



The American GARDENER[®]

The Magazine of the American Horticultural Society November / December 2011

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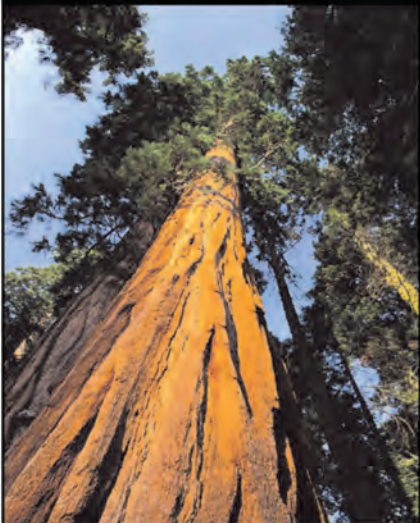
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dark, and
handsome
has a
whole other
meaning.



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NOTES FROM RIVER FARM

AS GARDENERS are prone to do, we often look out the window and ask ourselves how things will look in a season or two. How will our recently planted shrubs deal with the winter? Will our fall aeration of the lawn pay off with renewed vigor in the spring? Anticipation is a big part of gardening, and it is only natural to look to the future with equal helpings of excitement and trepidation.

Similarly, here at River Farm we are looking forward to 2012 with much anticipation. The year will not only mark the American Horticultural Society's 90th anniversary and the beginning of the countdown to our centennial in 2022, but will also bring some significant developments to improve both your membership experience and our ability to deliver on our mission of connecting more Americans with plants and gardens.

First, we plan to launch a new and improved AHS presence on the web next spring. Along with a fresh, inviting look, we want this new website to offer you, our members, a fun, friendly place to find the inspiration and information you need to stay at the top of your gardening game. If you have ideas and suggestions about the kind of features you would like to see on our new website, please fill out the brief survey on our website at www.ahs.org by December 31. As a thank you for your feedback, you will be automatically entered to win a copy of the *AHS Great Plant Guide* (DK Publishing, 2011).

Next year, we also will be celebrating a milestone anniversary of our National Children & Youth Garden Symposium in July. It's been 20 years since the first symposium was held in the Washington, D.C., area, and we'll be returning to our nation's capital for the occasion. Much has changed over the last two decades, but the AHS remains as committed as ever to educating and inspiring people to get kids into gardening.

And for all of you who take advantage of our Reciprocal Admissions Program, we are excited to offer an unprecedented number of participating gardens in 2012. This program turns your AHS membership card into your passport to discover America's horticultural treasures on your travels. Just present your card at any of the participating locations to receive free admission or other discounts!

Turning a little closer to home and to your own garden, look no further than this issue of *The American Gardener*. As always, it's packed full of tips and insights on a variety of horticultural topics. One trend that is catching on in this era of dollar-stretching is choosing bare-root plants over containerized ones. Kris Wetherbee explains everything you need to know to get more bang for your buck with bare-root plants. Love decorative berries in fall and winter? We've got an article about which shrubs provide the best berry displays. And don't miss the feature on stapeliads, an intriguing group of succulents from the milkweed family that are well known—perhaps notorious might be a better word—for the scent of their flowers.

We hope you enjoy this issue and our very best wishes for the holiday season.

Harry Risetto, Chair, AHS Board of Directors
Tom Underwood, Executive Director



CONTACTS FOR AHS PROGRAMS, MEMBERSHIP BENEFITS & DEPARTMENTS

For general information about your membership, call (800) 777-7931. Send change of address notifications to our membership department at 7931 East Boulevard Drive, Alexandria, VA 22308. If your magazine is lost or damaged in the mail, call the number above for a replacement. Requests for membership information and change of address notification can also be e-mailed to membership@ahs.org.

THE AMERICAN GARDENER To submit a letter to the editor of *The American Gardener*, write to The American Gardener, 7931 East Boulevard Drive, Alexandria, VA 22308, or send an e-mail to editor@ahs.org.

DEVELOPMENT To make a gift to the American Horticultural Society, or for information about a donation you have already made, call (800) 777-7931 ext. 132 or send an e-mail to development@ahs.org.

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INTERNSHIP PROGRAM The AHS offers internships in communications, horticulture, and youth programs. For information, send an e-mail to education@ahs.org. Information and application forms can also be found in the River Farm area of www.ahs.org.

NATIONAL CHILDREN & YOUTH GARDEN SYMPOSIUM For information about the Society's annual National Children & Youth Garden Symposium, call (800) 777-7931 ext. 132 or visit the Youth Gardening section of www.ahs.org.

RECIPROCAL ADMISSIONS PROGRAM The AHS Reciprocal Admissions Program offers members free admission and other discounts to more than 250 botanical gardens and other horticultural destinations throughout North America. A list of participating gardens can be found in the Membership area of www.ahs.org. For more information, call (800) 777-7931 ext. 119.

RIVER FARM The AHS headquarters at River Farm is open 9 a.m. to 5 p.m. weekdays year-round (except Federal holidays), and 9 a.m. to 1 p.m. Saturdays from April through September. Admission is free. For information about events, rentals, and directions, visit the River Farm section of www.ahs.org.

TRAVEL STUDY PROGRAM Visit spectacular private and public gardens around the world through the Society's acclaimed Travel Study Program. For information about upcoming trips, call (866) 627-6621, send an e-mail to ahs@macnairtravel.com, or visit the Travel Study section of www.ahs.org.

WEBSITE: www.ahs.org The AHS website is a valuable source of information about the Society's programs and activities. To access the members-only section of the website, the user name is **garden** and the password is **ahs2011**.

MEMBERS' FORUM

PHOTO LOCATION CORRECTION

The caption for the photograph on page 30 of the September/October 2011 issue is incorrect. The location pictured is not the author's Pennsylvania garden, as written, but is the east side of the stone barn at the



The woodland garden at Willowood Arboretum in Chester Township, New Jersey

Willowood Arboretum in Chester Township, New Jersey, one of several horticultural sites managed by the Morris County Park Commission.

I'm sure the people associated with Willowood over the years would revel in the fact that this little-known gem of a New Jersey garden got a bit of attention in a significant national magazine. I lived there, as manager of horticulture from 1998 to 2001. For a plant nerd like me, it was pretty terrific; and as you might be able to tell, I am still quite fond of the place.

*Frederick R. Spicer, Jr.
Executive Director
Birmingham Botanical Gardens
Birmingham, Alabama*

GRAPE MYRTLES DEFENDED

The "Out-of-the-Ordinary Small Trees" article in the September/October 2011 issue probably has crape myrtle propagators and nursery owners grinding their collective teeth. By including crape myrtles among his list of overused plants in the Florida and Gulf Coast region, Gil Nelson has dismissed their value in the American landscape.

There are usually very good reasons why plants such as crape myrtles are overused. To begin with, this sturdy and drought-tolerant plant produces flowers in almost every color, and the peeling smooth bark is beautiful in its own right. Crape myrtles come in every size imaginable, from waist-high bushes to towering trees. There is real value in its low maintenance requirements, but its true gift to the landscape is the sustenance it provides to birds. In summer, hummingbirds dart from flower to flower for nectar and seek refuge in the branches. On the dreariest fall or winter day, I see cardinals, goldfinches, warblers, titmice, and innumerable other bird species fill their bellies with the seeds from those so-called messy fruits.

I can't imagine southern gardens without crape myrtles, and I, for one, will continue to use this beautiful and valuable plant in my landscape designs.

*Linda Lawler
Washington, Virginia*

Gil Nelson's response: There is no question that the crape myrtle with all its cultivars has many uses. My reference to overuse stems from a desire to make creativity at least as important as suitability in the process of plant selection. There are many outstanding native and well adapted non-native trees—the focus of Linda Askey's article—with which creative gardeners and designers can fashion diverse and interesting landscapes without relying too heavily on any single species.

KUDOS FOR PROVIDING PROVENANCE INFORMATION

The "Out-of-the-Ordinary Small Trees" article in the September/October 2011 issue was outstanding, especially because it provided information on plant origins. It's always helpful to know where things come from, whether it's the birds and butterflies who visit our gardens or the plants that grow in them. The "At a Glance" chart that was included in this article provided that information in a clear way with minimal use of space.

Over the past decade, I have become a passionate native plant gardener, and although I do not grow only native plants, I very much like to know when native options are available to me. I strongly encourage you to continue providing information on plant origins with the same regularity you include the hardness and heat zone information.

*Julie Newell
Marietta, Georgia*

ALLELOPATHY ARTICLE APPRECIATED

It has been a long time since I have read an article that interested me as much as Kathryn Lund Johnson's article, "Plant Wars and Turf Defense," published in the



July/August 2011 issue. I have been reading up on the subject of allelopathy for a year or so, but Johnson's well-written article included detailed information new to me, such as the use of roadside grasses to aid in broadleaf weed control, for instance.

As an American Horticultural Society member who writes the garden column for two newspapers, I appreciate the difficulties of publishing material for a broad audience; you face the additional challenge of trying to cover gardening over a huge geographical range. Because of this, some of your articles will not be relevant to all members. That is understandable, but your inclusion of articles like this inspires my heartfelt thanks.

*Molly Hackett
Victor, Montana*

PLEASE WRITE US! Address letters to Editor, *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308. Send e-mails to editor@ahs.org (note Letter to Editor in subject line). Letters we print may be edited for length and clarity.



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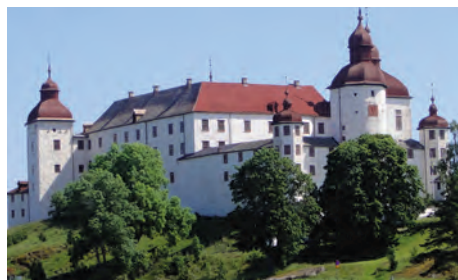
Evelyn Alemanni



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Bold Colors and Exuberant Flowers: San Diego County March 21–25, 2012 with AHS Host Evelyn Alemanni

■ Join us on this tour of exciting public landscapes and spectacular private gardens during one of the most colorful months in southern coastal California. We will be staying at the historic Inn at Rancho Santa Fe in the foothills of Northern San Diego County. Trip highlights include a sneak preview of new plants being introduced to the horticultural trade at the California Spring Trials; a stop at the world-famous Flower Fields to view a stunning display of ranunculus; and a private tour of both the San Diego Zoo Safari Park and the San Diego Botanic Garden.



Midsummer Gardens and Castles of Sweden June 26–July 6, 2012

with AHS Host John Floyd and Tour Escort Antonia Lloyd Owen of Specialtours

■ The long, warm days of midsummer are perfect for enjoying the beautiful natural landscape and unpretentious gardens of Sweden. We will journey from Uppsala—home of botanist Carl Linneaus—to Stockholm, Gothenburg, and Lund, taking in the formal gardens of historic castles as well as a variety of contemporary gardens.



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Andalusian Heritage and Gardens: Seville, Cordoba, and Granada October 26–November 5, 2012

with AHS Host Katy Moss Warner and Tour Escort Susie Orso of Specialtours

■ While the great Alhambra gardens of Granada and the Alcazar gardens of Seville are justly famous, there are many special, lesser-known gardens also worth visiting. From Belle-Epoque fantasy to cliff-top modernist, you will discover a diversity of styles in this memorable tour of southern Spain.

For more information about upcoming tours in the AHS Travel Study Program, please contact our travel partner,
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The American Gardener (ISSN 1087-9978) is published bimonthly (January/February, March/April, May/June, July/August, September/October, November/December) by the American Horticultural Society, 7931 East Boulevard Drive, Alexandria, VA 22308-1300, (703) 768-5700. Membership in the Society includes a subscription to *The American Gardener*. Annual dues are \$35; international dues are \$50. \$10 of annual dues goes toward magazine subscription. Periodicals postage paid at Alexandria, Virginia, and at additional mailing offices. Postmaster: Please send Form 3579 to *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.

Botanical nomenclature is based on *The American Horticultural Society A-Z Encyclopedia of Garden Plants*, on *A Synonymized Checklist of the Vascular Flora of the United States, Canada and Greenland* and on the *Royal Horticultural Society Index of Garden Plants*. Opinions expressed in the articles are those of the authors and are not necessarily those of the Society. Manuscripts, artwork, and photographs sent for possible publication will be returned if accompanied by a self-addressed, stamped envelope. We cannot guarantee the safe return of unsolicited material. Back issues are available at \$8 per copy.

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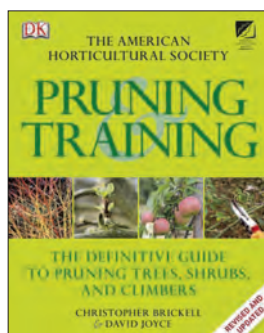
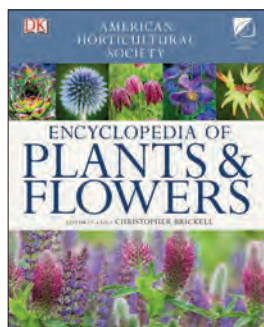
News from the AHS

November / December 2011

PROGRAMS • EVENTS • ANNOUNCEMENTS

RECENTLY RELEASED AMERICAN HORTICULTURAL SOCIETY REFERENCES

TWO OF THE American Horticultural Society's most popular horticultural reference books, the *AHS Encyclopedia of Plants & Flowers* and *AHS Pruning & Training: The Definitive Guide to Pruning Trees, Shrubs, and Climbers*, are now available in newly revised and updated editions from DK Publishing.



The 700-page encyclopedia includes more than 1,000 additional plants than the previous edition released in 2002, as well as a new introductory chapter on creating a garden. A two-tiered plant selection system allows readers to search either by plant group or by garden site requirements. "Whether you are a new gardener eager to begin designing your first yard or a veteran searching for the perfect plants to fill a few gaps," notes AHS Executive Director **Tom Underwood**, "this encyclopedia allows you to quickly identify a variety of plants that will thrive in different sites in your garden."

A favorite with home gardeners, horticulture students, and Master Gardeners, *AHS Pruning & Training* retains the same comprehensive, nuts-and-bolts pruning information that it has featured since its initial publication in 1996. The new edition features even more step-by-step instructions and clear illustrations to help you master a variety of general pruning techniques and also find expert advice on pruning specific plants, including fruiting trees, shrubs, and vines.

Both books are available wherever books are sold and can be ordered on the AHS website (www.ahs.org).

SPRING PRESIDENT'S COUNCIL TRIP TO NORTHWEST ARKANSAS

THE AHS'S annual President's Council trips offer once-in-a-lifetime experiences to the Society's most steadfast group of supporters. The next scheduled destination from April 18 to 22, 2012, will be northwestern Arkansas. This unheralded region offers exceptional public and private gardens, art, architecture, and natural beauty.

One exciting highlight will be a visit to the recently opened, world-class Crystal Bridges Museum of American Art in Bentonville. While exploring all the region has to offer, participants will stay at the historic Inn at Carnall Hall, located on the University of Arkansas campus in Fayetteville.

For information on how to become an AHS President's Council member and participate in the trip, contact **Tom Underwood**, AHS Executive Director, at (703) 768-5700 ext. 123 or tunderwood@ahs.org.



Spring color in Bentonville, Arkansas

WELCOMING NEW BOARD MEMBERS

FIVE NEW MEMBERS recently joined the AHS Board of Directors. They are:

Sally Barnett of Jacksonville, Florida, who has held a variety of leadership roles with the Garden Club of America and the Cummer Museum of Art & Gardens in Jacksonville.

Skipp Calvert, a landscape designer and retired naval officer who lives in Alexandria, Virginia.

Joel Goldsmith of Gilroy, California, formerly CEO of Goldsmith Seeds and recently retired from Syngenta's seed division.

Ed Snodgrass, an award-winning author, green roof consultant, and owner of Emory Knoll Farm in Street, Maryland.

Marcia Zech, an avid gardener, philanthropist, and volunteer from Mercer Island, Washington.

Each of the new board members bring experience in various arenas of horticulture and gardening to the AHS. "We are very pleased to welcome these new directors to the American Horticultural Society," says Board Chair **Harry Risetto**. "Their passion for gardening, leadership, and connections within the horticultural communities in different regions of the country will complement the expertise of our current board members and bolster our national outreach efforts." 

News written by AHS staff.

Master Gardener Conference



AHS Executive Director Tom Underwood takes a turn staffing the Society's booth at the 2011 International Master Gardener Conference this past October in Charleston, West Virginia. This event, which takes place every other year, brings together avid gardeners from all over the world.

