garden. The Oxford Dictionaries online defines a botanical garden as “an establishment where plants are grown for display to the public and often for scientific study.” Although not something I normally do, I must disagree with a dictionary definition. Scientific study is not a prerequisite nor is display adequate to define a botanic garden. This definition would allow institutions to be called botanic gardens if they only display plants. That would make every public park, historic landscape, campus, etc., a botanic garden.

There are several organizations or publications that list the many functions that define a botanic garden, but they include different sets of functions or prerequisites. Richard Lighty, former director of the Mt. Cuba Center and prominent botanic garden leader, tried to clarify what he considers a “legitimate” botanic garden by defining other types of institutions:

An institution primarily involved in research on plants over which it does not exercise ownership and continuing stewardship should be called a botanical institute. A display garden with unrecorded or temporary collections is really a park. And an institution that teaches people about plants without using a carefully assembled and recorded group of objects to do this is a school.

I would add more to Lighty’s list. A tract of natural land with conservation status and/or preservation documents, even if the plants are labeled, is a nature preserve, not a botanic garden. Examples might include Nature Conservancy and Trustees of Reservations properties. Certainly, botanic gardens can have such land within their boundaries but that alone does not make up a botanic garden. Additionally, historic estates with documented collections are not usually considered botanic gardens because their research and educational mission do not involve the study of plant species; their concern is generally with built structures and the landscape design as a whole.

Lighty goes on to say that collection quality, longevity, and the commitment to records can distinguish a botanic garden from other plant collections. Unfortunately, his comments are often ignored, and misconceptions about plant collections continue. All public gardens are not botanic gardens. Donald Rakow, coauthor of Public Garden Management (Wiley, 2011), emphasizes that botanic gardens are mission-based institutions that have a professional staff. I couldn’t agree more. For me, however, it is the specific mission, and not the existence of one, that defines a botanic garden.

What we do as a botanic garden influences the perception of the role of plants in the lives of the students we reach. It is imperative, therefore, that a directive is in place that will have relevance in years to come. We recently revised our mission statement:

The mission of the Botanic Garden of Smith College is to foster education about the science, beauty, and importance of the plant kingdom through the use of outdoor and conservatory plant collections, gardens, displays, and exhibitions, and to preserve and maintain the historic Olmsted campus landscape.

I think this statement captures the

(Continued on page 4)
Student Updates

Betsy Anderson ’04 was the Cary MacRae McDaniel Intern at the Botanic Garden for the 2003–2004 academic year, working with Madelaine Zadik on exhibitions and educational programming. As part of that internship, and even beyond her graduating from Smith, Betsy worked on cataloging the notebooks of Elizabeth Roys ’28 and transforming them into a wonderful exhibition that was displayed at the Botanic Garden in 2007. *Asian Gardens of the 1920s: The Travels of Elizabeth K. Roys* has since traveled to other institutions in West Virginia and Wisconsin. Here is an update from Betsy:

I am about to begin my second year of a master’s program in landscape architecture at the University of Washington. After several years of work in both landscape history and residential garden design, I’ve enjoyed immersing myself in a program that comprehensively examines the role of the built environment in shaping healthy ecosystems and cities. Since April I’ve held an internship with the Pacific West Regional Office of the National Park Service, where I’ve had the privilege to work on the Environmental Planning and Compliance team: this position has allowed me the opportunity to participate in exciting community-based planning and design projects that shape the future of existing national parks and guide the development of new park units. For my master’s thesis, I plan to continue my study of Elizabeth Roys’ (Smith class of 1928) Asian garden notebooks, a project I began while still at Smith. Specifically I would like to explore the evolving image of Chinese landscapes in the West by situating Roys’ documentation of Chinese gardens in the 1920s in the context of previous missionary depictions, and comparing these earlier conceptions of Chinese landscape to the changing role and emerging global prominence of landscape architecture in China today.

Betsy Anderson  

Jessamine Finch ’12 was a work-study student and curatorial intern with Elaine Chittenden at the Botanic Garden for three of her Smith years. In June she began a yearlong internship at the Morris Arboretum in Philadelphia. Here is her mid-summer report:

Greetings! I am about two and a half months into my new position at the Morris and absolutely loving it. Highlights include learning how to ride the tractor and operate the back hoe, the annual woody plant conference, a regional intern service day at historic Bartram’s Garden, and learning proper maintenance and appropriate plant communities for the green roofs located over the garages. My independent project is focused on the oak collection here, including the experimental Quercetum, or oak plantation, planted back in the 1950s. I will conduct an assessment of living specimens, make recommendations to our arborists for tree care and removals, propose a management plan, and also identify locations throughout the arboretum appropriate for new plantings of native oaks. I just returned from a Smith-supported adventure to the annual meeting of the Ecological Society of America in Portland, OR, where together with Professor Jesse Bellemare, I copresented a poster that incorporated results from my honors research. In September I will be starting a graduate course on the natural history of wetlands, and I just finished a summer literature course entitled *Town or Country: Warring ideologies on living the good life*, both at Penn. Additionally, this week I will start assisting a graduate student in a plant ecology lab with vegetation surveys on a nearby mountain in Slaton, PA. I am currently considering graduate programs in both horticulture and ecology, and plan to apply to schools this fall. I miss the Botanic Garden very much, and hope to return for a visit sometime in the fall semester.  

Jessamine Finch
Botanical printing — using inks to transfer images of plants — is part of a tradition of nature printing, a general term for a variety of techniques used to make prints from natural objects. Making images from found natural objects seems to be a human urge, perhaps to preserve the beauty we see in nature, or to preserve a fleeting moment in time. Feathers, shells, leaves, flowers, fish, insects, rocks, or even the human body have been used to make prints on paper, cloth, clay, rocks, or other surfaces. Probably the earliest surviving nature prints can be found in prehistoric cave paintings, where images of hands are common. These are believed to have been made with a technique similar to stenciling.

Unlike other forms of nature printing, botanical printing has its origins in the need for scientific documentation and accurate botanical illustration of herbs and medicinal plants. The earliest botanical nature prints to survive are sometimes attributed to Dioscorides’ De Materia Medica, written in approximately 65 AD, but little is known about them. Some experts question whether the prints were part of the original manuscript, so their date may be different. While there are other examples of nature prints in Europe, the first written description of the process of creating botanical prints is found in Leonardo da Vinci’s Codice Atlantico (circa 1508). That written description did much to spread the craft of botanical printing through Europe. Field botanists created volumes of imprints, some of which were beautifully hand colored. Introduced to the American colonies during the 1700s, botanical printing was adapted by Benjamin Franklin to print paper currency that could not be counterfeited. Interestingly, descriptions of botanical printing in Tahiti in the late 1700s can be found in the journals of James Morrison (one of the Bounty mutineers). He discusses how Tahitians made cloth from tree fibers and decorated it with prints of leaves made with dyes prepared from berries. Currently, National Geographic has an online gallery of historic nature prints, taken from the book Impressions of Nature, A History of Nature Printing by Roderick Cave.

Printing methods that were developed during the Industrial Revolution eventually eclipsed old ways of directly printing from plant material, and today’s cameras and copiers have certainly changed how we reproduce images. However, there is still much aesthetic appeal and even scientific value in botanical printing.

The Botanic Garden of Smith College is delighted to present an exhibition of botanical prints by local artist Leonore Alaniz. The prints include those made from plants in the Botanic Garden’s collection, native plants in the area, and plants from other locations, but the artist’s work goes far beyond the scientific documentation of plants and into a unique artistic realm. The detail in the prints is quite amazing, the colors and composition are sometimes surprising, and the scale is at times unexpected. With additional information about the species, the exhibition brings together art and botany, offering visitors a new way of experiencing both familiar and unusual plants.

References
3. See ngm.nationalgeographic.com/2012/10/leaves/nature-prints

Botanical Printing: Artful Collaborations on Paper and Cloth will be on view in the Church Exhibition Gallery at the Lyman Plant House through February 10, 2013.
components that exemplify a liberal arts college with a historic landscape plan and a commitment to the use of plant collections for education. We remind ourselves regularly that it is the plant collection that we interpret, and only a strong collection will have pedagogical value worthy of this college.

It is natural for botanic gardens to change over time, not just physically but philosophically. Yet, the changes need to be closely scrutinized. Changes are often linked to the background and philosophy of a new director, to a new set of researchers, or less often to changes in the administration above the director that redirect philosophy and influence funding in an institution. After a dozen years as director, I am thinking about how my decisions will guide or influence the Botanic Garden in the decades following my tenure. To do so, I must first reflect on Smith’s history.

The Botanic Garden of Smith College began with a director, William Ganong, deeply committed to plant science and its value to women’s education. In our Spring 2007 newsletter we published a reprint of William Ganong’s article, “The Botanic Garden of Smith College—A Study of an Educational Adaptation,” published in Garden and Forest in December of 1897, three years after his arrival at Smith. Ganong set in place a role for scientific inquiry and teaching for the Botanic Garden. He also commented, “Although in this sketch the botanical or educational aspect of the Garden has had first place, it is not to be inferred that its aesthetic side is neglected.” So we see that education trumps but does not exclude the aesthetic for Ganong.

When I arrived at Smith and studied the history of the Botanic Garden, I wanted to make sure that the original intent, to educate, was the basis of our existence. Ganong’s articles have reached cult status for me. Just as I make sure to watch the 1981 cult movie My Dinner with Andre (a philosophical unresolved conversation about humanism vs. spiritualism) at least twice a decade, I read a Ganong article yearly because for me it reinforces why the Botanic Garden at Smith College exists.