Gifts of Note

In addition to vital support through membership dues, the American Horticultural Society relies on grants, bequests, and other gifts to support its programs. We would like to thank the following donors for gifts received between August 1 and September 30, 2011.

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In memory of Thomas P. Youell

Mrs. Glen Youell

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AHS NEWS SPECIAL: America In Bloom's 2011 Award Winners

by Helen Thompson

A DECADE AGO, an AHS partner organization called America In Bloom (AIB) held its inaugural educational symposium and awards program in Washington, D.C. The goal: to promote community gardening and beautification projects and to recognize cities and towns across the country that had found innovative and sustainable ways to make their gardens and green spaces more beautiful.

of gardens, meadows, and woodlands" as inspiration. AIB President **Marvin Miller** remarked that each year has brought new and exciting landscaping ideas and every city involved has added a "different flavor" to AIB's overall success.

AIB presents awards in two different categories. Cities with similar population sizes compete against each other in an all-around program, while the Criteria Awards honor eight communities that



A beautified business in McCall, Idaho, the town AIB recognized for its environmental efforts.

This past October, AIB returned to the D.C. area for its 10th annual symposium. As part of this year's three-day event, the American Horticultural Society hosted the Criteria Awards Ceremony at its River Farm headquarters in Alexandria, Virginia, just as it did for the AIB's first symposium.

The AIB symposium allows city leaders and gardeners from around the country to share ideas that they can use in their own communities. Guests explored River Farm's gardens, which showcased ideas on everything from sustainable gardening to engaging families and children through plant selection and design. White House Chief Florist and the ceremony's guest of honor, **Laura Dowling**, spoke about the importance of using the "natural elegance

have excelled in specific areas, such as environmental awareness and floral displays. Every year, the AHS sponsors the Community Involvement Award and this year that recognition went to Washington, Missouri, where citizens worked with city government officials and staff on planting projects in the city's parks, street corners, and jogging trails.

In honor of the organization's 10th anniversary, AIB also recognized communities for their achievements over the last decade in 10 special categories. The awards categories highlighted unique aspects of beautification projects. For example, Springfield, Ohio, was recognized for its creative fundraising strategy of selling butterflies to be released in honor of a loved

Population Category Award Winners

- Under 4,000 **Sackets Harbor, New York**
- 4,001–10,000 **Gallipolis, Ohio**
- 10,001–15,000 **Bexley, Ohio**
- 15,001–25,000 **Arroyo Grande, California**
- 25,001–50,000 **Holland, Michigan**
- Over 50,000 **Fayetteville, Arkansas**

Criteria Award Winners

- Tidiness: **Holland, Michigan**
- Environmental Efforts: **McCall, Idaho**
- Community Involvement: **Washington, Missouri**
- Heritage Preservation: **Arroyo Grande, California**
- Urban Forestry: **Bexley, Ohio**
- Landscaped Areas: **Sackets Harbor, New York**
- Floral Displays: **Springfield, Ohio**
- Turf & Groundcover: **Fayetteville, Arkansas**
- John R. Holmes III Community Champion Award: **Vivian Lund, Warrenville, Illinois**
- YouTube Video Contest: **Coshocton, Ohio**

one, and its Eco-Sports Corridor—which features 1,400 acres of public parks, lakes, and bike trails—was named the "Best Feature for Young People" in the last 10 years. A full list of the special award winners is available on the AIB website.

"With this commitment," says Miller, "these cities join with nearly 200 others across the U.S. and many more around the world that have recognized the importance of flowers, trees, and other plants to the economic, environmental, psychological, and sociological well-being of their residents."

For more information on America In Bloom or to enter your community in the 2012 competition, call (614) 487-1117 or visit www.americainbloom.org.

Helen Thompson is an editorial intern with The American Gardener.



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AHS MEMBERS MAKING A DIFFERENCE: Alice Witterholt

by Helen Thompson

A RETIRED CHURCH secretary from Wilmington, Delaware, Alice Witterholt has been an active gardener since helping tend her family's Victory Garden as a child in the 1940s. She joined her local garden club 44 years ago, and in 2009 became president of the Delaware Federation of Garden Clubs (DFGC). That same year, Shirley Nicolai, currently president of National Garden Clubs, Inc., gave her a gift that proved to

saw a photograph of the facility in her local paper. "It looked absolutely bleak outside," she recalls. Every DFGC president pioneers a project that becomes the focus of his or her term, and she realized she had just found hers.

The article on healing gardens immediately came to mind, and Witterholt knew that this place, with such a "sad, heartbreaking task," could benefit from a garden. She proposed the idea to the base

round interest. A water feature would serve as a contemplative focal point and add 'white sound' to the space."

To raise the needed funds, Witterholt began by mobilizing Delaware's 28 garden clubs, but soon garden clubs from across the country pitched in, raising more than \$300,000 to support the cause, well exceeding the original budget of \$150,000.

The garden was completed and dedicated on May 31, 2011. Garden club



Above: At the dedication ceremony for the Memorial Garden for the Fallen, right, at Dover Air Force Base, State Representative Brad Bennett presents a Proclamation from the State of Delaware to Alice Witterholt.



be the catalyst for the most ambitious garden venture of her life.

It was an American Horticultural Society membership, and in the November/December 2009 issue of *The American Gardener*, she read an article, "Gardens of Recovery," which she describes as "an interesting story about gardens constructed in or around hospitals and rehab centers to help people deal with stressful situations."

Around the same time, nearby Dover Air Force Base was in the news because President Barack Obama had opened the base to the press and invited families to witness the ceremony known as "dignified transfer" of the bodies of U.S. soldiers who died on active service overseas. The base converted an old Commissary building into a place these families could stay while in Dover.

Something struck Witterholt when she


commander, who invited her to survey the site. "Inside it was beautifully furnished," Witterholt recalls. "But, when you walked outside, there was no place to go."

Next she tracked down a landscape designer, Rodney Robinson, based in Delaware. Not only had Robinson previously designed several therapeutic hospital gardens in the mid-Atlantic region, he was very enthusiastic about Witterholt's goal. "It is seldom that one gets to work on such a meaningful project," he says.

After meeting with Witterholt and her team, "we determined that the garden would serve as an outdoor room for contemplation and private moments," recalls Robinson. "A masonry wall would enclose the space, separating the garden from the parking lot, and give privacy to the grieving families. Ample seating was important, as were plantings that would provide year-

members, politicians, and military personnel attended the morning ribbon-cutting ceremony. That same afternoon, the garden was first put to its intended use by two bereaved families that arrived at the center.

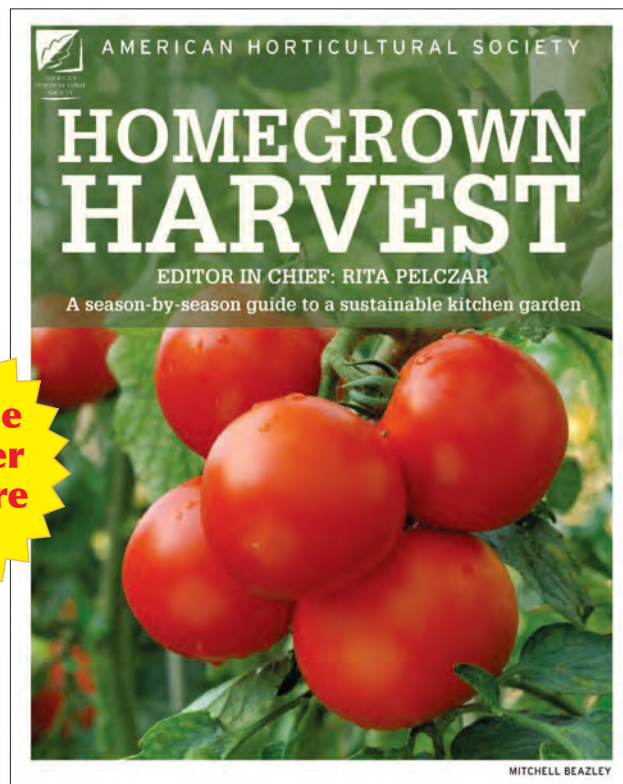
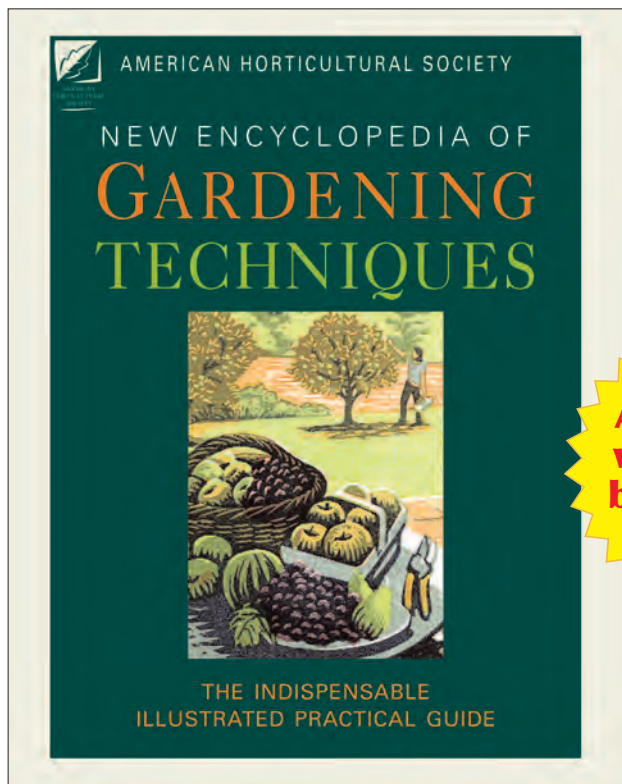
The DFGC plans to use the remainder of the funds for maintaining the garden. Witterholt's presidency has ended, but she remains actively involved with the project.

Looking back, Witterholt says, "Shirley's gift to me was marvelous because it started me down a path that led to the memorial garden project." And though this garden may continue to evolve, its purpose will always be to provide a serene space for families to find comfort during unimaginably difficult times. 

Helen Thompson is an editorial intern with The American Gardener.

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Gardens *for the* Greater Good

BY PATRICIA A. TAYLOR

Member gardens in the North American Plant Collections Consortium are more than places of beauty and inspiration—they preserve and document plant collections for future generations.

THE North American Plant Collections Consortium (NAPCC) is the official mouthful of words describing an organization that ensures and encourages the establishment of official collections of plants.

Let's say, for example, that you are fascinated, as Ganna Walska was, with cycads, a group of cone-bearing plants that date back to the time of the dinosaurs. It's not clear when Madame Walska first fell in love with cycads but fall she did—to the point that she auctioned her million-dollar jewelry collection in 1977 to pay for a cycad garden on Lotusland, her estate in Santa Barbara, California. When she died, her estate created a foundation to maintain the grounds. Her cycad collection on those grounds is the most comprehensive in North America, and has been established as a National Collection of Cycads by the NAPCC. As such, that area of the garden must meet and maintain the high standards set by the NAPCC.

This garden is but one of almost 70 throughout North America with a national plant collection. (For a complete list of NAPCC gardens, click on the web special for this article on the AHS website). These documented plant collections “represent a priceless genetic heritage important to growers, breeders, gardeners, conservationists, and scientists in many fields,” says Paul Redman, director of Longwood Gardens in Kennett Square, Pennsylvania, and current president of the American Public Gardens Association (APGA).

ORIGINS AND GOALS

Since the early 1970s, Richard Lighty, founding director of research programs



Mt. Cuba Center in Delaware is home to a national collection of trilliums.

COURTESY OF MT. CUBA CENTER



Collomia debilis, above, is one of many Northwest native alpine plants in the collection at the Betty Ford Alpine Gardens in Vail, Colorado, left.

at Longwood Gardens as well as founding director of Mt. Cuba Center in Greenville, Delaware, advocated “the need to have some organization of collecting policies among public gardens, with each focusing on its existing strengths, the constraints and advantages

of its geographical/climatological location, and the resources available to build and maintain collections.”

Lighty, who is now retired, continued to promote the idea, and in the late 1980s, the plant collections committee of the APGA began to organize ideas for creat-

ing such a body, and to develop standards that would be overseen by the APGA. “These curators sought a means to promote improved collection management at public gardens and to conserve important living collections,” says Redman.

While the plants and the scope of the collections vary tremendously, all must adhere to NAPCC membership requirements, and—because it is partly funded by the U.S. Department of Agriculture—must serve the broad public as well as plant collectors and research scientists.

NATIONAL STANDARDS

One of the NAPCC’s key goals is to provide national standards on how to identify, record, and maintain a plant collection. The peony collection at the University of Michigan’s Matthaei Botanical Gardens and Nichols Arboretum in Ann Arbor, Michigan, demonstrates how very important this is. As Associate Curator David C. Michener explains, “We knew we had a large and, we thought, top-notch collection of peonies, but we had no sense of standards or how to work with other collections of similar levels of excellence. So, in 2008, we applied to the NAPCC.”

As part of the application process, horticultural experts came to review the peony collection, evaluating not only the plants but also health and sanitation standards. “Much to our surprise,” says Michener, “we learned that about 10 percent of our peonies had a little-known disease. Those have now been destroyed and their growing area quarantined.”



The Ottosen Entry Garden at the Desert Botanical Garden features a dramatic display of cacti.

ALL-IMPORTANT ACCESSION DATA

In horticultural terms, plant record-keeping is known as accession data. Think of the process as a sort of inventory control. Each plant is assigned a unique identification code which contains the source and the date it was acquired.

If, for example, two plants of *Geranium maculatum* were acquired at different times, each would be assigned a unique code. Similarly, if they were acquired on the same date but from different sources—one in the wild, the other from a nursery—their codes would be different. Thus, when an organization talks about the number of accessions, it doesn't necessarily refer to the number of different species or cultivars.

Many public horticultural institutions do not have current computer records of their holdings. Such data collection requires time and funding that these institutions prefer to devote to landscape creation, maintenance, and acquisitions. This insular approach means that cooperation with others is limited, especially with regard to germplasm research.

All NAPCC members must have current accession data. As Nicola Ripley of the Betty Ford Alpine Gardens notes, such data allows the organization to scrutinize its many holdings to ensure that they are important to an organization's overall goals and to highlight areas that need improvement. It is also enormously important to know a plant's origin, especially those that are endangered and disappearing in the wild. Finally, the data simplify the task for researchers comparing plant performance over time and location. —P.A.T.

With guidelines established by the NAPCC, the peony collection is being transformed with the goal of becoming an internationally recognized reference, conservation model for other historic cultivar collections, and a destination for peony lovers.

Nicola Ripley, director of horticulture, research, and operations at the Betty Ford Alpine Gardens in Vail, Colorado, cites another aspect of Consortium membership. "Our participation in NAPCC required us to take a step further in documentation of plant material," says Ripley. After becoming acquainted with NAPCC standards, the garden's governing organization has become committed to emphasizing the importance of plant origin. As a result, the garden is now de-accessioning nursery-bought plants and replacing them with ones derived from wild sources.

Ripley notes that the application process also made the garden look more critically at the collection's purpose and value. "I had to do a considerable amount of research to find out which parts of our collection were truly alpine," she says, "and then to calculate what percentage of the alpine plants in Colorado were in the gardens. It has given me a lot more pride in this collection and a new enthusiasm to build upon it."

SCIENTIFIC RESEARCH

Within the broad horticultural community, there is great interest in developing new plants as well as saving others from extinction. And just as gourmet cooks want only the finest ingredients, the same is true of those breeding new cultivars or preserving endangered plants.

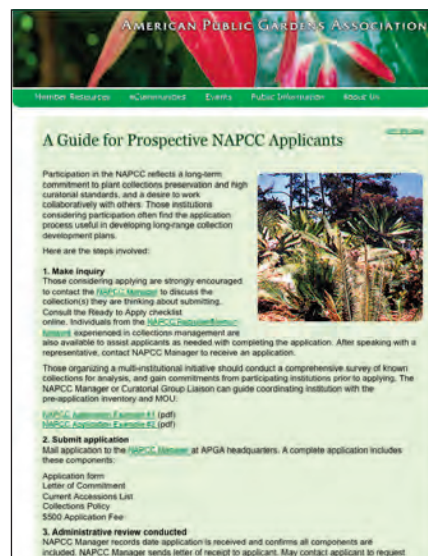
"The value of a national plant collection to the entire research community—both here and abroad—is that scientists



know that these groups of plants are not only diverse but of the highest quality," explains Kimberlie McCue, program director for conservation of threatened species and habitats at the Desert Botanical Garden in Phoenix, Arizona. Home to national collections of agaves and cacti, the Desert Botanical Garden is active in both breeding and preservation and has among its extensive research facilities a seed room and vault, which stores more than 4,000 accessioned seed varieties.

All institutions housing national plant collections, McCue notes, make germplasm available to researchers. She defines germplasm as any living material from which more plants can be generated. This includes plant tissue, seeds, pollen, and whole plants.

Another NAPCC goal is to protect endangered plants. "In this period of rapid global change," says Mark Weathington, assistant director and curator of



The NAPCC page on the APGA website outlines requirements for prospective applicants.



The Polly Hill Arboretum's noteworthy *Stewartia* collection includes *Stewartia pseudocamellia*, left, and *S. ovata*, above.

ALL KINDS OF COLLECTIONS

Many types of collections are eligible for membership in NAPCC. While all member institutions have to belong to the APGA, individual collection holders may apply if they are sponsored by an association member.

The Plumeria Society of America's association with the Naples Botanical Garden in Florida is a rare partnership example. The two organizations signed a working agreement when the garden officially opened in 2009. Today, the Naples Botanical Garden has the world's most comprehensive collection of these colorful, fragrant-flowered small trees. As Brett Adams, curator of collections, explains, "When we feel we need additional cultivars, the society will contact its members and ask them to donate registered plants."

Several institutions host more than one national plant collection. The Arnold Arboretum of Harvard University in Jamaica Plain, Massachusetts, for example, holds seven national collections: beech, hemlock, hickory, lilac, maple, pecan, and stewartia.

And because no single institution can cultivate a comprehensive collection of some genera, there are multi-institutional collections. The maple collection, for example, combines the climatic varia-

collections at JC Raulston Arboretum in Raleigh, North Carolina, "this program allows for *ex situ* conservation of endangered plants and allows for a more coordinated effort among gardens to perform gap analyses of their collections."

Although capturing and maintaining all of the genetic potential of even one species may be an unattainable goal, "we can collect and maintain a useful representative sample of each species if we divide the responsibilities among those with a serious interest in each," says Lighty. "We are not there—not even close—but the procedures and protocols have been defined and a few public gardens have taken on the responsibilities required to do the job."

MORE THAN A PRETTY PLACE

Membership in the Consortium provides gardens and arboreta with a certain cachet, a credential in horticultural

circles that the organization is a serious and respected one. Thomas Clark, collections and grounds manager for the Polly Hill Arboretum in West Tisbury, Massachusetts, firmly believes this. "NAPCC membership formally acknowledges the significance of our *Stewartia* collection and Polly Hill's tremendous success in growing these splendid small trees," he says. "We are still transitioning from a private to a public garden, and holding an NAPCC collection is a huge feather in our cap."

Clark feels that the arboretum's participation in NAPCC demonstrates that it is more than just a pretty place. "This is something that most gardens struggle with," he says. "By getting visitors to look beyond a garden's aesthetic value and to understand the research and passion that underlie it is a major accomplishment. Inclusion in NAPCC can be a tool in reaching that point."

tion, expertise, and physical space of 11 institutions throughout the United States and Canada. The combined holdings currently represent over 60 percent of known taxa. While the emphasis of each institution varies from botanical to horticultural, there is an overall Maple Curatorial Group made up of representatives from each institution and headed by Gregory Payton, plant records specialist at the Dawes Arboretum in Newark, Ohio.

To date, there is a preponderance of woody plants represented in the collections and a paucity of perennials and bulbs. Pam Allenstein, NAPCC manager, reports that the Consortium is actively encouraging institutions with perennial collections to apply for membership.

MEMBERSHIP REQUIREMENTS

Even if an organization believes it has met all the requirements for NAPCC membership, the application paperwork can be daunting (see “Are You Ready to Apply” at the NAPCC website at www.publicgardens.org/content/what-napcc).

Once the application has received first-round approval, the mandatory site visit by experts may result in further work. The oak collection at Taltree Arboretum & Gardens in Valparaiso, Indiana, for example was granted provisional status in 2010 after an evaluation by Andrew Bell, curator of woody plants at the Chicago Botanic Garden. While Bell praised the collection, the arboretum needs to do more work on signage and specimen preservation before it becomes a full Consortium member.

Alenstein emphasizes that experts donate their time to conduct site visits. There are at least 100 volunteers and many act as mentors after their visits.

BEAUTIFUL DISPLAYS

Whether you’re a researcher, an aficionado of a particular genus, or someone who simply enjoys visiting gardens, you will appreciate the creativity and color of the Consortium gardens.

When you walk through the grounds of Delaware’s Mt. Cuba Center in early May, for example, you may not be aware that it hosts national collections of trilliums and native gingers (*Hexastylis* spp.) because they are tucked among the swaths



Above: Hetty Ford, plant records assistant at Naples Botanical Garden, introduces a group of young visitors to *Plumeria stenopetala*. Top: *Plumeria* ‘Bali Hai Gold’, also at the garden.

of colorful spring flowers that flow through the grounds.

Plant geeks, however, seek out little-known treasures, many of which are beautiful but rare plants such as the mottled wakerobin (*Trillium discolor*). This species has pale yellow, candlelike flowers with a soft lemon fragrance. In nature, it is found only in the Savannah River watershed, along the Georgia-South Carolina border. “I’ve never seen it offered for sale,” says Mt. Cuba research horticulturist Jeanne Frett.

At Mt. Cuba, the trillium and ginger collections are integrated into the naturalistic gardens to provide inspiring examples of their use in home gardens. The Norfolk Botanical Garden in Virginia chose a different approach, housing its national plant collection in a designated area. Indeed, there is probably no better or easier introduction to the genus *Hydrangea* than to stroll through its one-and-a-half-acre Kaufman Hydrangea Garden.



At Mt. Cuba Center, collections of trilliums and native gingers, including *Hexastylis shuttleworthii* var. *harperi* 'Velvet Queen', above, are integrated with other woodland perennials.

This area is devoted to a collection of 300 hydrangeas, comprised of more than 200 different cultivars and species. There are hydrangeas in flower from spring through fall and the colors range from gleaming whites through lush pinks and purples to stunning blues. Each plant is labeled and growing tips are often included.

The bottom line, as Polly Hill Arboretum's Clark states, is that the NAPCC "is really all about the plants—

growing them, conserving them, learning about them, and gaining a better understanding of all aspects of their cultivation, propagation, and conservation needs." And that translates into something relatively new to North American horticulture—beautiful gardens that both the general public and research scientists can enjoy and learn from. 🌿

Patricia A. Taylor is a freelance writer based in Princeton, New Jersey.

PLANT HERITAGE OF GREAT BRITAIN

Participants in the NAPCC readily admit that the impetus for such a consortium came from work undertaken in Great Britain. There, an organization now known as Plant Heritage was formalized in 1978 and now has 650 national collections under its purview. It differs significantly from its North American counterpart in three major ways.

Public access As explained by David Knott, curator of the living collection at the Royal Botanic Gardens Edinburgh, the garden's collection of the *Rhododendron* subgenus *Vireya* is not open to the general public and is maintained strictly for research purposes. Other gardens under Plant Heritage auspices are at private residences and are only open on select days. In contrast, NAPCC members open their collections or, at the very least, part of them, to the general public throughout the year.

Financial backing Collection holders in Great Britain, many of them individuals, must support their collections from their own resources. For example, Ian Scroggy has spent almost 30 years acquiring 1,500 *Hosta* species and cultivars; many of the latter are results of his own breeding efforts. He has supported the entire endeavor, including buying a nearby four-and-a-half-acre plot when his collection outgrew his quarter-acre backyard. Currently there is no long-term financing for the future of the collection.

Such a garden could not be a member of the NAPCC. To be included, a collection must demonstrate that financial resources are available to maintain it in perpetuity.

Overall goal While the major purpose of Plant Heritage is to conserve plants, the NAPCC seeks to raise the quality of plant collections by establishing plant collection management standards and to ensuring that germplasm from these collections is available to researchers. The NAPCC shares with Plant Heritage a commitment to global efforts to save endangered plants. —P.A.T.

bizarrely beautiful Stapeliads

BY JEANETTE ATKINSON



Otherworldly, star-shaped flowers are the main draw for fans of this intriguing group of succulents.

Stapeliad flowers come in a veritable kaleidoscope of shapes, colors, and patterns that run the gamut from the starfishlike *Stapelia hirsuta*, top, to spotted *Huernia namaquensis*, above, and the almost garish lipstick plant (*Huernia zebrina*), right.

RAY LEMIEUX, a grower for Tropiflora Nursery in Sarasota, Florida, was completely unprepared for the foot-wide blossom that opened at his new Florida home, stinking up his yard and attracting flies. “I just couldn’t believe there could be a flower that smelled so bad,” he recalls, a hint of disbelief still apparent in his voice.

Despite this experience, Lemieux’s encounter with giant carrion flower (*Stapelia gigantea*) was the starting point for his fascination with this bizarre group of plants comprising some 30 genera and loosely classified as “stapeliads.” Stapeliads are low-

growing, mostly leafless succulents with upright or drooping angular stems. The stems branch from their bases to form clumps that can grow quite large over time. They are primarily grown as houseplants, in cool greenhouses in temperate regions, and outdoors in warm regions that have relatively dry winters.

MILKWEED RELATIVES

Stapeliads are members of the milkweed family (Asclepiadaceae), which botanists now consider a subdivision of the dogbane family (Apocynaceae). They have a broad native range that extends from subtropical

regions of Africa north to southern Spain, and east through the Middle East and into Southeast Asia.

Stapeliad flowers are composed of five petals fused at their bases to form a tube housing the reproductive structures. Different points of fusion produce blooms shaped like starfish, cups, saucers, bells, or crowns. In some species, notably those in the genera *Huernia* and *Orbea*, the bases of the petals swell to form a distinctive raised ring, known as an annulus, around



Orbea schweinfurthii is easy to grow and has small but colorful orange-yellow flowers.

the center of the flower. With or without an annulus, the center of the flower is comprised of concentric rings of appendages that aid in pollination and often are very decorative.

In addition, a sometimes kaleidoscopic array of color patterns, ridges, and warts ornament the inside surface of the flower petals. Many species also are coated with myriad, colored, club-tipped hairs that tremble with the slightest air movement.

No description of the flowers is complete without addressing their notorious scent, which ranges from sweet or slightly musty to what has been described as a well-used cat's litter box or decomposing meat. According to cacti and succulent expert Steven Brack, owner of Mesa Garden nursery in Belen, New Mexico, the good news is that most species "do not have an offensive odor, just a small fraction of them really stink."

The scent, along with the vivid colors and quivering hairs inside the flowers, is all part of an elaborate stage set intended to suggest rotting meat covered with fungal bodies and a mass of flies. Lured in, carrion-eating flies arrive to lay their eggs, pollinating the stapeliads in the process. (For more on stapeliad pollination, see sidebar, this page, and "Resources," page 23).

Most stapeliads bloom from summer to fall, but even when they aren't blooming, there is something intriguingly otherworldly about them. Many grow less than a foot in height, which, in combination with their shallow roots and spreading habit, makes them ideal for growing in fairly flat, dishlike containers. Side shoots form near the bases of stapeliad stems, giving rise to a variety of habits from upright, to mat-forming, creeping, or pendulous. The stems may be chunky or slender, smooth or gnarly, bristled or delicately felty and they come in colors ranging from apple green to gray green, dull purples and reds, and shades of tan and brown.

The stems may be circular or ribbed, with the majority having four ridges. Fleshy bumps, or tubercles, growing in longitudinal rows on the stems are all that remain of ancestral primitive leaves. Tubercles may be flattened or elongated into teeth, which may in turn sprout hairy or thornlike projections.

SAMPLING STAPELIADS

The easiest stapeliads to find tend to be those from three main genera: *Stapelia*, *Huernia*, and *Orbea*. These plants often show up even at big box store garden centers, invariably mislabeled as cacti.

Stapeliad classification seems to undergo perpetual revision, so a plant may be listed under different generic names. For instance, the genus *Orbea* has been reclassified several times, and species have been moved in and out of the genus *Caralluma*. Synonyms are listed in parentheses with some of the plants described below.

"In general, plants from the genus *Stapelia* are fairly easy to grow," says New Jersey-based horticulturist and garden writer Ray Rogers, author of *The Encyclopedia of Container Plants* (Timber Press, 2010). For beginners, Rogers recommends starting with giant carrion flower (*Stapelia gigantea*), which grows to eight inches tall and spreads indefinitely.

Brack recommends *Stapelia flavopurpurea* and its varieties because "their flowers are super pretty and they smell like warm honey." Others liken the fragrance to licorice. It has a crawling habit, and stems turn purplish in strong light. The starfish-shaped flowers are small, with a warty surface, and can be yellow, green, orange, or purple.

Clump-forming *Stapelia hirsuta* has upright stems that grow to nearly a foot tall. Its pink to purplish brown, starfishlike flowers reach three or four inches in diameter and are often covered with bristly white

INTRICATE POLLINATION

The milkweed family is known for its complex pollination mechanisms. In milkweed flowers, the stamens and pistil are merged into one columnar structure. Five narrow vertical slits are spaced evenly around the column. Milkweeds concentrate their pollen into pairs of sticky masses called pollinia. These pairs are located directly behind the slits in the column. A visiting insect becomes trapped when a spur on its proboscis, head, or a leg slips into one of these openings. In its struggle to free itself, the insect dislodges the pollinia. Pollination occurs if the insect visits another flower of the same species and frees itself of one or both pollen bodies in a reverse of the original process.

In the case of stapeliads, pollination is not a "simple" matter of redepositing the pollinia. Each pollen body of a stapeliad has a raised ridge on one side of it that must be inserted so that it fits exactly into a corresponding depression within the column, like a key in a lock.

Most flowers produce nectar or share their pollen to reward their pollinators. But the stapeliads are guilty of false advertising, luring insects in to pollinate and then providing nothing for the offspring that hatch from the eggs they lay.

Given the intricacy of stapeliad pollination, seed set tends to be low, especially when they are grown outside their native habitat. When seeds form, they are borne in a two-part, horn-shaped structure that splits longitudinally. If not gathered quickly, the winged seeds will float away.

—J.A.

hairs. Brack describes the flowers' odor level as "minimal," but other growers are less charitable.

Stapelia grandiflora is another easy-to-grow stapeliad that can often be found in garden centers. Growing to about a foot tall, it has an upright, clumping habit, with downy, dark green stems. Its ridged red flowers, which reach a good three inches in diameter, are spectacularly hairy and only mildly fetid.

Huernias are also relatively easy to cultivate, but they do tend to have foul-smelling flowers. With its bright reddish brown annulus, the lifesaver plant (*Huernia zebrina*) is one of the most striking and identifiable stapeliads. The one-and-a-half inch flowers are so stiff and shiny that they look almost artificial. The green-and-reddish-brown-striped petals frame the mottled annulus, which resembles the candy it is named for. Like most huernias, it is a low-growing plant with a four-angled stem. A botanical variety, *H. zebrina* var. *magniflora*, is a larger plant with flowers two-and-a-half to three inches in diameter. Lifesaver plants have a faint odor compared with other huernias.

Huernia schneideriana (syn. *Caralluma* or *Stapelia*) has narrow, arching, ribbed, apple-green stems that can reach a foot or more in height, spreading rapidly to form an attractive mound. The small, cup-shaped, burgundy-red flowers, which have only a slightly disagreeable odor, form near the base of the stems.

Other sought-after huernias include *H. namaquensis*, which Brack describes as "a creeper with short, fat stems about one to two inches long that grow flat on the ground." Its crown-shaped flowers, typically white or cream-colored with pink or



One of the few stapeliads with a somewhat pleasant scent, *Stapelia flavopurpurea*, above, has starfish-shaped flowers that come in a variety of yellow to purple shades. *Edithcolia grandis*, left, is a tiny plant that bears comparatively oversized flowers with highly intricate patterning.



maroon patterning, reach no more than an inch in diameter and have a faint odor. Then there's *H. pillansii*, featuring a dense covering of long hairs on its stems. Its reddish flowers are large in comparison with the size of the stems, which generally grow less than six inches tall.

Orbeas have a large annulus in the center of the flower and their stems are always mottled with maroon blotches, which make them attractive even when they are not in flower. They include, unfortunately, some of the foulest-smelling members of the group.