The director’s position was not immediately refilled after Ganong’s retirement in 1932, and the gardens and changes to them were under the charge of gardeners and designers whose focus was more on the aesthetic. Detailed plant records were not kept and botanical research emanating from the botanic garden was nonexistent. Lack of scientific rigor was not uncommon with some gardens during this era. There was a time when plant exploration and breeding focused more on plants that could embellish the American landscape and less on serious inquiry into flora in general, not to mention the absence of any conversation on the conservation of species.

If we look at the Smith College Botanic Garden over time, it has, for various reasons, wavered in mission from a slant on science to a slant on the aesthetic and back again. While science and aesthetics are not mutually exclusive they are, from the standpoint of collections, very different animals (or should I say plants). Pretty plants are not always of educational or scientific value and plants with educational or scientific value are not always pretty. At Smith, we are fortunate to have the resources to maintain attractive, horticulturally important species in addition to our collections of botanically significant species, but I would argue the former category alone is insufficient to constitute a botanic garden. We have always had the need for an attractive landscape, and we teach both horticulture and botany. Many of the plants collected during the Ganong era were collected for their teaching and research potential. Following Ganong, however, there were no directors with a Ph.D. and experimental research training until the hiring of Richard Munson in 1985. Since then, directors at Smith had a Ph.D., a research background, and split appointments between faculty and administration. Having a director who can span the gap between botany (i.e., fields like physiology, ecology, and genetics) and horticulture (i.e., fields like garden design, soil science, and plant pathology) seems to keep the science and the aesthetics in balance, which benefits the scientific training of students and the college’s attractive landscape.

Today, I think the Botanic Garden of Smith College is closer to the Ganong model than it has been for a long time. While landscape design and horticulture remain in our roots (pardon the pun), we have moved more aggressively into improving the scientific value of the collection. Many of the more serious challenges for today’s botanic garden did not exist a century ago. We live in a world with shrinking biodiversity and less funding to protect and regulate some of our more endangered species and environments. With this in mind, we try to improve the biological value of our collections. Our collections contain many important plants that are endangered in the wild, two that are extinct in the wild (one in our Campus Arboretum, the other in Lyman Conservatory), and many with interesting biological and/or cultural stories to tell. We share locally collected seed as well as rare tropical seed with other botanical institutions.
throughout the world via our *Index Seminum* program. We provide plant material to researchers worldwide. Besides being a member of the American Public Gardens Association (APGA), we also belong to Botanic Gardens Conservation International, a group dedicated to saving species from extinction and educating countries about the importance of their flora. We abide by the Convention on Biological Diversity, which administers an international treaty to preserve the flora and fauna of the earth, using many means and pushing for fair economic gain from botanical resources. Our collection and distribution of plants and seed follow guidelines set by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, since our collection contains many threatened and endangered species. Although botanic gardens have been one source of the escape of exotic species, we are vigilant about the removal of exotic invasive species, most of which currently migrate into the Smith landscape from surrounding areas. We have the Massachusetts Invasive Plant Advisory Group and the National Invasive Species Council to assist us in our decision making process regarding plant collections and plant removals, and we refer to the Invasive Plant Atlas of New England when considering new plants for our collection.

Does our strong commitment to botany make us a botanic garden? In some disciplines, professional organizations and accreditations give legitimacy to an organization. However, unlike museums, zoos, and aquaria, there is no organization in place for the accreditation of botanic gardens! Zoos and aquaria can be accredited by the Association of Zoos and Aquariums and if they chose they can also apply to the American Alliance of Museums (AAM). It is possible for a botanic garden to be accredited as a museum through the AAM, but only about 3% of accredited institutions are botanic gardens. A primary qualification to be AAM accredited is a full-time director, which we do not have due to my joint appointment as a member of the biology faculty, although we maintain membership in AAM. Perhaps someday botanic gardens, like zoos and aquaria, will have their own accreditation system, and if that occurs I hope that accreditation will be based on the quality, documentation, and maintenance of plant collections, support of research, and the quality of educational interpretation.

While there is no organization accrediting botanic gardens, there is an organization that supports public gardens. The APGA was once the American Association of Botanical Gardens and Arboretums. The somewhat recent name change was more than a name change. It reflected the admission that defining a botanic garden is difficult, allowing other types of organizations to feel comfortable as members under the larger umbrella of public gardens. The inclusivity encouraged growth. Not a bad thing for the survival of an organization or for getting gardens with different missions talking with each other. Admittedly, many gardens were never intended to have a focus on science. For me, however, the organizational umbrella made me aware that display gardens exist in greater numbers than gardens with scientific missions. At annual meetings I see fewer gardens talking about the import of their plant collections and collections management policy and many more discussing, for example, wedding venues, sculpture exhibits, human resources, and gate receipts. Many gardens are on a slippery slope, leaning toward becoming public meeting places with the plant collections as aesthetic backdrops for fund-raising events. Fortunately, we are incorporated into a college campus that philosophically exempts us from commercial pressures, has its own development office, and frees us from relying on admission and event fees to sustain us. This permits us to focus more on the collection itself and on its value to our students’ education.

With regard to tree collections, the Morton Arboretum, a premiere woody plant collection and research and educational institution in Lisle, Illinois, recently established the Morton Register of Arboretums. They created a system of accreditation to foster the establishment and professionalism of arboretums, to identify arboretums capable of participating or collaborating in certain scientific, collections, or conservation activity, and to advance the planting and conservation of trees. We are reviewing the accreditation criteria and expect to submit our application by the end of this year.

When I discuss botanic gardens with students I tell them that most of the American public does not take the plant kingdom as seriously as they should. The beauty (or digestibility) of a plant becomes the reason for its existence, and little thought is given to the role of plants in ecosystems or their relationship with other animals. So the next time you wander through our plant collections and think, “Why don’t they replace that ugly plant with something showier?” it might just be because that “ugly” plant is very important for reasons not obvious at first glance. After all, botanic gardens collect important plants, pretty or not.

Special thanks to Rob Nicholson, Elaine Chittenden, Madelaine Zadik, Polly Ryan, and Gaby Immerman for their comments, suggestions, and added insights that helped shape this commentary.
One of the summer programs that Smith College offered this year was a Young Women’s Writing Workshop for high school students. Gail Thomas, Learning Specialist and Coordinator of Tutorial Services at the Jacobson Center for Writing, Teaching and Learning, taught a poetry workshop and brought the students to the Lyman Conservatory. She was delighted by how the students got into it, and she was very impressed by the poetry they created. Here are samples of their writings inspired by the Botanic Garden.

Although the titan arum, or corpse flower, was not yet blooming when the students observed the plant, there was a sign that had pictures and which told the story of this amazing plant. So, even without seeing (or smelling) it, one student was inspired to write a poem about it.

---

**The Corpse Flower**

by Alana Dore

The Corpse Flower is...

a waiting stalk
hungry like the wolf
blue bonnet tears
sour kisses with lemonade squeezed lips

It Breathes...

jealous rage
corrupt anticipation
cool night air tinged with the guilt of the dead
bloody mess

It Steals...
oxygen from your lungs
money from your threadbare pockets
glassy-eyed stares
precious camera time

The Corpse flower is...

Titan Arum
silently waiting its timely arrival
pig-pen infused mess
attention whore

---

**Garden**

by Simona Zaretsky

Heavy, with delicacy they admire the world.

Their eyes are wide, pink, blue, brown, purple.

Colors flood, surge, roil beneath their feet, trying to conquer.

Emerald fuzz tops interlaced toes, gentle protection.

Their eyes are wide.

Swaying above this battle between color and neutral.

Grey, black, brown, swarm stomping into red, crashing into blue, dissolving into yellow.

Their eyes are wide.

A storm to watch a game to guess a performance of the weak.

Their eyes are wide, their petals open, arching from thick, slender stems.

My orchid sees you.
**The Last Victorian**

Rob Nicholson

It takes a particular stripe of Britishness to sport a full, trimmed beard in the heat of the Amazonian forest, but Sir Ghillean Prance cuts such a figure. Seemingly a throwback to another era, he has navigated through the intricacies of the Amazonian flora, and has done so for decades on behalf of major botanical gardens. Not only is he the world’s expert on this ecosystem, but his lower face runs a very real risk of becoming a small part of it.

Prance began to botanize the Amazonian region in 1964 and has returned again and again to the river forest, maintaining a persistent rhythm of exploration, discovery, collection, and analysis that may never again be matched. He has authored 19 books, published hundreds of scientific papers, and though now officially retired (his “third career”), he is highly active in the botanic garden world and conservation circles.

British exploration of the great South American tropical forests includes some of the most defining and powerful names in biological thought: the luminaries Charles Darwin, William Bates, and Alfred Wallace. It may be argued that tropical forests were the biological muse *par excellence*, the crucible where the theory of evolution began to gestate in the minds of Darwin and Wallace. Both men independently arrived at the concept of natural selection as the driving force of species evolution, though Darwin, mindful of his wife’s religious sensibilities, sat on his manuscript for 20 years. Less renowned but still important explorers include Henry Wickham, whose rubber seed collections altered world economies, and Richard Spruce, who toiled 14–15 years in the Amazon and was the first to report on the powerful hallucinogen ayahuasca. Spruce also aided the empire by spreading the lucrative quinine tree to India.

The early literature of Amazonian exploration tried to convey the vastness, thickness, and complexity to readers used to strolling through verdant and leafy forests of beech and oak:

> At Tauaú I first realized my idea of a primeval forest. There were enormous trees, crowned with magnificent foliage, decked with fantastic parasites, and hung over with lianas, which varied in thickness from slender threads to huge python-like masses, were now round, now flattened, now knotted and now twisted with the regularity of a cable…. In some places one might walk for a considerable distance without seeing a single herb, or even rarely a fallen leaf, on the bare black ground. It is worthy to be noted that the loftiest forest is generally the easiest to traverse; the lianas and parasites (which may be compared to the rigging and shrouds of a ship, whereof the masts and yards are represented by the trunks and branches of trees) being in great part hung too high up to be much in the way.