The prominent, cone-shaped teeth and shiny texture of *Orbea schweinfurthii* make this a plant with presence in bloom or not. Its four- to six-inch-long stems seem to scramble over each other. It has small orange-yellow flowers borne at the tips of the stems. It does not have a particularly foul scent.

Tovah Martin, a Connecticut-based garden writer and indoor plant expert, says her favorite stapeliad is *Edithcolea grandis*. "It's one of the most diminutive stapeliads, but this little stinker bursts its balloonlike buds to form otherworldly blossoms." And other than keeping it warm year round, it's easy to care for, to boot. "Forget to water it—no problem," says Martin. "Mine dwells in a tiny little urn. The foliage seems to be in suspended animation, but the flowers come nonetheless."

HOODIA HYSTERIA

One stapeliad that has become an internet sensation is *Hoodia gordonii*, although it's not because of its horticultural merits. Reports that indigenous people in South Africa and Namibia traditionally ingested stems of *H. gordonii* to suppress hunger and thirst on desert hunting trips spawned a cottage industry in *Hoodia* extracts and pills advertised as diet aids. However, medical experts advise against experimentation with these products because they are unregulated and have the potential to cause liver damage. —J.A.



CARE AND CULTIVATION

In frost-free areas such as southern Florida and southern California, a number of common stapeliads will thrive outdoors in a free-draining site with shade during the hottest period of the day. In their native habitats, most grow in the shade of rock outcroppings or other plants.

Because stapeliads like to sprawl and their roots don't grow deeply, Brack says they fare best in relatively shallow, gritty

containers will do best if they receive regular water and fertilization when they are in active growth, usually from late spring through fall. Add one-eighth teaspoon per gallon of a balanced, water-soluble fertilizer that contains trace elements every time you water. You can also use slow-release fertilizer pellets at one-quarter to one-half the recommended rate. Stapeliads require a dormant period, so in win-



In this trough garden at Chanticleer gardens in Wayne, Pennsylvania, a specimen of giant carrion flower (*Stapelia gigantea*) mingles with a variety of other succulents.

soils. Thus they are ideal additions to rock or gravel gardens. However, they won't endure long exposure to temperatures below 40 degrees Fahrenheit, and a combination of cold temperatures and wet soil in winter is deadly.

For container culture, grow stapeliads in a free-draining medium and never let the plants stand in water. Place them where they will get bright, indirect light and good air circulation year-round.

Most stapeliads thrive in a slightly acidic soil with a pH between 6 and 6.5. To create a container mix, combine 50 percent grit with 25 percent each of organic material (peat, coir, or fine bark chips) and very coarse sand. Pumice is ideal; turkey grit, (unless it is made from crushed limestone), small gravel, or fired clay material is also suitable. If the mix tends to stay too dry, add up to 25 percent vermiculite.

ter, stop fertilizing and water only if the plants appear to be shriveling.

Inspect plants frequently for pests and diseases. Mealybugs and scale are the most common pests. Small surface infestations can be cleared up by rubbing pests off with a cotton swab dipped in alcohol. Larger infestations are difficult to control, so it is best to discard those plants, sterilize their pots, and start anew.

Black spots or mushy, water-soaked growth indicate rot. Detach healthy stems and cut away rot on others. Let the stems and roots dry before repotting using new potting medium.

Because stapeliads do sometimes succumb to diseases, it's best to take cuttings of favorite species regularly to ensure survival. Stapeliads root readily from stem cuttings placed flat on the surface of potting medium. Brack says stapeliads "bene-

Sources

- Arid Lands Greenhouses**, Tucson, AZ. (520) 883-9404. www.aridlands.com.
- Gardino Nursery**, Delray Beach, FL. (888) 323-1333. www.rareflora.com.
- Mesa Garden**, Belen, NM. (505) 864-3131. www.mesagarden.com.

Resources

Seeds and cuttings can be obtained by joining stapeliad interest groups: **The International Asclepiad Society**, www.aclepiad-international.org. **Yahoo! groups:** stapeliads and sastapeliads.

Further Reading

- Crazy About Cacti and Succulents** edited by Ray Rogers. Brooklyn Botanic Garden, New York, NY, 2006.
- Stapeliads: Floral Wonders of Creation**, www.stapeliads.info/serv/core.s3.
- The Asclepiad Page**, <http://succulent-plant.com/families/aclepiadaceae.html>.
- Article on stapeliad pollination:** www.cactus-mall.com/stapeliad/pollin.html.

fit from repotting every couple of years," discarding older stems in favor of the vigorous newer growth.

A SHARED PASSION

Malodorous flowers notwithstanding, stapeliads have a surprisingly large and passionate following worldwide. "The flowers are so remarkable and interesting, and the range of diversity is amazing," says Brack, who notes that the wealth of plants in the group is largely untapped. While the number of commercially available species is limited, there are a number of online groups devoted to stapeliads (see "Resources," above), so if you become a devotee you will find plenty of people who will share advice as well as seeds and cuttings of their prized plants. And, like Lemieux, you may even find the objectionable smell of the flowers a small price to pay for enjoying the beauty of these intriguing plants. ☪

Jeanette Atkinson is a free-lance writer based in Naples, Florida.

Winter's Berried Treasures

BY KATHLEEN FISHER

ALL GARDENERS anticipate spring. We celebrate winter aconites and crocuses; we eye daffodil shoots for a hint of yellow. Buds on bare woody branches grow plump. Herbaceous perennials we'd forgotten about rear their tender heads.

As a non-gardening youth, I considered these harbingers of spring just the appetizer before the bacchanalia of summer. But as a middle-aged gardener living in the Mid-Atlantic, I dread July and August. Take your pick: Hose-dragging drought, or gray skies, drizzle, and non-stop weeds. The air is like chloroform. Mosquitoes lurk.

So I've learned to anticipate autumn. I note that the tiny pink flowers on my beautyberry have been replaced by green ball bearings and envision them turning to amethyst pearls. I make an informal count of the green knobs on my winterberry holly, hoping for even more scarlet fruits than last season. And I know that the orange berries on my firethorns will feed mockingbirds in my garden all winter.

There are dozens of other worthy shrubs that bear showy berries in late fall. Whether the berries are persistent—lasting into winter or even spring—depends not only on the species or cultivar, but on the winter weather and the presence of fruit-eating resident birds.

Here are some shrubs with especially showy berries that will lend visual élan to your garden while giving avian friends something to chirp about, too.

HOLLIES

Evergreen hollies are synonymous with winter beauty. The contrast between their bright green leaves and the red berries on female plants makes them a decorative addition to any garden, and we've been decking our halls with them for centuries.



Shrubs that retain colorful berries through late fall and winter are a delight to gardeners and wildlife alike.

But only recently have gardeners come to appreciate our native deciduous hollies. Among the most popular are the winterberries (*Ilex verticillata*, USDA Zones 5–8, AHS Zones 8–5), which make a knockout hedge or massed clump. Native to the eastern half of North America and growing up to 15 feet tall and wide, they have small, serrated leaves and tiny white flowers hidden in the leaf axils. The berries begin ripening in late summer, and when

the foliage falls, the curtain really comes up. The berries, held snug against the branches, easily last past New Year's and sometimes into spring. Many birds feast on these berries, including bob-whites, flickers, and thrushes.

'Winter Red' is a female selection that won a Pennsylvania Horticultural Society (PHS) Gold Medal in 1995; its sport, 'Winter Gold', which received the same award in 2005, bears orange-yellow



Pyracantha 'Mojave'



Aronia melanocarpa

berries. Other PHS award winners are hybrids of winterberry and finetooth holly (*I. serrata*), a similar species from Japan and China. 'Harvest Red' has a spreading form while 'Sparkleberry' is more upright. All of these plants need a "male escort" in order to produce berries: the recommended ratio is one male for every four females.

Possumhaw (*I. decidua*, Zones 5–9, 9–1), native to the mid-Atlantic and Southeast, is another deciduous holly with red berries. 'Warren's Red' is a superior cultivar that can grow to 15 feet or more.

Most hollies will grow in either sun or shade. They prefer acidic soil and can be

pruned in winter if you want to harvest berries for decorations.

FIRETHORNS

Like talented thespians, these members of the rose family can play myriad roles, from fountainlike specimens to bristling security hedges and fanciful espaliers. Scarlet firethorn (*Pyracantha coccinea*, Zones 6–9, 9–3) is really the only species common to gardens, but there are lots of cultivars and some worthy hybrid selections. Scarlet firethorn is an evergreen that ranges from six to 18 feet tall and wide. The stiff stems are perfect for birds to perch on and the long thorns keep

predators away. The clusters of small, white, mid- to late-spring flowers can completely cover the stems, but you'll have to wait until early fall for the real drama—orange-red, pea-sized berries that often last through winter.

Fungal diseases such as scab and fire blight are serious problems for this otherwise useful shrub, so look for cultivars, such as the ones below, that are disease tolerant and that also have pronounced upright or spreading habits or smaller size. 'Apache' grows only four feet tall, with red, long-lasting berries; 'Fiery Cascade' grows upright, its berries deepen from orange to red, and it is considered more cold tolerant than most. 'Gold Rush' (dense) and 'Teton' (upright) both have yellow-orange berries; 'Mohave' has profuse flowers and fruit and an upright habit; 'Pueblo' is wide, with abundant, persistent fruits.

Give firethorns full sun for best fruiting and neutral to acidic, well-drained soil. They tolerate drought and resist disease better in dry climates. Pruning can be done at any time of year, but early to mid-spring is best to reduce the loss of flowers and berries.

CHOKEBERRIES

There are only two species in this deciduous genus, both native to the eastern United States. Black chokeberry (*Aronia melanocarpa*, Zones 3–8, 8–1) sometimes develops attractive red and purple fall foliage, is well suited to small gardens at six feet tall and slightly wider, and has dark berries. But it pales in comparison to red chokeberry (*A. arbutifolia*, Zones 4–9, 9–4), especially the cultivar 'Brilliantissima', which offers both stellar fall foliage and bright red berries.

A PHS Gold Medal winner in 2000, 'Brilliantissima' grows six to eight feet tall and three to five feet wide, tending to sucker and become leggy. It can also catch some of the diseases (such as leafspot) and attract pests (such as Japanese beetles) that disfigure other members of the rose family. You can control its shape by pruning it back by about a third in spring but, depending on your region's proclivity for these above-mentioned problems, you might want to relegate it to a hedgerow toward the edge of your property, where its bright berries will still shout out their presence.



Lindera benzoin

Red chokeberry colors best in full sun. A wetland native, it's an excellent choice for pond banks or other moist sites, but it also adapts to drier soils.

SPICEBUSH

A native shrub that grows six to 12 feet tall and wide, spicebush (*Lindera benzoin*, Zones 4–9, 8–1) has something special to offer all year long. In earliest spring, it lights up woodlands with delicate little yellow-green flowers that bloom directly on bare stems. In fall, its foliage turns forsythia-yellow, contrasting smartly with the glowing red fruits, although the latter are so appealing to fall-migrating birds that they don't last much past October.

In summer, its leaves are a favored food for the larvae of the spicebush swallowtail butterfly. The leaves also emit a wonderful spicy scent when you brush against them, as will the twigs or berries when crushed.

Spicebush grows naturally along streams and in moist woods, often in chalky soils. It will adapt to drier conditions once established, but appreciates an occasional dose of dolomitic limestone. It will grow denser in full sun; given shade, it develops an appealing open shape that showcases those flowers and berries.

BEAUTYBERRIES

Once you have seen one of these beauties in full berry, you won't forget the common name. The fruits are shiny, bright purple, bordering on magenta.

American beautyberry (*Callicarpa americana*, Zones 7–10, 9–6), native from Maryland to Florida and across to Texas, grows eight feet tall and six feet



Callicarpa americana 'Welch's Pink'

wide, but hard pruning will keep it about half that size and better shaped. In late spring or early summer, tiny pink-purple flowers fringed with stamens bloom shyly in the leaf axils. And here the striking berries cluster, beginning in September. 'Welch's Pink' bears medium-pink berries.

There are also several attractive Asian species such as *C. bodinieri* var. *giraldii* 'Profusion' (Zones 5–8, 8–3), which has arching branches and particularly prolific berries. The graceful purple beautyberry (*C. dichotoma*, Zones 5–8, 8–7) grows only four to five feet tall with berries jutting above the foliage or, in the north of its

MORE FRUITING SHRUBS FOR WINTER INTEREST

Here are some more good choices for fruit-bearing shrubs that are worthy of consideration in a shrub border or wildlife sanctuary.

- Sargent crabapple (*Malus sargentii*, Zones 4–8, 8–1). Ten to 12 feet tall; bright red fruits; self-pollinated; native to Japan.
- Osoberry or Indian plum (*Oemleria cerasiformis*, Zones 6–10, 10–6). Eight to 15 feet tall; blue-black fruits; needs pollinator plants; native to western North America.
- Silver buffaloberry (*Shepherdia argentea*, Zones 3–7, 7–1). Ten to 15 feet tall; red fruits; needs pollinator plants, native to north central and western North America.
- Russet buffaloberry (*Shepherdia canadensis*, Zones 2–6, 6–1). Seven to eight feet tall; orangy yellow fruits; needs pollinator plants; native to northern North America.
- Snowberry (*Symphoricarpos albus*, Zones 3–7, 7–1). Two to four feet tall; white fruits, self-pollinated; native to eastern North America.
- Coralberry (*Symphoricarpos orbiculatus*, Zones 2–7, 7–1). Six to eight feet tall; pink-red fruits; self-pollinated; native to eastern and central United States.



Symphoricarpos albus



Rhus typhina

range, on bare branches. Japanese beautyberry (*C. japonica*, Zones 5–8, 12–3) is roughly the same size, with arching branches; ‘Luxurians’ is considered a superior cultivar. There are also white-berried forms with white flowers.

Beautyberries are a snap to grow in sun or shade, although like most plants, they fruit better with more sun. Northern gardeners usually prune beautyberries near the ground in spring to keep them compact and get rid of any winter dieback.

MAHONIAS

There are many garden shrubs with blue berries. But they’re usually small, dark, or hidden in evergreen foliage. Mahonias, however, almost go to excess, with true blue berries half an inch long, hanging in grapelike clusters. The berries are not birds’ favorite repast, but are valued in late winter when tastier treats are long gone.

Best known is Oregon grapeholly (*Mahonia aquifolium*, Zones 6–9, 9–6), a native of the Pacific Northwest that is adaptable to gardens elsewhere. The species grows to about six feet tall and five feet wide. The leaves are compound, with up to a dozen leaflets on a side, spiny, thick, and often tinged with bronze in spring and fall. Yellow flowers bloom early to mid-spring, with the bold blue berries forming in summer and persisting through winter.

Cascades mahonia (*M. nervosa*, Zones 5–7, 7–5), another Northwest native, makes a pretty purple-blue-berried groundcover at 12 to 18 inches tall; and leatherleaf mahonia (*M. bealei*, Zones 6–8, 6–3), a Chinese species to 12 feet tall, with bright blue berries coated with a white bloom.

Mahonias grow best in part or dappled shade; in arid regions, they even appreciate heavy shade. Give them a spot out of the wind in acidic, humusy soil. In spring, after the berries are gone, remove any shoots that have rocketed above the rest of the foliage and spoiled the shape.



Mahonia aquifolium

SUMACS

Our native sumacs are just beginning to get a little more respect. Given their bright red autumn foliage, heavy swags of late-summer flowers, and fruits that draw dozens of bird species, the only reasonable explanation for their neglect by gardeners is that they are too easy to grow. Especially fine—literally and figuratively—are two cultivars named ‘Laciniata’, each featuring deeply divided leaves.

The first is sometimes identified as a cultivar of smooth sumac (*Rhus glabra*, Zones 3–9, 9–1), other times as a selection of *R. x pulvinata*—a cross between smooth sumac and staghorn sumac (*R. typhina*, Zones 4–8, 8–1). Just to make things additionally confusing, staghorn sumac has its own cultivar called ‘Laciniata’. Both species are similar, except that staghorn sumac has reddish down on its branches. The cultivar Tiger Eyes® has bright yellow leaves that turn red-orange in autumn. Smooth sumac usually grows 10 to 15 feet tall, while staghorn can reach 20 feet or larger. Both will sucker and form colonies, so they are best used on large properties, or for naturalizing in masses or shrub borders.

Much shorter—at two to six feet tall—is fragrant sumac (*R. aromatica*, Zones 4–9, 9–1), an eastern native that makes a wonderful cover for steep banks.

Resources

Bird-by-Bird Gardening by Sally Roth. Rodale Books, Emaus, Pennsylvania, 2006.

Dirr's Encyclopedia of Trees & Shrubs by Michael A. Dirr. Timber Press, Portland, Oregon, 2011.

The Homeowner's Complete Tree & Shrub Handbook by Penelope O'Sullivan. Storey Publishing, North Adams, Massachusetts, 2007.

Native Trees, Shrubs & Vines by William Cullina. Houghton Mifflin Co., Boston, Massachusetts, 2002.

Sources

(Plants for which there is only one mail-order source are noted.)

Camellia Forest Nursery, Chapel Hill, NC. (919) 968-0504. www.camforest.com. (For *Symplocos paniculata*.)

Fairweather Gardens, Greenwich, NJ. (856) 451-6261. www.fairweathergardens.com.

Forestfarm, Williams, OR. (541) 846-7269. www.forestfarm.com.

Las Pilitas Nursery, Escondido, CA. (760) 749-5930. www.laspilitas.com. (For *Heteromeles arbutifolia*.)

Sooner Plant Farm, Park Hill, OK. (918) 453-0771. www.soonerplantfarm.com.

The fruits, borne on female plants, take the shape of upright cones more than six inches long. Those on smooth sumac tend to stay bright red, while those on staghorn sumac fade to brown.

They will tolerate the most adverse conditions, including seaside banks, as long as they have good drainage.

SAPPHIREBERRY

If you're among those gardeners who go bonkers for blue, sapphireberry (*Symplocos paniculata*, Zones 4–8, 8–4) fits the bill. This deciduous Asian shrub ranges from 10 to 20 feet tall. The leaves are finely toothed and slightly fuzzy, while the upright branches are furrowed and gray.

Sapphireberry is impressive in bloom, since the star-shaped flowers are highlighted by prominent stamens and flowering is often heavy. But its bright blue



Symplocos paniculata



Viburnum trilobum 'Wentworth'

berries are the feature attraction, ripening in early autumn and usually lasting for several weeks until the birds have gorged themselves with them.

Sapphireberry grows in neutral to acidic soil that is moist and well-drained, in sun or light shade. It makes a good informal hedge and shouldn't need pruning unless you need to control its size. Unfortunately, its availability is quite limited (see "Sources," this page).

VIBURNUMS

If hollies offer a feast of berry plants, viburnums are a block-long smorgasbord.

There are few that don't offer fruits to please the human eye or the avian palate. Many of the berries, however, either start out blue-black or quickly fade to that color. Two with the longest lasting color are the 'Erie' cultivar of linden viburnum (*Viburnum dilatatum*, Zones 5–8, 8–5) and the American cranberry bush viburnum (*V. trilobum*, Zones 2–7, 7–1).

Another PHS medal winner, 'Erie' is one of the many worthy viburnum cultivars developed by the late great U.S. National Arboretum breeder Donald Egolf. The linden viburnum species is from eastern Asia and averages nine feet tall

ATTRACTING BIRDS TO YOUR GARDEN

The best way to attract avian visitors to your garden is to have a diversity of shrubs and small trees that will provide sugary berries to feed nestlings in spring; fatty berries that fuel fall migrants; and persistent berries that dry and stick around year round for resident birds and the return of migrants in spring.

The berries of our native spicebush are high in fat that migrating birds such as warblers need to fuel up for the big trip. Those of sumacs, bayberries, and crabapples are less immediately tempting, but stay on the plant for months to provide food for omnipresent sparrows and finches.

Not all berries are a feast for the human eye. Berries that birds love tend to be small. Some berries start out red—nature's way of signaling a meal for hungry migrants—then fade or shrivel. But pretty much all of them provide sustenance for birds when severe weather has eliminated other sources.

For example, the sweet berries of American elder (*Sambucus canadensis*, Zones 4–9, 9–1), a ditchside denizen native to the eastern United States and Canada, feed almost 40 species, and others prefer this shrub for nesting. The blue elderberry (*S.*

caerulea, Zones 5–8, 8–4) is the western counterpart.

The evergreen southern wax myrtle (*Myrica cerifera*, Zones 7–10, 10–5) and the northeast native bayberry (*M. pensylvanica*, Zones 3–7, 7–1)—which is deciduous in much of its range—have tiny blue-gray fruits only on the female, but some 25 bird species dine on these persistent fruits.

You can bet your bottom birding dollar on a viburnum. In addition to those already mentioned, there are wayfaring tree (*Viburnum lentana*, Zones 4–8, 8–1, which has berries that change from yellow to red then black, with all colors in a cluster, and smooth withered (*V. nudum*, Zones 5–9, 9–5) has berries that are pink before they turn blue.

Remember that berries evolved on plants as clever means for persuading birds to disperse their seeds. Some highly invasive non-native plants—such as bush honeysuckles (*Lonicera* spp.) and Russian and autumn olives (*Elaeagnus angustifolia* and *E. umbellata*)—are especially talented at this and are sometimes promoted as wildlife plants. Be sure to avoid invasive berry plants when planning your bird-friendly landscape. —K.F.

and six feet wide, but some of the cultivars, including this one, often grow more broad than tall. The foliage is toothed and puckery, and in fall turns yellow, orange, and red. They bear four-inch flat clusters of white flowers followed by intense red berries that turn an unusual coral color and last most of the winter. 'Iroquois' and 'Oneida' are other selections of linden viburnum with red berries; 'Michael Dodge' has yellow fruit. For best fruiting, plant more than one linden viburnum.

American cranberrybush is native to Canada and the northern United States. It grows eight to 12 feet tall and wide with three-lobed leaves that turn yellow to reddish purple in fall. The white mid-spring flowers resemble those of a lacecap hydrangea, and the edible fruits, which appear in early fall and last through winter, virtually glow. 'Wentworth' features red autumn leaves and bright red berries.

Viburnums are relatively easy to grow in moist, well-drained, slightly acidic soil in either sun or part shade. Protect them

from wind and prune only to remove suckers or correct any growth that spoils their natural, relaxed shape.

TOYON

Heteromeles arbutifolia (Zones 8–10, 12–8), a Southern California native, is usually called toyon, but also California holly and Christmas berry for its red berries.

Toyon usually grows five to 10 feet tall and slightly less wide, although it has been known to reach 25 feet. The evergreen leaves are thick, shiny, and dark green with sharp teeth. In early to midsummer, white flowers bloom in terminal clusters. Then in fall the oval berries turn bright orangy red, ready for the birds to snack on between November and January. Occasionally, berries turn yellow rather than red.

Toyon can be hard to transplant, so look for a good-sized specimen with a healthy set of roots. Plant it in well-drained soil in sun or part shade. It makes a good seaside bank plant since it tolerates wind and drought, but will do best with supplemental water, especially during its first summer. The availability of toyon is limited (see "Sources," page 28). ☞

The late Kathleen Fisher was a former editor of The American Gardener. This article is an updated and adapted version of her original article, which was published in the November/December 2000 issue.



Heteromeles arbutifolia

success with Bare-Root Plants

BY KRIS WETHERBEE



If you buy a lot of plants and are looking for ways to save money, purchasing bare-root plants is a cost-effective option.

OVER 20 years ago, our UPS driver arrived in February with three long boxes containing over 100 bare-root Asian pear trees. When he asked what was in the packages, he was surprised to learn that so many trees could fit in just three boxes and that we could plant trees at that time of year. In the weeks that followed, we continued our bare-root planting marathon with apple and cherry trees, blueberries, strawberries, and grapes, along with enough bare-root asparagus to fill three 30-foot-long beds.

Our original strawberries have long since retired, but our fruit trees, blueberries, and grape vines are still producing an

abundance of flavorful fruit. Our harvest wouldn't be nearly as abundant, however, had we started with more costly container-grown plants. That's because bare-root plants are typically 20 to 50 percent less expensive than container-grown selections and traditional balled-and-burlapped (B&B) plants. Bare-root stock allowed us to buy more with the same budget.

Bare-root plants are one- to three-year-old nursery stock that have been dug from the ground in the fall when dormant. After the soil has been washed off the roots, the plants are packed in a moist material such as sawdust. They are kept in cold-storage facilities and then shipped in late fall, win-

ter, or early spring without any soil or potting mix surrounding their roots.

This type of system works well for many woody plants, such as fruit and nut trees, cane fruit, grape vines, and some herbaceous edibles such as strawberries, asparagus, and rhubarb. Bare-root roses are very common; other ornamentals available as bare-root stock include a wide variety of perennials such as asters, astilbes, coneflowers, daylilies, and milkweeds, as well as numerous ornamental trees, shrubs, and vines (see "Bare-Root Selections," page 34).

BARE-ROOT BENEFITS

While container-grown plants have their place in the landscape, bare-root stock has several advantages. Bare-root plants are less expensive to grow since no pots or potting mix is used in their production. Because they are sold when they are dormant, with no soil around their roots, they are lightweight and easier to package, and therefore are cheaper to ship than container-grown or B&B stock. And because they are less cumbersome than container plants or B&Bs, bare-root plants are also easier to plant.

Another benefit is that "you can dig a larger root system on bare-root plants than on B&B," says horticulturist Chris Starbuck, an associate professor with the Division of Plant Sciences at the University of Missouri. And although container plants can have extensive root systems, "the roots are in a small volume, with few roots spreading widely. The wider root system of a bare-root plant will provide better anchorage once the tree is established," explains Starbuck.

The natural root flare—where the trunk of the plant widens or flares at the point where stem tissue transitions into root tissue—is readily determined on a bare-root plant. The root flare should remain above the soil level for the newly planted tree or shrub. "With B&B trees,

Plant bare-root peonies in fall so their feeder roots develop before buds break in the spring.

the soil may be mounded on the trunk, making it difficult to see the buried root flare,” explains Nina Bassuk, professor and program leader with the department of horticulture at Cornell University’s Urban Horticulture Institute. “The root flare of bare-root trees is obvious and the proper planting depth is easy to determine.”

PLANNING YOUR PURCHASE

Bare-root planting season is pretty short, and if you’re not on the ball, it can slip right by you. Most plants need to be shipped and planted while still dormant and before their buds start swelling. Late winter or very early spring—January to early April in most regions—is the most common time to order and begin planting bare-root stock.

“I prefer to plant bare-root in the fall when the soil is still warm, and there is no chance of early bud break,” says Bassuk. A few mail-order companies ship bare-root plants in fall, including Prairie Moon Nursery in Winona, Minnesota. Prairie Moon, which offers a wide variety of trees, shrubs, vines, and perennials native to the Upper Midwest, has both fall (October) and spring (April to May) shipping seasons for bare-root plants, according to Bill Carter, the nursery’s president. “We ship over a hundred thousand every year with pretty good results,” says Carter. He adds the nursery has seen growth in sales of bare-root plants over the last five years, thanks in part to the detailed planting instructions provided on its website. Whether planting in fall or early spring, be sure to place your order early for best selection.

Bare-root selections of fruit and nut trees, fruiting vines, and perennial edibles such as rhubarb and asparagus are available at many nurseries and garden centers. But for gardeners who seek a wider selection of plants, buying online or from a mail-order catalog is the way to go—especially when it comes to ornamental trees, shrubs, and rare heirloom varieties.

Nurseries typically wait to ship bare-root plants until after the danger of freezing in transit has passed. So if you garden in sunny southern California, and your mail-order source is located in Upstate New York, a late freeze there may mean you receive your plants after your planting window has passed. To avoid climate dis-



A wide selection of fruit trees, including apples, is available as bare-root stock.

parities, it’s best to purchase bare-root plants from a nursery as close to your region as possible. Also, choose a company that offers reasonable guarantees and money-back or replacement offers for damaged stock or plants that aren’t up to the standards specified.

CARE ON ARRIVAL

Once your plants arrive, the first step is to inspect them carefully. Healthy bare-root specimens have plump, fresh, and firm stems, twigs, roots, and buds. The roots

should be moist and well formed, with lots of fine, fibrous feeder roots growing from the main root system. Avoid plants that are dried, brittle, or shriveled; roots that are slimy, squishy, or moldy; and dried or leafed out buds. Be wary of end-of-season bargains that have begun to show signs of growth. They won’t establish as quickly as bare-root selections that are planted while still truly dormant.

Ideally, bare-root plants should be planted within 24 hours of arrival, but there are ways to keep them viable for

Resources

Creating the Urban Forest: The Bare Root Method by Michelle Buckstrup and Nina L. Bassuk. Department of Horticulture, Cornell University.

www.hort.cornell.edu/uhi/outreach/pdfs/bareroot.pdf.

Hand-Planting Guidelines for Bareroot Trees and Shrubs, USDA Natural Resources Conservation Service. www.sdda.sd.gov/Forestry/Publications/PDF/Hand-Planting-Guidelines.pdf.

Sources

Nourse Farms, Deerfield, MA. (413) 665-2658. www.noursefarms.com.

Prairie Moon Nursery, Winona, MN. (866) 417-8156. www.prairiemoon.com.

Raintree Nursery, Morton, WA. (800) 391-8892. www.raintreenursery.com.

Trees of Antiquity, Paso Robles, CA. (805) 467-9909. www.treesofantiquity.com.

HOW TO PLANT BARE-ROOT STOCK

Although bare-root stock is dormant when shipped, it is critical to keep the roots moist until they are in the ground. Planting should be done as soon as possible after purchase or receipt, and great care should be taken to set the plant at the proper depth. Steps in planting a bare-root rose are illustrated below.



1. Dig a hole with tapered sides deep enough to accommodate roots and one-and-one-half to two times as wide. **2.** Form a mound of soil in the center of the hole high enough so that the plant's crown will sit two inches above ground level, which is easily identified by placing a yardstick across the hole. Adjust the height of the mound if necessary.



short periods until you are prepared to plant. If you will be planting in the next two to three days you can keep them in their original package as long as you keep the water-retaining packing material around the roots moist—not soggy—and move the boxes to a cool and shady freeze-free location; 33 to 38 degrees Fahrenheit with a relative humidity of 90 to 95 percent is ideal. Avoid a location that is too warm, such as a heated garage, because this can cause your plant to break dormancy.

Dipping the roots in a hydrogel slurry will buy you up to an extra week of planting time. Hydrogels are synthetic compounds that look a bit like table sugar when dry, but when moistened can hold several hundred times their weight in water. According to Bassuk, the fine grades provide much better coverage than the coarse grades.

Bassuk recommends mixing about 15 ounces of hydrogel per 25 gallons of water. It takes about 30 minutes to an hour before the water fully hydrates the gel. “The

hydrogel should be the consistency of thick gravy when you start dipping,” she says. Leave the slurry on the roots after dipping and put the roots in a large plastic bag to hold in moisture. Again, store plants in a cool, shaded, frost-free location until you’re ready to plant, but wait no longer than a week.

Another option for delayed planting is to heel in the plants. The most common way of doing this is to dig a trench deep enough to accommodate the plant roots in a shady and wind-protected area. After soaking the roots for several hours, lay plants in the trench at an angle, then cover the roots with soil and water thoroughly. The roots should lie completely below the soil surface; stems above the soil surface. If the roots aren’t completely covered, add more soil. Mulch with moist sawdust, straw, or shredded leaves to prevent drying out; this will buy you several days of holding time as long as you keep the soil moist. But be sure to plant your bare-root plants before they break dormancy.

No matter which holding process you choose, it’s vital that you keep the roots covered and protected at all times. The most common reason that bare-root plants fail is allowing the roots to dry out.

PLANTING TECHNIQUE

If possible, choose a day for planting that is cool and cloudy and plant in the early morning or late afternoon.

To prepare the plant, roots should be pruned, then soaked. Starbuck suggests pruning any damaged, broken, or blackened roots back to healthy-looking tissue. “Shortening long roots makes it easier to plant and causes root branching,” he explains. “This will increase the number of water-absorbing root tips in the backfill soon after planting.”

The roots need to be rehydrated with water before planting. Some gardeners hose their roots down, but I prefer to rehydrate by soaking the roots in a pail of water for several hours or overnight. I usually add one tablespoon of liquid fish fertilizer to the soaking water and time my



3. Once the correct depth has been determined, place the plant on top of the mound and spread roots evenly; do not bend or fold the roots. **4.** Place soil around the roots, tamping it down gently with your fingers. Form a ring of soil around the plant base to help direct water to the roots. **5.** Water thoroughly to settle the soil around the roots and eliminate air pockets.



soaking so that I can leave the plants in water buckets until the minute I plant them. Do not keep the roots in water any longer than 24 hours.