Richard Spruce, 1849

The path Dr. Prance has followed traces its origins back to these early explorers of the Victorian era, men who helped shift scientific thought and whose work helped forge Biology as a separate academic discipline. The idea that the world’s fauna and flora should have specimens collected and catalogued, be described in scientific literature, and explorations financed reached full flower during the Victorian Era, and Prance represents a continuum of those ideals. He may be the last of the breed as colleges are pushing away from traditional botany courses and stressing genetic concerns while the number of botanists employed in U.S. botanical gardens who do actual fieldwork is but a minute fraction of all employees.

Prance’s point of embarkation for his Amazonian studies is the large city of Manaus, now serviced with direct flights from multiple U.S. cities. In the maw of downtown Manaus, which I visited with Prance in 2009, it seems everyone is a vendor. Children with shoeboxes hawk candies aboard the hundreds of buses, small stalls line and clog the sidewalks, all selling the same thousands of objects, while hundreds of stores, large and small, sell the products of global commerce to river folk from hundreds of miles around. It was not unusual to see rough plank cabins with satellite dishes hundreds of miles upriver. Manaus has become the shopping mall and spare parts bin of the Amazon. What can Prance think, seeing large flat screen televisions selling for $3500 in downtown Manaus, a town he remembers as a sleepy backwater when he first arrived in the 1960s? What can he think when he remembers the poverty upriver and evident throughout the unchecked sprawl of Manaus? What are the global trade-offs that bring us to this?

Manaus began as a river port in 1669, sited where the two major branches of the Amazon, the Rio Negro and the Rio Solimões, confluence (not a word but should be!). It continued as an interior way station, and early explorers had to paddle upriver from Belém for a month or more to reach it. Steamboats came in 1853, cutting the transit (Continued on page 8)
from the coast to 8 days. But what really put Manaus on the map was vulcanization and pneumatics. The creation of stable rubber that could tolerate cold and heat, and the method of inflating it, gave rise to the soft rides on vehicles and bicycles we now take for granted. The nations of the industrial world demanded rubber and Brazil was poised to oblige, its Amazon forests peppered with *Hevea brasiliensis* and *Hevea spruceana*, trees that could be tapped again and again for the base material, a plant latex.

The Manaus economy exploded with the rubber boom and a period of mad money ensued. Horses were quenched with champagne, prostitutes imported from Europe, native Amerindians enslaved and tortured to supply a cheap labor force, and farcical opulence abounded. The pièce de résistance was the now famous Manaus Opera House, still grand and imposing a hundred years later, a pink and white confection where no expense was spared to create a faux European high culture in the forest of high rainfall and high humidity. Even today, the Murano glass, Alsacian glazed roof tiles, Parisian chandeliers, and Scottish ironwork and tropical wood marquetry floors dazzle with their improbable extravagance.

The boom collapsed after one Henry Wickham, profoundly Victorian with beard and curling moustache, on a mission financed by the Royal Botanic Gardens, Kew, returned to England with sound seed. This was propagated and spread to tropical nations within the British Empire, and within ten years Brazil’s monopoly broke, creating one of the classic supply/demand/price graphs of all time. It is no small irony that the garden that ruined Manaus eventually had Sir Ghillean Prance at its helm from 1988 to 1999. Prance first came to Manaus in 1964, when its population was about 200,000. Today it stands at 2 million, with a suspension bridge, 150 feet off the water, being erected, the first span across the immense, tumultuous Rio Negro.

Brazil’s forest is one of the planet’s great scrubbers of atmospheric CO₂, products of industrial economies and cities worldwide. The idea of a carbon tax tied to the conservation of forest lands seemed like ecological pie in the sky 25 years ago, less so today as peoples’ awareness has increased about global warming and carbon’s role.

If the world truly values Brazil’s rainforest it will assist in its preservation and wise usage. It will participate in sustainable ecotourism, help donate to nongovernmental organizations and botanical gardens committed to help, help educate youth on ecology and sustainable energy and lumber systems. The extractive models of the past—cut out the valued timber species one by one, or worse, clear-cut for short-term farms on the poor tropical soils—are what Prance seeks to reduce. He is astute enough to realize long-term economic value must be added to the economic modeling of the Amazon. Prance constantly seeks ideas to help develop sustainable products that can be pulled from the forest or, also important, bring well heeled visitors to photograph, fish, marvel, connect, and then advocate.

Prance now operates in a realm where, in the last 100 years, only a handful of botanists ever have. He speaks to kings, world leaders, and heads of religions about the imperative of global conservation. His measured and reasoned voice, tempered by a thousand views of poverty and rough times himself, carries an air of irrefutable fact and truth, delivered with aplomb and erudition. It is the rare voice of reason that can negate debate and silence opposition, but his is one. If Prance seems a man out of time, it may be that the times have changed in a way that is, as he might put it, “highly regrettable.”

The second part of this article in the spring newsletter will describe my visit to the Amazon with Prance in 2009.
Most of us never wonder how seedless watermelon plants come about. We simply eat the melons, never thinking about the role of domestication in the process. We also eat seedless bananas, oranges, and grapes. Those species can be propagated vegetatively, by taking pieces, such as cuttings or divisions, of the parent plant. Once one seedless plant is found, whether it be the result of a spontaneous mutation or some complex breeding, the side shoots from the mother plant are removed and planted (in the case of bananas) or branches are grafted (in the case of citrus or grapes) to indefinitely propagate a line of seedless plants. All ‘Thompson Seedless’ grapes, for example, are ultimately derived from one seedless individual. Seedless watermelon is a much more complex story.

Watermelons cannot be propagated economically by cuttings. Even if they could, unlike citrus, grapes, and bananas, they are essentially annuals, not biologically inclined to live beyond one season. Since seedless watermelons make no seed, how can you get seed to plant more seedless watermelons?

First, you need to know some scientific facts. Watermelons have imperfect flowers—lacking some sexual organs, the flowers are either male or female. In the case of watermelons the male and female flowers are on the same plant (the botanical term is monoecious). Most plants and animals have two sets of chromosomes in each of their cells (called diploid). Watermelon plants have a total of 22 chromosomes per cell, two matching sets of 11. The exception is the sex cells, which have only one of each chromosome (haploid) for a total of 11. The diploid state is restored when pollen delivers sperm to fertilize the egg. Now the chromosome number is again 22, with 11 contributed by the female, 11 by the male. Here is where the ingenuity comes in for breeding seedless watermelon. To get seedless watermelon you need to create plants that are sterile and set no seed. Just as a mule, the hybrid between a horse and a donkey, is sterile, seedless watermelon can only be produced with planned hybridization.

Producing seedless watermelon takes three steps. It has long been known that plants with cells having three sets of chromosomes (triploid) are sterile and do not produce seed. How can you get triploid plants? The first step involves doubling the diploid chromosome number of one parent. This is done using colchicine, an alkaloid extracted from the fall flowering crocus, *Colchicum autumnale*. The chemical disrupts chromosome movement during cell division. Instead of the chromosomes segregating to each of the dividing cells, they stay put, with the end result being a cell that has four sets of chromosomes (tetraploid), rather than two. When breeders apply colchicine to watermelon shoot tips they sometimes get tetraploids that have a total of 44 chromosomes. Tetraploid plants are fertile and can be inbred into a line that consistently produces tetraploid offspring.

Step two involves making the triploid plants. Tetraploid female flowers cross-pollinated with diploids make triploid seed, which have 33 chromosomes, 22 from the female and 11 from the male. The triploid seed are planted, producing triploid plants.

Triploid plants do not produce viable eggs or pollen because the odd number of chromosomes does not allow the chromosome number to be halved. Yet, if pollinated with viable pollen, triploid plants produce fruit because the mere act of pollination, even without fertilization, triggers fruit development. For step three, pollination of the triploids is accomplished by planting some diploid plants among them and allowing the bees to cross-pollinate. Since bees visit flowers randomly, they pollinate flowers from the both the diploid plants and triploid plants with the diploid pollen. Seeded and seedless fruit must be marketed and priced differently, however, so growers need to know which melons are seedless. Again, it takes ingenuity to solve the problem. By using triploids with, for example, a solid colored rind, and a diploid pollinator with a striped rind, the field of melons can be separated by rind color and pattern, which are determined only by the female. Fruit with striped rind color, derived from the diploids, will have seeds; fruit with a solid rind, derived from the triploids, will be seedless. Melons are visually sorted and sold separately.

The little white seedlike objects often found in seedless watermelons are actually seed coats that failed to form properly because no embryos ever developed. They are edible, as you already know. Once in a while things don’t go as planned and you can find a triploid melon with a few mature seeds in an otherwise seedless fruit. Please enjoy spitting these out—it’s becoming a lost art. On a personal note, I was never good at this as a child, as evidenced by the number of seeds I nearly inhaled when trying to win distance contests.

What was the purpose of this article? First of all you can impress your friends and relatives with your knowledge the next time you eat a seedless watermelon. More importantly, I want to emphasize that education in science affects us in ways we don’t realize. That seedless melon you just ate could not have existed without knowledge of plant breeding, cytogenetics, and horticulture. It takes lots of brainpower to make a seedless watermelon!
Emerald Ash Borer

Since the 2002 discovery of the emerald ash borer (EAB) in North America, over 25 million ash trees, *Fraxinus* sp., have been killed by this exotic pest from eastern Russia, northern China, Japan, and Korea. It probably arrived in wood packing or crating material from shipments originating in Asia. Despite efforts to stop it, the EAB infestation continues to spread. In July of 2012, the first sighting of the emerald ash borer was confirmed in Connecticut and in September, its arrival in Dalton, Massachusetts, was verified. EAB is now present in 18 states.