The planting hole should be shallow and tapered: make it deep enough to ac-



Soak roots in water for several hours or overnight prior to planting bare-root stock.

commodate the height of the root system and one-and-one-half to two times the width of the extended root mass. The slightly wider than deeper hole will give roots plenty of room to grow outwards. “The roots shouldn’t be folded, curled or otherwise constricted in the planting hole,” says Nan Sterman, a garden designer and horticulture consultant who lives in southern California.

Some experts suggest loosening the soil beneath the root system while others think you should leave it alone. But all seem to agree when it comes to loosening the soil on the sides—it’s a definite yes. Another area where experts disagree is whether to amend the soil removed from the planting hole or fill the hole with backfill only. The approach you choose should be based on the quality of your existing soil; in some suburban gardens the “soil” is a mix of clay and building debris left after home construction.

“We have very heavy clay,” says garden blogger and master gardener Kylee Bauble, who lives in northwest Ohio,

“so I amend the soil with organic material so that the soil within the planting hole is a little looser for the roots to easily grow out into. Once the plant is established, the roots will be strong enough to grow out into the pure native soil.”

My philosophy on digging a hole is much like Bauble’s. After digging the hole I use a spade to break up any compacted soil, loosen it on the sides and bottom. Then I throw in several shovelfuls of loamy topsoil or compost, digging it into the surrounding native soil until blended. A good ratio for less-than-ideal soil is one part compost to two parts native soil.

Fill the hole with water and allow it to drain; if it takes longer than two hours for the water to disappear, you will need to improve the soil’s drainage or relocate your hole. To prepare for planting, use the backfill to form a cone-shaped mound several inches high within the hole and place your plant on top of the mound so that the roots spread out over the mound as evenly as possible. The first

BARE-ROOT SELECTIONS

With the exception of roses, the most commonly found bare-root selections at garden centers are typically edible plants. You'll have more to choose from—an extended selection of fruits, vegetables and other edibles, as well as more ornamental choices—if you purchase bare-root plants through mail-order sources.

EDIBLE PLANTS

Fruit trees Apples, Asian pears, cherries, figs, peaches, pears, plums

Nut trees Availability varies depending on location, but may include almonds, hazelnuts, pecans, walnuts

Other fruits Blackberries, blueberries, grapes, raspberries, strawberries

Other edibles Asparagus, artichokes, rhubarb

ORNAMENTAL PLANTS

Trees Serviceberries (*Amelanchier* spp.), American elm hybrids (*Ulmus americana* hybrids), ashes (*Fraxinus* spp.), basswood (*Tilia americana*), littleleaf linden (*Tilia cordata*), hedge maple (*Acer campestre*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), sycamore (*Acer pseudoplatanus*), honeylocust (*Gleditsia triacanthos*), pin oak (*Quercus palustris*), yellowwood (*Cladrastis kentukea*), Japanese flowering cherry (*Prunus serulata*), Japanese tree lilac (*Syringa reticulata*), katsura tree (*Cercidiphyllum japonicum*), and crabapples (*Malus* spp.).

Shrubs and Vines Clematis, dogwoods (*Cornus* spp.), forsythias, lilacs (*Syringa* spp.), common witch hazel (*Hamamelis virginiana*), roses, meadowsweet (*Spiraea alba*), butterfly bushes (*Buddleia* spp.), inkberry (*Ilex glabra*), blackhaw viburnum (*Viburnum prunifolium*), southern arrowwood (*Viburnum dentatum*), and nannyberry (*Viburnum lentago*).

Perennials and Grasses Milkweeds (*Asclepias* spp.), asters, astilbes, tickseeds (*Coreopsis* spp.), coneflowers (*Echinacea* spp.), daylilies (*Hemerocallis* spp.), peonies.

—K.W.

roots should rest just below the soil line and the crown positioned about two inches above ground level. Lay the handle of a shovel or a yard-long ruler across the top of the planting hole to ensure the positioning is correct. Adjust the level of the soil beneath the roots if needed.

Once the plant is properly positioned, gently fill in the hole with loose soil or a blend of compost mixed with native soil. Steady the plant with one hand while using your other hand to gently firm the soil and stabilize the plant. This, along with a thorough watering, will help re-



After planting and watering, spread a two- to three-inch layer of mulch around the base of the plant, keeping the area immediately around the trunk mulch-free.

move air pockets and settle the soil around the roots. “When you’ve replaced half of the backfill, water the hole to help collapse air pockets,” suggests Bassuk.

To ensure water is delivered directly to the roots, build up a ring of soil around the plant’s base. Water deeply, filling the basin several times if needed. Add more soil if additional settling occurs after watering. The last step is to spread a two- to three-inch layer of mulch around the plant to help retain moisture, moderate soil temperature, prevent weeds, and protect its roots. Leave a mulch-free zone immediately around the base of the trunk or stem to reduce the risk of fungal infection or rodent damage.

GROWING ON

Providing adequate and consistent moisture for the first year is key to ensuring continued development of the root system. The rule of thumb is one inch of moisture per week for most plants; the goal is to keep the soil moist but never soggy or the roots may rot.

Regularly monitoring your plant for signs of stress and assessing its overall health will help you determine when and if to fertilize, weed, and add protection from wind or animals. Fertilization after planting is usually not needed

the first season as plants settle into their environment, especially if you have already amended the planting hole with compost. If you do fertilize, a mulch of compost or aged manure or a topdressing of slow-release organic fertilizer should suffice.

Maintain the mulch and remove weeds as needed to help get your bare-root plants off to a great start. By summer, the plants should be growing vigorously and on their way to a beautiful and fruitful life in your garden. 🌿

A regular contributor to *The American Gardener*, Kris Wetherbee lives in Oakland, Oregon.



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gardening lessons from **Parking Lots**

For those seeking design and plant ideas for tough environments, botanical garden parking lots can be instructive places to start. ARTICLE AND PHOTOGRAPHS BY KAREN BUSSOLINI

AS I PULLED my rental car into the Denver Botanic Gardens' small parking lot some years ago, it was immediately clear that it was a very special place. I was suddenly eye-level with a strip of technicolor western native perennials. City noise was replaced by swishing grasses and birdsong.

Despite being tired after a long day of traveling, it was wonderful to be welcomed by such beauty in a parking lot and to im-

mediately see examples of tough, drought-resistant plants that thrive in low-maintenance areas in the dry West. Having previously traversed many a barren expanse of blistering hot, car-packed pavement at botanical gardens across the country while pursuing my work as a garden photographer, this was definitely more like it.

Based on that experience, I began paying closer attention to the landscaping of parking lots at other public gardens. Over

time, it occurred to me that these areas, where the needs of plants, people, and vehicles all have to be taken into account, yield ideas that can be adapted for smaller-scale home landscapes.

Planting around parking lots and driveways presents many challenges over and above those normally encountered in the garden. Practical considerations such as snow removal and handling water runoff have to be dealt with in an attrac-



Low-maintenance groundcovers, interspersed with upright evergreens and deciduous trees such as zelkovas, provide an attractive setting around the parking lot at Chanticleer, opposite. Above: Granite curbs, draped here by deutzias and ferns, help direct runoff to a designed wetland area.

tive yet environmentally responsible manner. Visitors need to be given cues on where to park and how to enter the garden. The soil will likely be thin, highly disturbed, or compacted from construction and foot traffic. Plants, which often suffer from heat reflected off the hard-scaping, need to be tough and offer interest over a long period of time.

These pass-through areas aren't usually high priority for soil remediation, irrigation, or maintenance, yet they do play an important role in creating a first impression for visitors and setting the stage for the rest of the garden. Because they are somewhat isolated, they also present opportunities to get a little wilder than might be desired close to a visitor's center (or home), paint with a broader brush, try something new, and even use plants whose overly aggressive nature may be an asset.

What I discovered after a few years of travels is that public garden parking lots are becoming models of how to conserve

resources and protect the environment in inventive and attractive ways. The approaches range from basic design and plant selection to more sophisticated solutions such as permeable paving and rain gardens. The following gardens provide particularly good examples in different regions of the country (a list of plants from the parking lots at these gardens can be viewed in a web special linked to this article on the AHS website at www.ahs.org).

DESIGNING FOR PRACTICALITY AND BEAUTY

At Chanticleer garden in Wayne, Pennsylvania, near Philadelphia, visitors are slowed down by plantings so interesting that you want to roll down the window and gawk. Trees and shrubs partly conceal what is around the bend, and high granite curbs prevent wandering off-road. The curbs serve another important function: redirecting stormwater runoff. "It's simpler to have curbs so you can design them to direct water to basins where it will slow-

ly seep in," says Bill Thomas, Chanticleer's director. Small, earth-toned asphalt lots tiered down a steep slope give way to pervious gravel at the bottom. From there, water sinks into a basin planted with marsh marigolds (*Caltha palustris*), blue flag iris (*Iris virginica*), pussy willows (*Salix discolor*), and other edge-of-pond plants. When pond cypress (*Taxodium ascendens*, syn. *T. distichum* var. *imbricarium*), shadblows (*Amelanchier* spp.), and other moisture-tolerant trees mature, this will become a wet woodland.

Thomas says his philosophy is to make the parking lot "gardenesque" but lower maintenance. "We don't irrigate but we do weed and mulch," he says. "We try not to plant things that need deadheading and we use perennials that are ground-covering to smother weeds, planted more in masses than they are in the garden."

Tough trees, shrubs, perennials, and grasses serve many practical purposes in addition to their aesthetic qualities. For in-

stance, suckering shrub dogwoods and self-layering *Deutzia gracilis* 'Nikko' anchor steep banks. Feather reed grass (*Calamagrostis xacutiflora* 'Karl Foerster') is a stellar parking lot plant in Thomas's estimation because it "requires almost no tending, gives a sense of movement, and provides some screening. It looks great from midsummer all the way through January, unless it's beaten up by heavy snow."

Shade trees are a challenge because they need a lot of soil for proper root development. Chanticleer's gardeners experiment to see what does well in existing conditions. Evergreen cryptomerias have proven to be tough, but they don't like reflected heat and prefer some shade. They provide a backdrop for a variety of flowering deciduous shrubs, which in turn buffer lower branches from the pavement's heat. Upright eastern juniper (*Juniperus virginiana*) does well in poorly drained soil and better withstands heat.

Thomas advises maintaining a safety zone around trees to keep vehicles away from trunks. Herbaceous plants such as bluestar (*Amsonia hubrichtii*) or shrubs such as *Hydrangea arborescens* that can be cut to the ground every spring, are good buffers for vulnerable trees because they will grow back readily if damaged.

While toughness and appropriateness to the site are important, so is a tree's shape. Selecting trees with the right form, avoiding trees with down-sweeping branches, and removing lower branches (limbing-up), keeps branches out of harm's way and enhances sight lines—this is as useful a lesson for a home garden as it is in a parking lot. Many of Chanticleer's cryptomerias are pruned to be skinny. Trees such as red oaks (*Quercus rubra*), planted where there is enough soil, look good limbed up. Pond cypresses have a naturally narrow form and sawleaf zelkovas (*Zelkova serrata*) develop a vase shape that rises up and over vehicles below, especially if lower branches are removed.

CREATING A SENSE OF PLACE

If the quiet magic felt upon turning into nearly untouched Maine woods isn't enough to make a driver slow down and notice the surroundings, the long, looping roads might do the trick. The meandering gravel road into the Coastal

Maine Botanical Gardens (CMBG) in rural Boothbay was sited to seem natural and have minimal impact on native ecosystems and hydrology. The road snakes around fields of moss, massive stone ledges covered in polypody ferns and lichen, dense stands of fir and spruce, boggy dips and hummocks, offering visitors an intimate experience within a dense forest. Although the unpaved road takes a good deal of maintenance, it has a low-carbon footprint (local stone, no oil-based materials),

minimizes impervious surfaces, and benefits its rural setting.

On my first visit, it took me a long time to get to the actual gardens because the drive along the entrance road entailed many stops to make notes on combinations and ideas for mingled groundcovers, and to renew my appreciation for the gorgeous texture of massed hayscented ferns (*Dennstaedtia punctilobula*). Evergreen tree seedlings carpeted the earth, along with lowbush blueberries (*Vaccinium angustifolium*), Canada mayflower (*Ma-*



Near the parking lot at Coastal Maine Botanical Gardens, this evocative natural vignette—a clump of pink lady's slipper orchids (*Cypripedium acaule*) in front of a solitary boulder capped with moss and fine sedge—caught the author's eye. She immediately envisioned how the component elements, with an ethically propagated replacement for the lady's slippers, could be adapted to a Northeast woodland garden setting.



The low-tech gravel parking lots at Coastal Maine Botanical Gardens are separated by naturalistic boggy areas designed to absorb runoff.

ianthemum canadense), bunchberry (*Chamaepericlymenum canadense* syn. *Cornus canadensis*), and sweeps of ostrich ferns (*Matteuccia struthiopteris*), cinnamon ferns (*Osmunda cinnamomea*), and interrupted ferns (*Osmunda claytoniana*) in wet spots. All of this together demonstrated that

sometimes the best way to convey a powerful sense of place is to preserve what is already there.

Instead of filling in low areas and leveling to make a big parking lot, three small gravel “pods” were built with strips of trees and low wet areas for runoff between

them. Logs keep cars in place. This design garnered an award from the “smart growth” organization Friends of Mid-Coast Maine for innovative and environmentally responsible site planning.

Observant visitors will notice natural compositions full of interesting forms, textures, and contrasts that vary with small differences in soil moisture and sunlight. Drifts of hair-fine sedges (*Carex* spp.) are interrupted by a linear tapestry of bunchberry, lowbush blueberry, mosses, and wintergreen (*Gaultheria procumbens*). On a spongy hummock, more bunchberry and wintergreen mingle with princess pine (*Lycopodium obscurum*), and bracken fern (*Pteridium aquilinum*); higher ground was silvery with lichens.

Where the driveway plantings at Chanticleer are simplified and the gardens complex, the scenario at Coastal Maine is reversed. Natural areas around cars are more varied and complex than anything designed; the gardens are a simplification. Traversing the crushed stone path over a rise from the parking lots’ native plant communities to the clearly defined beds around the Visitor’s Center is intriguing because there’s a subtle transition between the untouched, the managed, and the planted. Highbush blueberries (*Vaccinium*

ADDITIONAL GARDENS WITH INSPIRATIONAL PLANTINGS

Here are a few other public gardens that offer thematic or interesting plantings or “green” features in their parking lots.

Delaware Center for Horticulture, Wilmington, Delaware. Colorful curbside combinations of plants that can take heat and humidity in stride.

Lady Bird Johnson Wildflower Center, Austin, Texas. Native shrubs and grasses in a naturalistic setting.

Longwood Gardens, Kennett Square, Pennsylvania. Ever-changing and inspirational plantings of both new and familiar plants.

Marie Selby Botanical Gardens, Sarasota, Florida. Hellstrips are planted with shrubs most gardeners know only as houseplants.

Morton Arboretum, Lisle, Illinois. Permeable paving in the parking lot allows water to drain through filtering gravel and collect in bioswales planted with woody and perennial plants for year-round interest.

New York Botanical Garden, New York, New York. A variety of mature, less common canopy trees and interesting shrubs that tolerate urban conditions.

Tower Hill Botanic Garden, Boston, Massachusetts. Showcases Cary Award winners—underutilized trees and shrubs adaptable to New England.

—K.B.



In the parking lot at the Lady Bird Johnson Wildflower Center in Austin, Texas, visitors are immediately introduced to native plants such as Texas ranger (*Leucophyllum frutescens*).

corymbosum) and huckleberries (*Gaylussacia baccata*) provide natural edible landscaping as the path winds through sun and shade, ledges and soil pockets, wet and dry.

A sense of place is also apparent in the parking lot at the Oregon Garden in Silverton, where Oregon State University Extension Horticulturist Neil Bell and Cistus nursery owner Sean Hogan collaborated to “get some Oregon into the Oregon Garden” right up front. The goal was to design a lot that “sampled the geographic and sustainable possibilities and showed people how they can have landscapes that look good with months of no summer rain and no irrigation.”