EAB was first discovered near Detroit in southeastern Michigan. Because it was killing hundreds of ash trees, the specimens were turned over to Dr. Dave Roberts of Michigan State University. He could not identify the culprit, but after consultation with scientists in Eastern Europe, the emerald ash borer, *Agrilus planipennis*, was identified as the causal agent in ash tree decline and mortality in the Detroit area. Prior to identification of EAB, homeowners and arborists attributed the loss of their ash trees to ash yellows, a disease caused by microorganisms that invade the trees’ food-conducting tissue (phloem). Ash trees infested with EAB show a top-down crown dieback, dense sprouting from trunks (called epicormic shoots), and other signs of tree stress typical of ash yellows. In the second year of infestation they display, dying crowns. Most trees die within five years.

The insect is striking in appearance, with a bright, metallic green color. It is a slender beetle, 1/2” long and 1/16” wide, with a flattened back and purple abdominal segments beneath its wings. It usually takes a full year to complete the life cycle of one generation. The adult beetles begin to emerge in late May and June in the mid-Atlantic region, and live for approximately three weeks. They feed on tree foliage, only minimally damaging trees by chewing small, irregularly shaped notches into the leaf edges. Mating occurs seven to ten days after emergence, and then the females lay eggs on crevices in the bark. Eggs hatch in seven to nine days and larvae chew through the outer bark into the cambial layer, where new bark and new water and nutrient conducting tissue are produced. The larvae feed on the inner bark and outer sapwood, making S-shaped tunnels also called galleries, which eventually become larger and quite extensive. It is in this stage that EAB is most destructive, as the larvae tunnel through and feed on the cambium. This girdles the tree, preventing the movement of nutrients and water, and leads to decline and eventual death of the tree within one to three years of infestation.

Although adult beetles can fly over half a mile from where they emerge, movement of infested trees, logs, or firewood by people is by far the biggest cause of new infestations. Shipments of ash nursery trees and logs with bark are now strictly regulated, and transporting firewood outside of quarantined areas is illegal.

EAB is found in nurseries, landscape, and forest settings. Usually trees are not diagnosed until severe dieback is noticed. Whole branches wilt and die and the tree resouts below the dead areas. The D-shaped exit holes distinguish this borer from other insects that attack ash trees. EAB often prefer trees of greater than 10” diameter and seem to attack the upper trunk first, making early detection difficult. Look for vertical splits in the bark (above the previous year’s larval galleries), current year galleries, woodpecker feeding injury, and the distinctive D-shaped exit holes.

The infestation in Connecticut was discovered by monitoring a native ground-nesting wasp, *Cerceris fumipennis*. Developing wasp larvae are fed adult EAB provided to them by the adult wasp. You may have also seen purple triangular traps in trees along highways in your travels throughout the eastern states. These traps, about 2’ long, are positioned in key spots by state forestry officials to detect the advance of the beetle’s spread into new regions. They lure EAB with volatile compounds associated with ash leaves. Monitoring using the predatory wasp may prove more effective than the traps.

New infestations are mostly occurring along interstate highways. It is believed that illegal transporting of firewood is the major cause. The best thing that can be done to slow down the spread of EAB is to avoid moving ash firewood or living ash trees from one area to another. If you suspect an infestation, call your county agricultural extension office.

In North America, the emerald ash borer attacks only ash trees, primarily white ash, *Fraxinus americana*, and green ash, *F. pennsylvanica*, and their many cultivated varieties. We are carefully watching our ash specimens on campus: *F. americana*, white ash (NE U.S.); *F. americana* ‘Rosehill,’ Rosehill ash (NE U.S.); *F. ornus*, flowering ash (Eurasia); *F. ornus var. rotundifolia*, round-leaf flowering ash (Mediterranean); *F. oxycarpa*, desert ash (Eurasia); *F. pennsylvanica* ‘Cimmzan,’ Cimmaron ash (N. America); *F. quadrangulata*, blue ash (N. America). Since some of these species may not have been exposed to EAB before, we may be a test case for them. Unfortunately, there is no control method, so if we do find EAB in our collection, our only recourse will be to destroy the tree and chip it up. ☠

More information:
  - [www.emeraldashborer.info](http://www.emeraldashborer.info)
New Biology Faculty Member: Danielle Ignace

Michael: Danielle, first of all, welcome aboard. I thought our readers would be interested to know we have a new biologist who studies plants. Here goes. I have not met a single person who has said to me “I’ve always wanted to study plants. It started as a small child.” So tell me how you got from learning your ABCs wanting to be an ecological physiologist.

Danielle: My love of plants did not start when I was small; you could say I was a late bloomer. I’ve always had a strong affinity towards science, which I attribute to my father being a medical doctor and his plan for my siblings and me to pursue careers in medicine. That was my plan too, until I got research experience my sophomore year at the University of Wisconsin at Madison. I assisted with agricultural research, primarily grinding cow fecal samples at the barn and homogenizing cow liver samples in the lab. I could see that the work was important, but it wasn’t exactly the kind of experience that had me rushing to graduate school. Then I volunteered in a lab that used *Daphnia magna* (zooplankton) as a model organism for investigating the effects of toxins in freshwater ecosystems. Having so much more fun with the research process, I knew I wanted to get a Ph.D.

To get into a good Ph.D. program I knew I needed more research experience. I was thrilled to be selected for the Research Experience for Undergraduates program at Rocky Mountain Biological Lab in Crested Butte, CO. My project focused on how food web structure (insects and plants) varied across an elevation gradient. Perhaps the beautiful mountains influenced me, but this is when I discovered that I absolutely had to work on plants. While interviewing for the Ecology and Evolutionary Biology Ph.D. program at the University of Arizona, I realized that my interests completely overlapped with the new plant physiologist, Dr. Travis Huxman. I guess I was a plant physiologist but did not know it yet.

What distinguishes what you do from someone who spends their time studying a model plant in a laboratory setting?

I am primarily a field ecologist, which means most of my research and data collection occurs in the natural setting of the plant species I study. I use unmanipulated permanent plots and return to the exact same spot to observe changes in the plant community annually. Additionally, I use long-term field experiments to investigate multiple environmental factors that can have profound impacts on the plants. Doing fieldwork has its challenges, and at times my field site is my office. However, the laboratory is a very important setting for my research. I have growth chambers in my lab, where I control environmental factors, such as temperature, light, soil moisture, even CO₂ concentrations. With these chambers I can manipulate factors that I cannot adequately control in the field. Most importantly, I consider my lab the main hub of operations, since it is a place where I run controlled experiments, generate ideas with students, and where all my plant samples are processed, analyzed, and stored. I don’t study one model plant in the laboratory, but many plants in the field and laboratory.

You’ve done most of your recent research in the dry southwest and now you are moving into a much wetter region. How do you think your work will translate to New England?

One of the best aspects of my research is that I can do it anywhere. I have always been interested in broad questions that have deeper implications than what is happening just in my back yard or my field site. I aim to understand the biological and environmental factors that are responsible for the patterns that we see in plant communities. These factors may include non-native species invasion, climate change, pollution from nitrogen deposition, and changes in the animal community, to name a few. The bad news is that non-native invasive species, climate change, and pollution seem to be everywhere, leaving a path of destruction throughout native plant communities. The good news is that non-native invasive species, climate change, and pollution seem to be everywhere, giving me the opportunity to do my research wherever I go. I never feel limited in locations where I can do the research that interests me most.

Some scientists chose to do research for a research institute, others prefer an academic setting. What made you decide to enter the world of academia?

Interacting with students is the most important reason why I chose a career in academia. Increasing the presence and voice of Native Americans and other underrepresented minority groups in science and education is a top priority in my career. Teaching is a great way to interact with students and get them excited about science. Leading a group of students who assist with research allows me to teach them about the process. I find academia exciting because there is always a seminar to attend, new (Continued on page 12)
Danielle Ignace continued

(Continued from page 11)

questions to be answered, exciting collaborations to be formed, and a constant flux of students who want to get involved. One of the most fulfilling aspects of academia is mentoring students, either through their research experience or helping them figure out their career goals. I am biased in that I would love to see them go on to pursue careers in academia. If I can pass along my knowledge and spark interest of plants, then I have done my job. However, if I help the student choose an entirely different career (even in medicine!), then I consider that a success as well.

What types of plants interest you most?
The plants that interest me the most are highly dependent on the scenario. In a general sense, plants that seem to have the biggest impact in an ecosystem are plants that really grab my attention. They could be the winter annuals that are in full bloom during the spring in Arizona or grasses active during the summer in New England. The plants do not have to be non-native invasive species, but it often happens that these species have the biggest and most negative impacts on ecosystems.

The world is becoming more hostile towards wildlife and plants. What type of research do you feel is crucial to stem the tide of extinction?
Wildlife and plants are facing many challenges, whether from habitat loss, pollution, climate change, or invasive species. These factors likely interact in ways that have a more profound impact than when considering them alone. Research that investigates the mechanisms by which a combination of these factors could have detrimental effects on wildlife and plants would be ideal. As important as this research is, it does not necessarily speak to how to mitigate the negative impacts on wildlife and plants. An experimental approach that incorporates this perspective, such as determining the impacts of removing an invasive species, will be necessary to learn how to protect species against extinction. Outreach programs are also crucial for developing awareness and understanding of threats to wildlife and plants, as well as preventing further hostility towards these organisms.

What amazes you most about plants? Is there a particular plant factoid that makes you get goose bumps?
I am always amazed at the special traits that plants have in order to cope with extreme environments. My experience is with desert plants that are faced with extreme temperatures and low precipitation. I have seen annual plants that germinate after only a couple of small (5–10 mm) rainfall events and grow roots deep enough to survive weeks without more rain. I was never able to determine the exact rooting depth due to their extent in rocky soil. It was frustrating not to get that data, and using a backhoe is not a good alternative to digging soil pits! I have also witnessed grasses that appear to be in a deep dormant state after a drought and then come to life and achieve incredibly high photosynthetic rates after 10 mm of rainfall. A native annual plant I work with forms root nodules, signifying a symbiotic relationship with nitrogen-fixing bacteria (rhizobia). This helps the plant to do well in desert ecosystems that have extremely nutrient poor soil. I am constantly surprised by what plants can do and it takes my research in exciting and new directions.

Tell us about your plans for teaching and research at Smith College.
During the fall I will be teaching in one of the main introductory biology courses (BIO 150), which focuses on cells, physiology, and development. In the spring I will take a broad approach to teaching plant physiology. Students will learn key concepts such as water and nutrient uptake, gas exchange, growth and allocation, and the impacts of climate change. The course will provide a good foundation in plant physiology, which will be useful when they learn how to apply the key concepts to ecosystem and global processes in my future courses.

I plan on maintaining my collaborations at the University of Arizona and continuing my research in desert ecosystems. This project focuses on how changes in climate, nitrogen deposition, and rodent community composition have played a role in the irruption of a non-native, Eurasian species, Erodium cicutarium, redstem stork’s bill, and its impacts on the native plant community. This plant community previously flourished with high diversity and abundance of native plants. During the mid 1990s Erodium exploded over the landscape, initiating its long-term dominance over the native community. Although this is an incredibly common outcome of invasions, I have witnessed the most unlikely twist in this scenario. Erodium seems to facilitate one of the native species, Astragalus nuttallianus, smallflowered milkvetch, leading to codominance in this community in recent years. This shows the complexity in determining how species interactions affect patterns at the community level and makes me want to dig deeper in my understanding of these patterns.

I integrate techniques from plant physiology, community ecology, and ecosystem ecology with the goal of providing a predictive framework for understanding how global change factors impact community structure and ecosystem function through species interactions. This interdisciplinary approach is used to determine the suite of mechanisms that lead to successful invasion and dominance of non-native species. I use large-scale field experiments, growth chamber experiments, greenhouse studies, observational studies, regional surveys, and long-term data analysis. With this framework in mind, I will seek out local study sites to further develop my research program. I will start by exploring the possibilities at the MacLeish Field Station, in Whately, MA. I am very excited to be working at Smith and I honestly see endless possibilities for my future work and collaborations.

Research on wild plant populations often rests on the work of field crews who spend days or weeks collecting data outdoors. While not the fast track to monetary wealth, field technician work offers a wealth of opportunities to learn about plants in their native habitats. Very different from classroom or book learning, it is an exciting way to develop a full understanding of the whole plant and its environment. One gains a new perspective of our amazing living planet.

It all began with answering an online job announcement.1 By mid-March of 2012, I found myself about 100 miles north of Las Vegas, setting up my tent for a month of work on a field crew of five in the Eastern Mojave Desert in Nevada. The research project, headed by evolutionary biologist Professor Christopher Irwin Smith of Willamette University, was designed for further exploration of the relationship between Joshua trees, *Yucca brevifolia*, and their exclusive pollinators, two species of yucca moths, *Tegricula synthetica* and *T. antithetica*.2

Our field site lay in the Tikaboo Valley, a 30-mile wide basin of knee-high shrubs and Joshua trees. From the highway, the valley looks like one of those monotonous gray-green landscapes that drivers like to speed through. But on foot, day after day, the site proved far from monotonous. Ringed by sedimentary and volcanic peaks whose color changed hourly in the desert light, the basin hosted range cattle along with antelope, coyote, fox, badger, and rodents, as well as migratory birds and, of course, snakes, lizards, and scorpions. Quickly, the sea of gray-green came into focus as individual shrubs and as home for countless creatures.

**Joshua trees**, relatives of century plants and agaves in the family Agavaceae, grow almost exclusively in the Mojave Desert in the southwestern United States in California, Nevada, Arizona, and Utah. The Cahuilla Indians have long known the value of the leaves and trunks for fiber and building materials, and the fruits and seeds for food. Computer modeling predicts a 90% reduction in their numbers as this arid region becomes warmer and drier, outpacing the trees’ ability to shift their range.3 Fire, air pollution, and habitat disturbance from off-highway vehicles and commercial and residential development also threaten the trees. But for now, they continue to play a key role in the ecology of the Mojave, where a relationship with an insect pollinator has allowed them to survive for millennia.

Joshua trees stand about 5 to 15 feet tall, their trunks and branches covered with stiff, daggerlike leaves. The flower buds nestle in the center of terminal rosettes, looking like green to whitish-purplish artichokes. Fully open, the pineapple-sized inflorescence contains dozens and dozens of musky-smelling, creamy-white, bell-shaped florets, each with six tepals (sepals and petals that look alike). Typically, we found flies, beetles, spiders, an occasional centipede, and, of course, yucca moths in the florets.

Yucca moths, for all their importance to Joshua trees, have an unassuming appearance with grayish-black wings about a half inch or less in length depending on species. In this mutually beneficial relationship, a female moth enters a floret and gathers pollen into a tiny golden globe (just visible to my eye) held beneath her mouthparts. Moving to a different floret, she inserts her ovipositor—an appendage at the rear of her abdomen—into the floret’s stylar canal to deposit her eggs on the ovules (the undeveloped seeds). Then she climbs up the stigma and deposits the pollen, thus pollinating this floret and ensuring that the ovules develop into seeds to nourish the moth larvae when they hatch from her eggs. The larvae do not eat all of the seeds, thus the tree survives and reproduces.

Such an insect/tree relationship is not unique. Fig trees and fig wasps, for example, have a similar relationship. What becomes particularly intriguing is that each subspecies of Joshua (*Y. brevifolia brevifolia* and *Y. brevifolia jaegeriana*) has its own species of moth pollinator (*Tegricula synthetica* and *T. antithetica*, respectively). And, there is a critically important match between the typical length of stylar canal in each tree subspecies, and the ovipositor length of the preferred moth species. Thus, for example, the right moth can deposit her eggs without over-reaching and damaging the walls of the ovary.

(Continued on page 14)
Yucca continued

Continued from page 13

Generally Yucca brevifolia brevifolia and Y. brevifolia jaegeriana grow in separate geographic areas, but in the Tikaboo Valley both species occur together, providing a valuable research opportunity. Our job was to manipulate the insect/tree pairings by introducing yucca moths either to their non-customary tree subspecies as an experimental treatment, or to their native host as a control. A crew would return in May to assess adaptability to these treatments as measured by pollination success, number of larvae, and number of seeds eaten by the larvae. The study would contribute to understanding more about how tree and insect coevolve and adapt.

Guided by Ramona Flatz of Willamette University, we hoisted packs and field equipment each day and set out across the sand to find Joshua trees in bloom and collect moths from their flowers. Balancing on ladders in the desert breeze, we tucked cloth bags around the blossoms, carefully broke them off into the bag, and searched through each floret for moths. We took leaf tissue for genetic testing that would aid in identifying a tree’s subspecies. My colleagues also took scent samples for scent profiling and caged the blossoms with wire mesh to prevent accidental pollinations and the munchings of cattle and rodents. Back at camp, we had use of an RV (where, amazingly, a chef provided meals for us) for identifying and measuring moths under microscopes, writing field notes, and finding respite from sand and wind (and two snowstorms).

I found that Lesson #1 was to move carefully around trees with needle-sharp leaves. Lesson #2 was that blossoms can be few and far between in a dry year. And Lesson #3 was to pay attention to things beyond the immediate task. After days on the sand, visiting hundreds of trees, I began to notice the intricate relationships between Joshua trees and other desert residents. As the only tall objects in the desert, for example, Joshua trees provided shade for cattle (which in turn left their manure at the roots). Loggerhead shrikes perched on the topmost branches to spy on their lizard prey. Upper crotches supported red-tailed hawk nests out of reach of four-footed predators, while inner branches protected cactus wrens and their airy nests of golden grass stems. Rodents ate the fruits and buds of the trees, but returned the favor by storing seeds in burrows where they might later sprout.

My colleagues pushed my observations further. Passionately interested in nature, they shared their stories and enthusiasms, a major perk of the job. Our crew leader told of her awe at the tenaciousness with which the female moths cling to their precious cargo of pollen, despite their arduous journey into plastic vials, daypacks, microscope examination, and finally, introduction to a new tree. My crewmates showed me the perfection of a nickel-sized, nearly translucent golden scorpion; the beauty of beetle markings; and the possibility of responding calmly to rattlesnake presence. In turn, I talked about my fascination with the plants.

The science aspect of the project—its discipline, protocols, data sheets, measurements, and microscopic views—coupled with the daily immersion outdoors in company with knowledgeable and interested companions, gave me a rich sense of Joshua trees and, more broadly, a personal connection with the trees and their home. I highly recommend field work as a way of focusing attention and experiencing the plant world in both a scientific and holistic way.

Notes
1. Field technician jobs are often announced on websites such as www.conbio.org.
Pond Dredging and Renovation

Madeline Zadik

After much planning, on October 15 the Lyman Plant House Pond Restoration Project (dredging the pond) began in earnest. The work was necessitated by years of sediment buildup. The contractor selected was chosen by Smith College in part because they are known for their sensitivity to environmental issues. The work should be complete by early December. The work includes removal of approximately 200 cubic yards of dredged materials and soils harboring invasive plant species, the reshaping of the banks with new loam, and the installation of a gravity fed underground water supply, harvested from existing drains, to improve pond water quality. The sculpture in the pond, Great Blue Heron by Elliot Offner, was removed by the Museum of Art, for conservation and safekeeping during the heavy construction.