Adding to the challenge, Heather Desmarteau-Fast, staff horticulturist at the Oregon Garden, describes the parking lot soil as “terrible”—nothing but red clay and rock, but the design was planted without amendments. Oregon’s winters are as wet as summers are dry, so a bioswale—a wide, shallow ditch—runs through the two big beds, collecting runoff and allowing it to infiltrate slowly. Rushes (*Juncus effusus*), along with various Willamette Valley winter ephemerals such as *Brodiaea* spp. and summer-blooming monkey flower (*Mimulus lewisii*) fill the bioswale.

Elsewhere, a combination of “drought-adapted creatures,” as Hogan calls them, from the Mediterranean region—rosemaries, rock roses (*Cistus* spp.), lavenders, olives, Italian cypresses—and the American West—dozens of manzanitas (*Arctostaphylos* spp.) and *Ceanothus* species and cultivars, native grasses, *Penstemon centranthifolius*—grow under, around, and through each other. Lush mounds of Mediterranean spurge (*Euphorbia characias* ssp. *wulfenii*) and fine-bladed evergreen grasses such as California needlegrass (*Stipa californica*) and native fescues (*Festuca californica*, *F. glauca*) make big contrasts in form and texture against the many twiggy small-leaved dryland plants. Gleaming silver California fuchsia, (*Epilobium* ‘Wayne’s Silver’), with scarlet trumpetlike flowers, is dazzling against dark green rosemaries and manzanitas.

Now, on sunny summer days, visitors are greeted with delicious scents rising on waves of heat from the asphalt and encounter low-input, high-impact plantings



Drought-tolerant Oregon natives, such as manzanitas and the ‘Wayne’s Silver’ selection of California fuchsia, mingle with lavender, rosemary, and other Mediterranean-region plants in the parking lot at the Oregon Garden in Silverton.

that look good any day of the year. “It’s exciting to show people in this area that you can have a visually appealing display that doesn’t need much water,” says Desmarteau-Fast. (For some tips from Hogan on how to create a low-maintenance garden, see sidebar, left.)

LESSONS IN SUSTAINABILITY

The Queens Botanical Garden in Flushing, New York, doesn’t have a parking lot, it has a parking garden. Like its LEED

Platinum certified Visitor & Administration Center, described as “an encyclopedia of techniques that conserve water, tap renewable energy, and work with nature to mitigate global warming,” the parking garden is a whole system designed to provide environmental services and inspiration for home landscapes.

Parking “fingers” of permeable pavers set into a deep bed of gravel, alternating with mini bioswales, absorb water, let it infiltrate slowly, and divert most of it to

SEAN HOGAN'S LAWS OF LAZY GARDENING

Oregon-based horticulturist and nurseryowner Sean Hogan, who helped design plantings at the Oregon Garden in Silverton, offers these guidelines for North-western adapted, low-maintenance plantings that, with substitution of regionally adapted species, apply equally well in botanical garden parking lots and home gardens anywhere.

- No bare ground ever, especially in winter when many weeds grow.
- Use as many “spillers”—such as grasses, rushes, and rosemary—as possible over curbs and walls.
- Use plants, such as Chilean strawberry (*Fragaria chilensis*), that creep into the understory to conserve moisture and cover ground.
- Make sure that “sustainable” isn’t a toothless cliché; plant diversity and reduced needs for resources such as water and fertilizer are fundamental.
- Use legumes such as *Coronilla glauca* (syn. *Coronilla valentina* ssp. *glauca*) and other plants that fix nitrogen in their roots, such as *Ceanothus* spp., and hairy canaryflower (*Dorycnium hirsutum*), a silver subshrub tough enough for planted roofs.
- Incorporate as many winter-growing and evergreen plants as possible: winter-flowering Corsican hellebores (*Helleborus argutifolius*) keep neat rosettes of foliage all winter; native *Salvia clevelandii* contributes silvery-green mounds.

—K.B.



In the parking garden at Queens Botanical Garden, permeable pavers and gravel beds are used to absorb and channel rainwater. Here a laurel oak (*Quercus imbricaria*), which will eventually shade parked cars, grows amid little bluestem (*Schizachyrium scoparium*) and other native grasses in a gravel bed.

larger bioswales. Most of the water—even during hurricanes—is quickly absorbed, evaporated, or used by native plants, such as sweet flag (*Acorus calamus*) and shallow sedge (*Carex lurida*) in the bioswales. This reduces runoff to the city’s already overburdened stormwater system. Excess water flows into a native wet meadow designed to mimic the ecosystem prior to urbanization. Plants and oil-eating bacteria in the soil break down or sequester leaking car fluids, further reducing pollution of natural bodies of water.

The light gray pavers reflect light, reducing the urban heat island effect. Additional “gravel-grass” areas with large chunks of bluestone gravel planted with native grasses remain green while absorbing water and accommodating occasional parking. “You never go through a puddle, there’s always cool shade, and no hot asphalt,” says Patrice Kleinberg, the garden’s director of education and visitor services.

The mostly native plants are combined to evoke original habitats such as wet meadows, wetlands, prairies, and brushlands. Grouped by needs and tolerances—prairie plants where it is high and dry, plants that can take wet or dry conditions in bioswales—they receive no irrigation. As plant communities mature, the hope is that they will outcompete the invasive plants so problematic in disturbed areas and perhaps even colonize surrounding areas.

PUTTING IDEAS TO WORK AT HOME

As several public gardens around the country are proving, parking areas need not be boring or uninviting. Instead, they can be used to increase biodiversity and reduce pollution, while spotlighting some really tough but beautiful plants. Strategies used in parking lots can be applied to terraces, sidewalks and roadsides, neighborhood traffic circles and hellstrips, rain gardens, and even planted roofs. So I encourage you to slow down and take notice of the places you leave your vehicle, whether close to home or across the country, for there is lots to learn from parking lots.

Karen Bussolini is a garden writer, photographer, and eco-friendly garden coach based in Connecticut.

Taking Care of Indoor Plants in Winter

by Scott Aker

FOR MOST of the country, winter puts a real damper on outdoor gardening, making us appreciate the vibrancy of houseplants all the more. However, this time of year can be tough on indoor plants, too, thanks to lack of sufficient light, dry air, and cold drafts. Keeping them looking good involves close examination of all the cultural parameters found in our homes and matching these conditions as much as possible to your houseplants' native habitats.

Gardenias and calamondin oranges, for example, are quite happy kept in a sunroom all winter, where conditions—cool nights and warm days—mimic the subtropical climate of their places of origin. African violets and spathiphyllums need the consistent temperatures and high humidity found in more tropical areas. Cacti and succulents need cool nights, bright light, and dryness found in the deserts where they naturally grow. Definitive information on temperature needs can be found in books or online, but if you can't find the temperature range for the houseplants you are growing, find out what their natural range is and check out that area's climate for some clues.

THE RIGHT LIGHT

Light is the most limiting factor for houseplants, especially during winter when days are short and light is less intense, so you might want to consider supplemental lighting. The best lighting systems offer plants a balance of red and blue wavelengths, which

are important for photosynthesis. Because plants need a daily dark period to grow well, use a timer for your supplemental lighting to make sure this happens. You'll also save money on your electric bill that will quickly pay for the cost of the timer.



If you are relying solely on natural light, place plants that need the most light close to south- or west-facing windows. For less sunny spots, try species that do well with minimal light, such as cast iron plants (*Aspidistra* spp.), philodendrons, and snake plants (*Sanseveria* spp.).

HUMIDITY, WATERING, AND FERTILIZER

Many species grown as houseplants come from regions with high humidity, so they

don't appreciate the dry air in heated homes. One trick is to keep your home—or at least the rooms where your houseplants are—on the cool side, which keeps the relative humidity high. Grouping plants together helps to create a humid microclimate from

water evaporating from soil and being released from foliage. You can also purchase a humidifier or use trays filled with pebbles and water to put some extra moisture into the air. Just set pots in saucers on the pebbles and top up the tray once in a while.

As far as watering goes, take your cues from the weather. If skies have been overcast all week, you may not need to water for a few more days. And during the depths of winter, you may not need to water for several weeks if light levels are low and you also keep the temperature low. Every few days, use your finger to check the moisture level of the soil by poking it an inch or two below the soil surface. If you feel moist soil, you may not need to water yet. When you do water, be generous enough so that water drains out the bottom

of the pot. Collect drained water and discard it—never let your plants sit in it.

The only time most indoor plants need fertilizer is when you see new growth, which usually occurs spring through fall. However, supplemental lighting in the winter may also induce new growth. Simply apply a balanced liquid fertilizer at half strength the next time you water, and no more than once every two weeks during periods of new growth to mitigate buildup of salts in the potting soil.

PESTS AND OTHER PROBLEMS

If you take your houseplants outside during the warmer months, be sure to inspect them for pests and give them a quick but forceful shower either with a hose or in your bathtub before bringing them back indoors for the winter. Scale and spider mites are some of the most common pests you might encounter, both of which can be controlled with horticultural oil. If you spot mealybugs, consider discarding infested plants since these pests are nearly impossible to control.

As with your outdoor plants, don't expect perfection. You might see a few leaf



Scale, shown here on the underside of a poinsettia leaf, is a common pest that can be controlled with horticultural oil.

spots or dead leaf tips, but most of the time these can just be snipped off and the plant will be fine. And for some houseplants sold around the holidays, such as poinsettias, cyclamen, and kalanchoe, their needs are very difficult to satisfy in the standard household environment. If you're not up for that challenge, treat them as cut flowers—enjoy them while they look good, then add them to the compost bin when the show is over. 🌱

Scott Aker is a Washington, D.C.-based horticulturist who wrote the "Digging In" gardening column for The Washington Post for a decade.

Gardening Q&A with Scott Aker

HOLIDAY CACTUS BUD DROP

Last year I bought a Christmas cactus (Schlumbergia spp.) just after Thanksgiving. It bloomed beautifully, and I put it outside on my deck over the summer, where it got much larger. When I brought it inside for the winter, I noted that it was full of flower buds, with some of the leaves carrying three or four! Some have dropped off. Is there anything I can do to rescue the remaining flower buds? When is it likely to bloom this year?



These cacti can bloom at different times, most commonly around Thanksgiving, but generally in early winter. They respond to shorter days and cooler weather by growing flower buds at the ends of their cladodes, which are short, flattened stems that function as leaves.

It is normal for some of the flower buds to be shed prior to flowering if the bud set is particularly high. Keep the plant cool and keep the humidity as high as you can. Don't water it too frequently, make sure that it never sits in water, and give it bright indirect sunlight. A few more buds may fall off but the remaining ones will likely open sometime around Thanksgiving. You might even be able to keep it blooming through early December if you keep it in a cool location.

LAST-DITCH SOLUTION TO WEED PROBLEM

Over the years, a defunct drainage ditch between the street and my Missouri yard has become partially filled in with leaves and other organic debris. Its surface is now only about one foot below street level and my front lawn, and in summer, weeds grow in it with wild abandon. Sometimes the city comes and mows it down; sometimes I spray it with herbicide. I would like to vanquish the weeds for good and plant something else there. How should I prepare the site?

The drainage ditch may still function to control stormwater runoff, so I would advise you not to alter the grade until you have checked with the transportation department in your municipality. Wet meadows are an integral part of the natural landscape in your area, so designing a rain garden may be a good solution.

The best approach starts with eliminating the weeds that are there now. Mowing the area followed by treatment with a non-selective herbicide in late summer or early autumn is the most efficient way to do this. You may want to follow up with additional spraying for another entire growing season to ensure that the woody weeds are completely killed and that the bank of weed seeds in the soil has been exhausted before proceeding with planting. Among the plants that should do well in your region are queen of the prairie (*Filipendula* spp.), Joe Pye weed (*Eupatorium purpureum*), marsh milkweed (*Asclepias incarnata*), blue flag iris (*Iris versicolor*), palm sedge (*Carex muskingumensis*), and river oats (*Chasmanthium latifolium*).

—S.A.

E-mail your gardening questions to Scott Aker at saker@ahs.org.

Sweet Rewards: Fall-Fruiting Raspberries

by Keith Uridel

FALL-FRUITING RASPBERRIES (*Rubus idaeus*, Zones 4–11, 10–1) are among the easiest edible plants a gardener can grow. They are more accurately called primocane-bearing raspberries, since their fruit is borne on primocanes—the current year’s shoots—as opposed to summer-

be planted in either spring or fall in USDA Hardiness Zones 7 to 11, in spring only for Zones 6 and colder. You can plant potted raspberries anytime, since they have established root systems.

Soil Preparation Because we have very heavy soil at our farm, I like to till to a

grow a few plants here and there. In a row, build up your soil so it gradually rises six to eight inches above grade at the center of the row. That little bit of increase above grade does wonders at our farm, with ridged plantings producing nearly twice the crop in wet years as non-ridged plantings. Raised beds are another good alternative.

Irrigation During hot, dry weather, fall raspberries need consistent moisture for good production and berry size. I use drip irrigation, watering my rows twice a week during droughts. I have found that running two drip lines down each row, both off-center, is more efficient than a single line down the middle.

Fertilizing and Pruning Topdress established plants twice a year—first when primocanes start to emerge, which for me is in late April, and again in mid-June—with balanced organic fertilizer. I also foliar-feed with a blend of liquid fish emulsion, kelp, and molasses (for its iron) twice a month during the growing season, beginning when plants are fully leafed-out and continuing until berries appear.

The easiest and most productive way to maintain your raspberries is to prune them back to ground level any time from late winter to early spring before the new buds open. This will cause the plants to produce lots of primocanes that will begin bearing fruit in late summer. If you’d like to have fruits bearing over a longer period but are willing to accept lower overall fruit production, a more complicated option is to thin the canes to about four or five per square foot and prune off the tips of each cane in late winter. Then, in late summer, remove the floricanes that produced the early harvest.

Mulching Mulching is indispensable for weed control and moisture retention. The mulch should be coarse—fresh straw or pine bark mini-nuggets work well—to avoid crown rot.



Above: ‘Heritage’ is a reliable, disease-resistant heirloom variety. Right: Plant raspberries in rows to make harvesting easier.



bearing types, which fruit on second-year shoots called floricanes. At my family’s farm in southern Indiana, the first fall raspberries actually begin ripening in early July and continue in waves until the first frosts in October. Also known as ever-bearing, these are the sweetest of all raspberries, and because the fruit develops on the current season’s growth, they are easier to prune.

GROWING GUIDELINES

The best spot for growing fall raspberries is in full sun and well-drained soil. They are often grown in rows to facilitate harvesting, but are amenable to growing in small beds. Rows should be 18 to 24 inches wide, with plants two to three feet apart in each row. Leave eight to 10 feet between rows. Bare-root raspberries can

depth of eight to 12 inches prior to planting raspberries. Then, for each plant, I mix in two to four shovelfuls of sphagnum peat moss, a shovelful of compost, and a half-pound of worm castings.

For potted stock, I add one cup of balanced, organic fertilizer and one-eighth cup of kelp meal, which supplies many micronutrients not often found in general fertilizers. Bare-root stock is best planted without adding any granular fertilizers, but I topdress a few weeks after growth starts with the same fertilizers I use for potted stock.

Amending with organic matter helps ensure adequate drainage, but you can also plant in mounds, if you want to

PEST AND DISEASE PREVENTION

The best approach to pest and disease control is prevention. Select disease-resistant varieties and follow the cultural guidelines offered in this article. Remove any wild raspberries growing nearby because these may carry pests or diseases. Because raspberries are susceptible to verticillium wilt—a fungal disease that also plagues strawberries, tomatoes, peppers, potatoes, and eggplant—avoid planting them where any of these crops have recently been grown. Raspberries are sometimes attacked by Japanese beetles, but applications of neem oil will repel them.

RECOMMENDED CULTIVARS

'Autumn Britten' An early-ripening cultivar with large, sweet berries. It's one of the most productive fall reds I've grown. In fact, its five-foot-tall canes need a trellis or other support for its heavy fruit load.

'Heritage' This old-time, heirloom cultivar has many things going for it: strong canes, disease resistant foliage, reliable fruit production, and tolerance of fluctuating weather.



'Autumn Britten' produces large, early berries.

'Anne' A golden-hued fall raspberry that is one of the last to begin ripening on our farm, usually in late August. Production is better further south, where it is able to ripen more fruit before cool weather sets in. The rich deep gold berries have a sweet yet distinct flavor compared to red raspberries.

Sources

Backyard Berry Plants, Nashville, IN. (812) 988-0579. www.backyardberryplants.com.