In order for heavy equipment access into the area, part of the wrought iron and granite fence along College Lane had to be moved out of the way, and part of the perennial border and sections of the Systematics Garden were temporarily removed. All of these areas will be replanted in the spring. We expect that the “new” pond, replanted with native vegetation around it, will be a great improvement to the area.

Member Profile: Roland Normand

Pamela Dods ’08

Whenever I walk through our greenhouses and gardens, I’m struck by the fact that just when I think I’ve seen everything, I notice something new. There is one thing, however, that remains a constant: the daily visits by Botanic Garden Friends member Roland Normand, who can usually be found somewhere in the gardens, camera in hand.

For this interview Roland consented to let me turn my camera and curiosity toward him. Like the plants he photographs, when seen up close, interesting details emerge.

Roland Normand is a WWII Army veteran. He is retired from the Springfield, MA, Armory where he worked his way up from machine operator to tool maker and finally to tool and gauge designer. He then worked at UMass Amherst for 16 years (before retiring again) as the maintenance programmer for the electrical and mechanical equipment on campus. He has three grown children and has been widowed for 27 years.

For the last 10 years or so, Roland walked the 2½ miles to the Botanic Garden from his home in Northampton almost every day. Mr. Normand is no stranger to long walks. In fact, he’s a member of the Appalachian Mountain Club and has been on 56 major hikes all over the world. Roland explained, “When I say major hike, I mean hikes that lasted from 1 to 3 weeks!” Additionally, Roland has pursued photography as a hobby for over 60 years. As a photographer, he loves the opportunity the Botanic Garden provides to get up close to his subjects, from the amazing plants to the diverse wildlife that is attracted to the gardens and campus. When asked if he has a favorite plant or garden, he replied, “They’re all my favorite!” These days, although he doesn’t travel as far, Roland still “hikes around the world,” capturing its beauty and diversity with his camera on his daily visits to the Botanic Garden’s exotic plant collection.
The Botanic Garden of Smith College is grateful to our supporters who help make our work possible. We wish to express our sincerest thanks to the following contributors who have given so generously in the last fiscal year, from July 1, 2011, through June 30, 2012.

MEMORIAL GIFTS
In memory of Elsie Baskin Adams 1911
Elizabeth R. Maruska
In memory of Georgiana Jackson Allen 1907
Kate Bunker-Neto
In memory of Judith Brett Avrett ’59
Sherry Martin
In memory of Barbara Balfour ’64 & Jeanne Silver Kirk ’63
Dale Claire Gibb
In memory of Sarah Boasberg ’58
Janice Oresman
In memory of Carol Brown 1911
Sheafe Satterthwaite
In memory of William Campbell
Jane Ross Moore
Edith A. Sisson
In memory of William & Alice Campbell
Deb Brown
In memory of Helene Cantarella
Margaret Groesbeck &
Arthur Apostolou
In memory of Emma Rose Coleman
Marcie Elegant
Joseph G. Ambessi
Antoinette Arnold
Clara Monheit Berman
Michele E. Brogunier
Luanne Buchanan
Katherine E. Cavanaugh
Amalia Charles
Floyd Cheung
Lindsey A. Clark-Ryan
Catherine Cote
Nora Cothren
Rebecca A. Cross
Ann Deppman
Amanda Dowd
Lucia Ferguson
Katherine Finnerty
Ariane Flick
Mary Y. George
Sophie Glidden-Lyon
Sarah Gokey
Elisabeth Goodman
David Gorin
Caroline von Herrmann
Mary L. von Herrmann
Mary von Herrmann
Susan von Herrmann
Parshia Hobbs
Jean S. Hoffheimer
Victoria Hugo-Vidal
Eve Hunter
Nicholas R. Jones
Christopher Jones
Jelk Cush
Zehra J. Khan
Barbara J. Kryc
Serena Kunzler
Susie Kwon
Kerry Langan

MEMORIAL GIFTS
continued
In memory of Emma Rose Coleman
continued
Lauren Currie Lewis
Melissa Lyle
Olivia K. MacLennan
Corina McCandless
Hannah DeEtte Muclker
Nag Bushan Odekara
Richard T. Parker
Sarah E. Pedicini
Francesca Petronio
Emma M. Phipps
Catherine A. Culp Posner
Vanessa Raditz
Mary Reilly
Ayellet Reiter
Hannah Rousselot
Mia Ruf
Jessica S. Sabat
John W. Sabin
Karen Sarappo
Sophie Schor
Julia Schwartz
Jihyun Shin
Jane M. Stangl
Jane E. Starkman
Gary Stoudt
Emma Tanaka
Cassie Thompson
Sarah J. Tucker
Mary Celine Villacastin
Sarah Wanenchak
Ellen Watson
Elizabeth Wingrove
In memory of Lora Collins ’57
Jean L. Brensaham
In memory of Lyn Judge Corbett ’74
Barbara E. Judge
Barbara Judge Townsend
In memory of Elena Damjanoiit
Demetri & Margaret E. Antoniou
In memory of Edith Donahoe Dinneen
Edith N. Dinneen
In memory of Amy Sue Doppelt ’81
Stephen J. Scheier
In memory of Patricia Fearsall Dutcher ’35
Deborah D. Bump
In memory of Melissa Fong ’01
Liv Coleman
In memory of Dorothy Lilly Fowell ’24
Elvin M. Fowell
In memory of Marjorie Weilman Freeman 1916 &
Fentress Kerlin Park
E. Hope Freeman Hudner
In memory of Marshall Fulkerson
Kay Huey
In memory of Ora Gillies Gerhard ’37
Caroline Riggs

MEMORIAL GIFTS
continued
In memory of Charles & Ruth Hill
Katherine Hill Udall
In memory of Roselle Hoffmaster ’98
& Allison Ihm Schwartz ’98
Annette Zaytoun & Rick Reynolds
In memory of Marjorie Mollison Holmes ’71
Priscilla Dickey
In memory of Helen Wild Jennings ’34
Stephen & Linda Jennings
In memory of Constance Davison Mail ’30
Patricia Mail
In memory of Robert & Mary McCarthy
Linda M. Jaegers
In memory of Victoria McCarthy ’75
Megan Adamson
In memory of Alice Houston
McWhinney 1916
Madeline M. Dale
In memory of Edith Christian Minar ’60
Ellen Hauser Bernstein
Minette Switzer Cooper
Bonnie G. Donham
Susk Falk Green
Janet King
Susan Dworski Nusbbaum
Llewellyn P. Smith
In memory of Virginia Maddock O’Brien ’38 &
Kate Greene Stephenson ’33
Jane Stephenson
In memory of Rosemary O’Connell Offner ’53
Helen Bryan Smith
In memory of Gwendolene Pearce ’48
Catherine Seidenberg
In memory of Muriel Kohn Pokross ’34
Donna K. Donaghy
Deborah Wolfe Lievens
In memory of Evelyn Prout ’41
Allison M. Deen
Mary DeWitt
Marion DuBosque
Ashley Prout McAvey
Virginia P. Smithers
In memory of Edward Roberts
Donald & Mary Roberts
In memory of Mary Snow ’66
Anne B. Terhune
In memory of Mary Mattison van Schaik ’31
Jacoba van Schaik
In memory of Jeanne Hampton Shearer ’66
Anna Craig Hogan
In memory of Paraskevia Smith
Linda S. Fidnick

MEMORIAL GIFTS
continued
In memory of Margaret Soule ’63
Joan B. Corbett
In memory of Lisa Tavener Spencer ’82
Anne E. Baron
In memory of Elizabeth
Spetnagel ’28
Pamela P. Tisza
In memory of
Paul & Virginia Tegel
Kimberly Hatch
Betty Tegel
In memory of
Caroline Blanton Thayer ’29
Helen T. Chapell
In memory of
Rand Van Sant Ward ’55
Cynthia D. Wenzlau
In memory of Beth Warren ’88
Marion S. Marcucelli
In memory of Sophia Burnham Westcott 1904 &
Sarah Westcott Drew ’34
Sarah Drew Reeves

BEQUESTS
Jane Gilmore Lukens
Muriel Kohn Pokross

ELIZABETH A. SPETNAGEL ’28
ENDOWMENT FUND
Jane Gilmore Lukens

LOUISE DE BEVERS SPETNAGEL ’29
ENDOWMENT FUND
Jane Gilmore Lukens

Muriel Kohn Pokross ’34
FELLOWSHIP IN BOTANICAL
& HORTICULTURAL STUDIES
Donna K. Donaghy
Deborah Wolfe Lievens

CARY MACRAE McDaniel ’69
INTERNSHIP FUND
Barbara Burgess Wolfe

MARCIA SCHOFIELD ’65
CONSERVATORY
MAINTENANCE FUND
Marcia Schofield
**Honorial Gifts (continued)**

**Honorial Gifts**

In honor of Maryjane Beach
Cathy Ann Longinotti

In honor of Jennifer Clark ’09
Sheila Clark

In honor of the
Class of 1947 65th Reunion
Smith College Class of 1947

In honor of Susan Cohen ’62
Jill G. Schifman

In honor of Hope Cone
Linda Lauglin

In honor of
Lora Kleinzahler Freier ’62
Talia Schenkel

In honor of Mary Laprade
Elizabeth A. Salzer

In honor of Lawrence House
Classmates
Marilyn Martin

In honor of
Anna Zukel Middaugh ’39
John P. Middaugh, M.D.

In honor of Richard Munson
Judy L. Shindel

In honor of James & Miriam
Niederman ’48
Nancy V. Ahern

In honor of Cornelia Mendenhall
Small ’66
Rachael Bartels
Robin Brooks

Agnes Bundy Scanlan
Linda Smith Charles
Carol Christ
Katherine Clark
Arlene Cohrs
Peggy Danziger
Deborah Duncan
Paula Ferris Einaudi
Elizabeth Evcillard
Lisa Ferrell
April Foley
Lynn Fox
Sidney Golub
Neil Grabois
Elizabeth Hoffman
Sabine Jean
Janet Ketcham

**Members of the Friends of the Botanic Garden**

**Champions**

Deanna Bates
Dr. William H. Danforth II
Donna K. Donaghy
E. Hope Freeman Hudner
Jane Spivy Keough
Elisabeth Mason
Stephen J. Scheier
Marcia Schofield

**Patrons**

Sue Andreau Brown
Edith N. Dinneen
Susan Hastings Glendon
Laurel McCaín Haarlow
William B. Hurd, Jr.
Heather Walsh

**Sustainers**

Nancy V. Ahern
Gay Flood
Ruth Flournoy
Christopher L. Frank
Alison Corning Jones
Christopher B. Loring
Ruth Mathews Leiter-Churchill
Jennifer E. Levy
Elizabeth Lewis
Mary Liz Lewis
Dr. Patricia D. Mail

**Contributors (continued)**

Deborah H. Cushman
Mary S. Dangremont
Margaret Flanders Darby
Donna M. De Sousa
Donna K. Donaghy
Susan V. Donovan
Irene Frangos Drivas
Mrs. Arthur Dube
Christina J. Eldridge
Georgianna Erskine
Bernice Fierman
Thomas & Wendy Fileti
Patricia G. Foulkrod
Gordon & Molly Fowler
Florence Bryan Fowlkes
Martha J. Gallew
Ann Lichty Giesler
Suzanne Quaintance

**Gift-in-Kind Donations**

Donald & Mary Roberts

**Drawing by**
Shama Rahman ’13

---

Many thanks to the many anonymous donors and all those who placed their contributions in the donations box.
Members of the Friends of the Botanic Garden continued

Individual & Dual Members continued

<table>
<thead>
<tr>
<th>Contributors</th>
<th>Individual &amp; Dual Members continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maureen E. Reilly</td>
<td>Jean G. Bodine</td>
</tr>
<tr>
<td>Thomas &amp; Teita Reveley</td>
<td>Sarah Murdock Bolster</td>
</tr>
<tr>
<td>Nicholas Covatta &amp; Robin Rinaca</td>
<td>Laura Booth</td>
</tr>
<tr>
<td>Estelle S. Roberts</td>
<td>Ann B. Borelli</td>
</tr>
<tr>
<td>Diantha C. Robinson</td>
<td>Lee Sullivan Born</td>
</tr>
<tr>
<td>Alicia B. Rose</td>
<td>Jennifer C. Bourgeois</td>
</tr>
<tr>
<td>Dr. Katherine &amp; Dr. Stephen Rostand</td>
<td>Erica Bradstreet</td>
</tr>
<tr>
<td>Dr. Nancy B. Rubenstein</td>
<td>Emily K. Breithauer</td>
</tr>
<tr>
<td>Elizabeth Salsedo</td>
<td>Carolyn E. Brewer</td>
</tr>
<tr>
<td>Ann Sanford</td>
<td>Elaine W. Brophy</td>
</tr>
<tr>
<td>Elizabeth Schoenfeld</td>
<td>Evelyn Brown</td>
</tr>
<tr>
<td>Mary C. Schroeder</td>
<td>Kathryn Brown</td>
</tr>
<tr>
<td>Susan L. Schwartz</td>
<td>Nancy B. Bryant</td>
</tr>
<tr>
<td>Susan G. Seams</td>
<td>J. Elizabeth Burbank</td>
</tr>
<tr>
<td>Henry &amp; Deborah Seay</td>
<td>Est A. S. Busi</td>
</tr>
<tr>
<td>Stephanie Shinn</td>
<td>Ann E. Cameron</td>
</tr>
<tr>
<td>Diana Simpial</td>
<td>Anne G. Cann</td>
</tr>
<tr>
<td>Jocelyn Aundel Sladen</td>
<td>Susan M. Capistran</td>
</tr>
<tr>
<td>Emma-Marie Snedeker</td>
<td>Caroline Carbaugh</td>
</tr>
<tr>
<td>Morton &amp; Estelle Soisland</td>
<td>Janet Carhart</td>
</tr>
<tr>
<td>Sharon A. Souther</td>
<td>Kathleen Carr</td>
</tr>
<tr>
<td>Dr. Sandra-Leigh Sprecker</td>
<td>Barbara J. Case</td>
</tr>
<tr>
<td>Barbara Palmer Stern</td>
<td>Madeline R. Catania</td>
</tr>
<tr>
<td>Nan Smith Stifel</td>
<td>Addison Cate</td>
</tr>
<tr>
<td>Marcella Stilwell</td>
<td>Bootie Charon</td>
</tr>
<tr>
<td>Lucille Anderson Streeter</td>
<td>Clara-Mae Chittum</td>
</tr>
<tr>
<td>Martha Wood Subber</td>
<td>Larri L. Cochran</td>
</tr>
<tr>
<td>Kikuko Tanimoto</td>
<td>Susan Cohen</td>
</tr>
<tr>
<td>Joan Thompson</td>
<td>Susan A. Cole</td>
</tr>
<tr>
<td>Sandra L. Tullius</td>
<td>Alison Collins</td>
</tr>
<tr>
<td>Anne B. Vernon</td>
<td>Mary P. Colwell</td>
</tr>
<tr>
<td>Phebe Wallace</td>
<td>David Young &amp; Suzanne Conlon</td>
</tr>
<tr>
<td>Janet B. Wallstein</td>
<td>Conway Garden Club</td>
</tr>
<tr>
<td>Kallie G. Weeks</td>
<td>Paula V. Cortes</td>
</tr>
<tr>
<td>C. Ann Rowland Welsh</td>
<td>Janice Randell Covert</td>
</tr>
<tr>
<td>Noreen P. White</td>
<td>Ruth C. Crocker</td>
</tr>
<tr>
<td>Susan E. Whitman</td>
<td>Christine A. Curylo</td>
</tr>
<tr>
<td>Byron and Anita Volz Wien</td>
<td>Linda J. Cysz</td>
</tr>
<tr>
<td>Patricia C. Williams</td>
<td>Sidonia Dalby</td>
</tr>
<tr>
<td>Marsha Wiseheart</td>
<td>Jeffrey Dan</td>
</tr>
<tr>
<td>Kathryn D. Wood</td>
<td>Penelope Daulton</td>
</tr>
<tr>
<td>Nancy Judge Wood, M.D.</td>
<td>Jo Ann W. Davidson</td>
</tr>
<tr>
<td>Dorothy M. Woodcock</td>
<td>John H. Davis</td>
</tr>
<tr>
<td>Jennifer Chin Yen</td>
<td>Gabrielle Dean</td>
</tr>
</tbody>
</table>
|-content continued|-

Individual & Dual Members continued

<table>
<thead>
<tr>
<th>Contributors</th>
<th>Individual &amp; Dual Members continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andy Adams</td>
<td>Ellen S. Eddy</td>
</tr>
<tr>
<td>Barbara L. Aiken</td>
<td>Donna Eden</td>
</tr>
<tr>
<td>Kimberly Albright</td>
<td>Paula Ferris Einaudi</td>
</tr>
<tr>
<td>Joe Amblesi</td>
<td>Stacie Eliades-Becker</td>
</tr>
<tr>
<td>E. Jeanne Ammon</td>
<td>Alecia M. Eppeley</td>
</tr>
<tr>
<td>Grace S. Anton</td>
<td>Arline Boyer Epstein</td>
</tr>
<tr>
<td>Shadde M. Ardalan</td>
<td>Margaret J. Ferguson</td>
</tr>
<tr>
<td>Christine Barsby</td>
<td>Louis Ferree</td>
</tr>
<tr>
<td>Linda Ward Bech</td>
<td>Heather Finan</td>
</tr>
<tr>
<td>Lynne F. Bennett</td>
<td>Natalie W. Fisher</td>
</tr>
<tr>
<td>Justine E. Bertram</td>
<td>William Fleming &amp; Ann Colangelo</td>
</tr>
<tr>
<td>Ann Atwood Biggs</td>
<td>Joanne Foster</td>
</tr>
<tr>
<td>Col. Nancy B. Black, M.D.</td>
<td>Mr. &amp; Mrs. Gordon Fowler</td>
</tr>
<tr>
<td>Susanne Blair</td>
<td>Nina Franz</td>
</tr>
<tr>
<td>Paul &amp; Sherie Bloomberg</td>
<td>Charlotte M. Frieze</td>
</tr>
</tbody>
</table>
|-content continued|-

Contributors continued

<table>
<thead>
<tr>
<th>Contributors</th>
<th>Individual &amp; Dual Members continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucy Kellogg</td>
<td>Elaine R. Kersten</td>
</tr>
<tr>
<td>Elain E. Kersten</td>
<td>Lucinda King</td>
</tr>
<tr>
<td>Caroleyn Grimell Kirkpatrick</td>
<td>Donna Estes Kishibay</td>
</tr>
<tr>
<td>Jennifer Keifer</td>
<td>Martha McKinley Kissick</td>
</tr>
<tr>
<td>Diane Kleber</td>
<td>Maribeth Klobuchar</td>
</tr>
<tr>
<td>Victoria Kohler</td>
<td>Gillian B. Kohler</td>
</tr>
<tr>
<td>Barbara Kolb</td>
<td>Victoria Kohler</td>
</tr>
<tr>
<td>Linda Klop</td>
<td>Colleen Alla Lessho</td>
</tr>
<tr>
<td>Cheryl Winter Lewy</td>
<td>Deborah Wolfe Lievens</td>
</tr>
<tr>
<td>Marcy L. Linder</td>
<td>Michele K. Lindsay</td>
</tr>
<tr>
<td>Ann L. Lynch</td>
<td>Mira A. Locher</td>
</tr>
<tr>
<td>Susette Lyons</td>
<td>Carol C. Loeffer</td>
</tr>
<tr>
<td>Ruth MacNaughton</td>
<td>Christine B. Lizner</td>
</tr>
<tr>
<td>Harriet Mahoney</td>
<td>Katy McClure Lukens</td>
</tr>
<tr>
<td>Jane Malarkey</td>
<td>David L. Latch</td>
</tr>
<tr>
<td>Barbara B. Mann</td>
<td>Ani Lundy</td>
</tr>
<tr>
<td>Melissa R. Marshall</td>
<td>Tinka Lant</td>
</tr>
<tr>
<td>Andrea L. Martin</td>
<td>Janice L. Mathews</td>
</tr>
<tr>
<td>Sherry Martin</td>
<td>Elizabeth J. Maxim</td>
</tr>
<tr>
<td>Janice L. Mathews</td>
<td>Dwight C. McClure</td>
</tr>
<tr>
<td>Lisa Denny McKnight</td>
<td>Brenda R. McGovern</td>
</tr>
<tr>
<td>Kristin McLaren</td>
<td>Lisa Denny McKnight</td>
</tr>
<tr>
<td>Donna L. Meehan</td>
<td>Kristin McLaren</td>
</tr>
<tr>
<td>Craig &amp; Carol Melin</td>
<td>George J. &amp; Mira N. Morrison</td>
</tr>
</tbody>
</table>

(Continued on page 19)
Donors (continued)

MEMBERS OF THE FRIENDS OF THE BOTANIC GARDEN

INDIVIDUAL & DUAL MEMBERS continued

Neil Morrison  Joan E. Schuman
Mrs. W. W. Morton, Jr.  Diana F. Seacord
Sheldon Mossberg  Marjorie Searl
Nancy B. Mott  Ann Seidler
Joanne Moyler  Kathryn Service
Mary Ann Munger  Carole P. R. Settle
Susan H. Munger  Virginia A. Sharpe
Katherine S. Naughton  William Sheehan
Sarah R. Newbury  Alison Shiel
Nancy A. Nicholson  Carolyn Shiel
Marguerite Nightingale  Robin B. Silva
Gary & Dee Dee Niswonger  Faith S. Simmons
Roland Normand  Pamela S. Simpson
David Norton  Karen W. Slater
Susan A. Norton  Helen Bryan Smith
Alyssa Nyberg  Jane L. Smith
Kathleen P. O’Beirne  Karen A. Smith
John D. O’Brien  Sarah C. Smith
Maureen Hayes O’Brien  D. Rebecca Snow
Nancy O’Hara  Elizabeth Baird Syosster
Elise W. Olson  Jayne Spielman & Stephen Baumgarten
Saul M. Olyan  Lee Sproull
Debra Orgera  Susan J. Steinstrup
Barbara F. Ostberg  Carol A. Stern
Ruth W. Pardoe  Jonathan E. Stone
Elsa P. Pauley  Priscilla L. Strain
Leila P. Peck  Marie Robinson Strauss
Frances K. Pekala  Kristina L. Streed
Nancy Pendleton  Cheryl R. Suchors
Anne Brooks Perry  Kingsley Sullivan
Harriet F. Phillips  Laurel Swetnam
Harriet M. Pehn  Edith K. Templin
Debbie Poitras  Lucy Tittmann
Susan E. Porth  Beverly Von Kries
Josie Queeneau  Dr. Gregory & Mrs. Susan Von Mering
Amy W. Quigley  Bruce & Jennifer Wade
Denise P. Quitmeyer  Norman & Deborah Walsh
Rea Rabinowitz  Carolyn D. Waterman
Catha Rambusch  Anne V. V. Webb
Sally W. Rand  Mrs. Willard T. Weeks
Dianne D. Rees  Diane Welch
Catharine B. Reid  Stephanie E. Wells, M.D.
Pamela Resor  Briana Welton
Barbara E. Rejniak  Karen A. Wendell
Pamela Resor  Jennifer Werner
James B. Ricci & Margaret E. McCarthy  Polly S. White
Patricia F. Riggs  Joan Wick-Pelletier
Cathleen D. Riley  Margaret P. Williams
Susan B. Ritger  Staunton Williams, Jr.
Alice Robbins  Lisa Wilsher
Jenna Roberts  Sherry Wilson
Penelope A. Roberts  Karen A. Wendell
Dr. Susanne F. Roberts  Jennifer Werner
Katharine H. Robinson  Polly S. White
Karen M. Rohan  Joan Wick-Pelletier
David B. Rundle & Catherine M. Huntley  Margaret P. Williams
Jean B. Russo  Staunton Williams, Jr.
Karen Russo  Lisa Wilsher
Susan M. Ryan  Sherry Wilson
Beverly H. Ryburn  Carol Wirtschafter
Yoelene Schaeffer  Tad & Michele Witowski
Talia Schenkel  Molly Duft Woehrlin
Julie Schroeder  Anne Harding Woodworth

Other Donations

Susan Alsaschuler  Barbara Gelling
Shadec Ardalan  Sue Gerstle
Miriam Cady  Donna Gochinski
Caroline Carr  Linda Golash
Carla Anderson Chapman  Norman Halpern
Judith Cmero  Mina Harrison
Alethea Cono  Eileen Hodge
Diana Cornely  Carol Jacshym
Elizabeth Delman  Carol Jolly
Ecological Landscaping Association  Edie King
Stephanie Larkin Frost  Mary Laprade
Regina Harrison  Michelle Lee
Hilltop Montessori School, Inc.  Myra Leung
Mrs. Paul C. Hoover  Ina Luadkite
Elizabeth G. Johnson  Susette Lyons
Janice A. Julian  Marian Macdonald
Cora Kamerman  Sigi Marocco
Julie Kiely  Peg McFarland
Nicole C. Lun  Alex Julius
Jean Lusson

STUDENT MEMBERS & RECENT ALUMNAE

Rachel C. Besserne  Jennifer Meyer
Lisa Bomba  Lisa A. Moline
Victoria Bram  Stephanie Moore
Jaime Duncan  Anne Mundinger
Maro Elliott  Julia Nims
Robinson Bennett Hunter  Lynda L. Norton
Lesley Joplin  Lisa Petruccelli
Donna Vidal Svirsky  Diana Prieto
Debora W. Tuck  Linda Rainville
Stephanie Vasilides  Maja Razlog
Dina Veneky  Anne Schmelzer
Anel P. Veenstra  Paul Schrater
Donna Vidal Svirsky  Alison Taylor
Stephanie Vasilides  Debora W. Tuck
Shannon Struble  Stephanie Vasilides
Maya Wei-Haas  Dina Veneky

Volunteers

Once again we wish to thank our dedicated volunteers. Their generous donations of time and energy allow the Botanic Garden of Smith College to offer enhanced visitor services, including guided tours. The following people donated 1400 hours of their time over the past year.

Elizabeth Adams  Barbara Gelling
Hazel Adolphson  Sue Gerstle
Jeanne Ammon  Donna Gochinski
Susan Bagnall  Linda Golash
Terry Barton  Norman Halpern
Maryjane Beach  Mina Harrison
Janet Bissell  Eileen Hodge
Diane Bowman  Carol Jacshym
Martı Catuogno  Carol Jolly
Susan Cooper  Edie King
Anne Deggendorff  Mary Laprade
Curis Dunbar  Michelle Lee
Laura DuPont  Myra Leung
Lara Ferrée  Ina Luadkite
Leslie Fisette  Susette Lyons
Dan Fitzgerald  Marian Macdonald
Sarah Freedberg  Sigi Marocco
Gail Gaustad  Peg McFarland

Please contact us (413-585-2742 or garden@smith.edu) if you are interested in volunteering. Information and applications are online: www.smith.edu/garden/Friends/volunteer-application.pdf
You are invited to join
The Friends of the Botanic Garden of Smith College

ALL MEMBERS RECEIVE

- A complimentary copy of Celebrating a Century: The Botanic Garden of Smith College, by C. John Burk
- Botanic Garden News, our newsletter and calendar of events, twice a year
- Members-only hours at the Bulb and Chrysanthemum Shows — 9:00 to 10:00 am daily
  Show dates: Fall Chrysanthemum Show: November 3 – November 18, Spring Bulb Show: March 2 – March 17, 2013
- Free admission and discounts at over 200 other gardens around the country
- A 10% discount on Botanic Garden merchandise
- Free audio tours of the Lyman Conservatory
- Invitations to show previews and receptions

Contributors and above receive: A screensaver with images of the Botanic Garden and our collections

☐ YES, I WANT TO BECOME A FRIEND OF THE BOTANIC GARDEN OF SMITH COLLEGE!

<table>
<thead>
<tr>
<th>Membership Categories</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champion</td>
<td>$2000+</td>
</tr>
<tr>
<td>Patron</td>
<td>$1000</td>
</tr>
<tr>
<td>Sustainer</td>
<td>$500</td>
</tr>
<tr>
<td>Contributor</td>
<td>$150</td>
</tr>
<tr>
<td>Household/Family</td>
<td>$75</td>
</tr>
<tr>
<td>Individual</td>
<td>$50</td>
</tr>
<tr>
<td>Student/Recent Alum</td>
<td>$20</td>
</tr>
<tr>
<td>graduated in the past 5 years</td>
<td></td>
</tr>
</tbody>
</table>

Enclosed is my check payable to Smith College in the amount of $ ... Class Year (alumnae):

Address:

City, State, Zip:

E-mail:

Or you may join or renew online with a credit card
All contributions are tax-deductible.