Raintree Nursery, Morton, WA. (800) 391-8892. www.raintreenursery.com.

Nourse Farms, Deerfield, MA. (413) 665-2658. www.noursefarms.com.

ENJOYING THE HARVEST


Berries are ripe when they separate easily from the plant, and best picked the day you plan to use them because they don't store well. In addition to eating them fresh, they also make good jams or preserves, or freeze well for later use.

The quality and freshness of home-grown fall raspberries surpass anything you can find in the grocery store. Add to this their relatively easy growth requirements, and they make an exceptional addition to any edible garden.

Keith Uridel grows organic berry plants at Backyard Berries in Nashville, Indiana.

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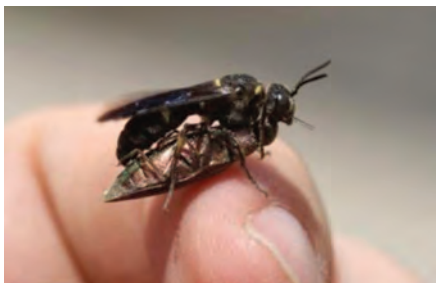
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Horticultural News and Research Important to American Gardeners

WASPS AND PURPLE TRAPS SLOW EMERALD ASH BORER INVASION

Since their introduction to North America in the 1990s, emerald ash borer (EAB) beetles have killed about 50 to 100 million ash trees, despite efforts by arborists, government agencies, homeowners, and others to contain their spread. But, two new early warning systems are helping to slow EAB infestations before they overtake uninfested areas.



A *Cerceris* wasp captures an emerald ash borer to parasitize with its young.

Cerceris fumipennis, a native wasp about the size of a common yellowjacket, has proven to be an efficient parasitic predator of EABs. More importantly, its ability to detect the presence of the beetles is far better than any existing technology. “By the time humans are able to detect EABs visually, the infestation is usually well-established,” says Frederic Miller, a research associate at the Morton Arboretum in Lisle, Illinois. “We hope this wasp will serve as an effective monitoring tool, giving us an earlier read as the EAB makes its way across the country.” To that end, the arboretum has launched a pilot citizen science biosurveillance program at local parks to detect the borers’ presence and hinder their spread across the Midwest. Through the *Cerceris* Identification Awareness Program, park users and employees are trained to keep an eye out for wasp nests that have EAB carcasses.

The U. S. Forest Service has also developed an early detection method in the form of purple, prism-shaped traps. In

2009, USDA scientists with the Animal and Plant Health Inspection Service (APHIS) determined that the brightly colored beetles were attracted to a particular shade of purple more than any other color. The APHIS team then determined that the best trap shape was a prism, and the most effective bait was manuka oil. This past summer, the Forest Service distributed more than 60,000 traps to state and local governments and tree conservation groups in all 48 continental states. These “Barney” traps, nicknamed for the similarly hued purple dinosaur beloved by small children, provide another relatively simple way to detect an infestation as early as possible.

For more information on the emerald ash borer and detection methods, go to www.emeraldashborer.info.

STAMP OF APPROVAL FOR BONSAI

The United States Postal Service (USPS) is celebrating the “beauty of bonsai” in 2012 with five new stamps depicting this horticultural art. Each features a popular design: Sierra juniper in semi-cascade style, a trident maple in informal upright style, a black pine in formal upright style, an azalea in multiple trunk style, and finally a cascade style banyan tree.

The stamps were designed by USPS art director and stamp designer Ethel Kessler and artist John D. Dawson. They will be issued as Forever® stamps that always carry the value of current first-class mailing rates.



One of five new bonsai-themed U.S. Forever® postage stamps to be available next year.

PEST-FIGHTING TURFGRASS FUNGUS

When it comes to lawns, fungi are usually seen as bad guys because they can cause diseases that wipe out grass. A study published recently in the *Journal of Environmental Entomology* indicates that there are some good guys, too, namely a fungus called *Neotyphodium*. It produces compounds that are toxic to certain insects, showing promise as an environmentally friendly turfgrass insecticide. However, these compounds are also toxic to grazing animals, which has been problematic for North American farmers.

In order to capitalize on the fungus’s potential benefits while mitigating its downside, scientists at Purdue University in Indiana, in collaboration with researchers in New Zealand, searched for strains of *Neotyphodium* that are both safe for livestock and can act as a natural insecticide. The few they found offer a way to “decrease the footprint of cultured turf and pasture grasses,” says Doug Richmond, an entomologist and lead author on the study. “And if you like having wildlife around, this is a benefit because it’s safe for those animals.” Soon farmers, golf course managers, and even homeowners may be able to obtain grass seed inoculated with the fungal strains in order to ultimately use fewer insecticides to manage lawns.

SAN FRANCISCO NAMESAKE PLANT ELEVATED FROM EXTINCTION TO ENDANGERED STATUS

In 2009, San Francisco botanist Daniel Gluesenkamp was on his way home from speaking at a climate change conference when he noticed an unusual-looking plant on the side of the road near where a housing subdivision was going up. He returned later to get a closer look and recognized the plant as Franciscan manzanita (*Arctostaphylos franciscana*), a rare flowering shrub that hadn’t been seen in the wild in the Bay Area since 1947.

Gluesenkamp immediately called a local non-profit, the Wild Equity Institute, which runs a program focused on

conserving endangered species in the Presidio Trust, a park in the Golden Gate Recreational Area. After government agencies relocated the plant to the park to protect it, Wild Equity also got it on the fast track toward Federal endangered species status.

“Franciscan manzanita needs both short term protection for the individual plant and long term protection to transform this one individual into a thriving species, and the Endangered Species Act provides both,” says Brent Plater, executive director of the Wild Equity Institute. Visit www.wildequity.org for more information.

NEW GENUFLECTING PLANT DISCOVERED

The Atlantic Forest, located along the eastern coast of Brazil, is known for its amazing biodiversity, much of which scientists believe remains undiscovered. Recently, a tiny plant with pink-and-white flowers turned up, exhibiting the unusual trait of burying its own seeds.

An international team of scientists, working to characterize and classify the plant, discovered that it represented an



Spigelia genuflexa

entirely new species in the genus *Spigelia*. They named it *Spigelia genuflexa* to reflect the plant’s ability to genuflect, or bow down, to place its seeds on the ground. This new species is the only member of its family to engage in geocarpy, the technical term for the self-planting mechanism. This ensures that the offspring stay close to the parent plant in a favorable environment for their survival.

NATIONAL PARK SERVICE AND GARDEN CLUB OF AMERICA TEAM UP FOR CONSERVATION

The Garden Club of America (GCA) and the National Park Service (NPS) have recently renewed their partnership

for native plant conservation and management. “This ongoing relationship has enhanced our ability to achieve mutual goals,” says Joan George, GCA president.

Through this partnership, national park staff will work with local GCA clubs to map, monitor, propagate, transplant, and inventory threatened or endangered plants that are native to the area. Other joint projects include removing invasive plants and conducting research. For example, previous initiatives under this partnership have included surveys of rare plants at Acadia National Park in Maine, which has culminated in a book, *The Plants of Acadia National Park*, released earlier this year. Other notable joint plant conservation efforts include removal of invasive plants at Congaree and Cuyahoga Valley national parks in South Carolina and Ohio, respectively, as well as the restoration of Texas trailing phlox (*Phlox nivalis* ssp. *texensis*) in Big Thicket National Preserve in Texas.

Visit www.gcamerica.org for more information.

BOSTON TREE PARTY

Back in 1773 it was tea, today it’s trees. Boston has launched a city-wide revolution in urban agriculture through an unconventional public art project called the Boston Tree Party. Tufts University art graduate student Lisa Gross started the project as part of her master’s thesis and has mobilized more than 50 community groups and organizations from all over Boston to plant and care for their very own pair of apple trees, creating an urban



Peabody Elementary School students joined the Boston Tree Party by planting two apple seedlings on school grounds.

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3 BARE ROOTS	And TO GET MORE FLOWERS, LONGER and MORE BEAUTIFUL	
4 FLOWERING	And TO GET MORE FLOWERS, LONGER and MORE BEAUTIFUL	
5 SEEDLINGS	TO PLANT THEM ALL SAFELY, UNIFORMLY – and GROWING MORE STRONGLY	
6 TREES TO GET	“TWO YEARS’ GROWTH IN ONE?”	
7 FRUITING	For EARLIER, HEAVIER, BEARING?	
8 BULBS	TO START THEM VIGOROUSLY, Beating Soil-rot, Hastening Better BLOOMING	
9 SEEDS	To Help GERMINATION Percentage and SPEED EARLIER, BETTER YIELDS, including Vegetables	
10 LAWNS	To Make QUICKER, deeper, TOUGHER TURF from SEED, SOD, Sodas, Sprigs, HYDRO-seeding	
11 XMAS TREES	17 HYDROSEEDING	22 FLOWERING PLANT
12 REFORESTATION	18 LANDSCAPING	COMPETITIONS
13 HYDROPONICS	19 PROPAGATION	23 INTERIORS CAPING
14 FIELD CROPS	20 ANTI-EROSION	24 CUT OVERS
15 BONSAI	21 ENVIRONMENTAL IMPROVEMENT	25 WEATHER DAMAGE
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PEOPLE and PLACES in the NEWS

Leadership Transitions at American Public Gardens Association and Coastal Maine Botanical Gardens

When **Dan Stark** resigned as executive director of the **American Public Gardens Association (APGA)** this past August, the association appointed **Casey Sclar** as its interim executive director. Sclar currently serves as the plant healthcare leader at **Longwood Gardens** in Kennett Square, Pennsylvania. In the past, he has been an active leader at APGA, chairing and serving on two of the organization's committees and advocating climate change issues for public gardens to the National Oceanic and Atmospheric Administration. In addition to handling day-to-day issues, Sclar will help maintain the APGA's important partnerships and collaborative programs with other organizations, such as the U. S. Department of Agriculture and the Let's Move! program spearheaded by First Lady **Michelle Obama**. He will also help plan the association's 2012 annual conference.



Casey Sclar

The Coastal Maine Botanical Gardens (CMBG) in Boothbay is also in the middle of a leadership transition, with **Maureen Heffernan** stepping down in August to become executive director at the **Myriad Gardens and Crystal Bridge Tropical Conservatory** in Oklahoma City. **Bill Cullina**, who has been CMBG's director of horticulture and plant curator for the last few years, is serving as the gardens' acting executive director until a permanent replacement is named.

orchard of sorts. Hospitals, universities, assisted living centers, city agencies, religious centers, low-income housing communities, and several other groups have banded together to metaphorically dump some tea in the harbor in the name of planting trees and eating healthy.

"The original Boston Tea Party was a symbolic performance that launched the movement toward American inde-

pendence," says Gross. "What if planting a pair of apple trees could also be a symbolic performance, too—of universal access to healthy food and bringing diverse communities together." Gross also notes that they want to promote heirloom varieties that aren't commercially available, because the potential loss of these species is "a loss of flavor, culture, history, and biodiversity."

The first group of saplings was planted in April, and will most likely bear fruit by 2015 when the project officially comes to an end. But, apple trees can live for up to 100 years, so Gross hopes they will provide Boston with fruit for many years to come. For more information on the project, visit www.bostontreeparty.org.

Written by Editorial Intern Helen Thompson.



2012 "Gardener's" Calendar

One of the benefits that TGOA/MGCA offers its members is the opportunity for TGOA/MGCA and AHS members to participate in our annual photography contest. From these entries, photos are chosen for our annual calendar. We encourage all men and women to become a member of TGOA/MGCA and enjoy the benefits of a worthwhile organization. For more information about TGOA/MGCA or to order calendars for \$6.95 postpaid, please call or e-mail:

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GREEN GARAGE® by Rita Pelczar

With so many tools and products to choose from, what's a gardener to do to select those that will make indoor and outdoor chores easier, safer, and more efficient? How about getting the scoop from another gardener? Contributing editor Rita Pelczar reports on products she has found useful or innovative in her garden, with an emphasis on earth-friendly products and supplies. Here she features an end-of-the-season miscellany of items she has found helpful during the year.

KEEPING BUGS AWAY

This year, I added a new product to my pesticide arsenal, and it has proven extremely effective on a variety of leaf and needle eating pests. **Captain Jack's DeadBug Brew** from Bonide is an organic insecticide/miticide whose active ingredient, spinosad, is derived from the fermentation of soil inhabiting bacteria. Because it primarily kills pests when they ingest the foliage of treated plants, it reduces any negative impact on beneficial insects than many other organic pesticides. It controls Japanese beetles, tent caterpillars, Colorado potato beetles, cucumber beetles, gypsy moths, bagworms, spider mites, thrips, and a number of other common garden pests, and is labeled for use on both edible and ornamental plants. It dispatched my pine sawflies with a single application. As always, be sure to follow the label's application recommendations and safety precautions. Visit www.bonide.com to find a dealer near you.



To apply the DeadBug Brew I used a battery-powered **Flo-Master Sprayer** from Charley's Greenhouse and Garden Supply—no pumping required. It has a telescoping wand that extends 35 inches, a padded shoulder strap, and a 1.3 gallon capacity that is a convenient size for small jobs. It runs on four D-cell batteries. Available from www.charleysgreenhouse.com.

A BOOST FOR PLANTS

POOpeas is a balanced soil-building fertilizer with—you've got to admit—a pretty clever name. It's granulated composted agricultural and dairy manure that is easy to apply to both new and established plantings as well as lawns. I've incorporated it into the soil for several shrubs I transplanted this fall. It contains both macronutrients and trace minerals which are broken down by soil microorganisms to provide a slow release of nutrients without the danger of runoff or plant burn. Available from www.poopeas.com.

EASY CLEANING

Cleaning my fall harvest of sweet potatoes was easy this year thanks to a nifty invention called **Skrub'a: the Scrubbing Glove** from Fabrikators. Slip them on and cleaning up your veggies



is easy; their lightly abrasive texture removes soil and debris so vegetables are ready for use in the kitchen, or storage. They work equally well on other root crops such as potatoes, carrots, radishes, and turnips. I also used them to clean up my butternut squash for storage in the cellar. Use them

outside, and you'll bring less dirt indoors. For adults, one size fits all; there's a smaller size for kids who like to help. Dishwasher safe and machine-washable. For more information, visit www.fabrikatorsusa.com.

EXTENDING YOUR PRUNING REACH

If you have hard-to-reach tree limbs or vines that need to be cut back or removed,

Fiskars' Pruning Stik Telescoping Tree Pruner

may become your best friend. Its lightweight handle extends to 12 feet—eliminating the need for ladders for most of your pruning needs. And it has a rope-free design and a chain driven “power stroke” sliding handle that maximizes both power and precision, since you can keep both hands on the pole. The head rotates 230 degrees to help with awkward angles. For thicker branches, a 15-inch saw blade is included. Available from www2.fiskars.com.



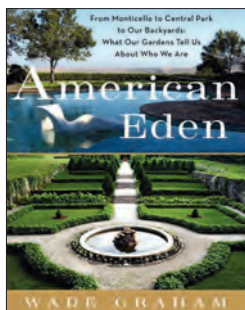
A contributing editor for The American Gardener, Rita Pelczar lives in North Carolina. She is the editor-in-chief of the AHS's Homegrown Harvest (Mitchell Beazley/Octopus USA, 2010).

Recommendations for Your Gardening Library

American Eden

Wade Graham. Harper, New York, New York, 2011. 462 pages. Publisher's price, hardcover: \$35.

AT FIRST GLANCE, *American Eden* by Wade Graham could be mistaken for a dull textbook on American garden history. Subtitled, "From Monticello to Central Park to Our Backyards: What Our Gardens Tell Us About Who We Are," this book is actually an engagingly told history of American landscapes from the colonial era to modern day.



Graham is a Los-Angeles-based garden designer and writer with a doctorate in American history, which explains the wide lens he uses in this book. Seasoned historians won't find much fresh

information in it, but they will be enchanted by Graham's way of rolling everything into a coherent story instead of simply presenting an endless recital of facts and events that mars so many histories. Interspersed with the narrative flow are autobiographical threads that provide valuable insights. For example, Graham explores the influence his childhood in Southern California had on his own quest to understand what our gardens and landscapes reveal about their owners and builders.

While the book does a good job of presenting the roles of various garden designers, landscape architects, architects, and theorists in the larger picture of American history, at times the relevance of particular information in the book is not fully explained. An extended discussion of the British Arts and Crafts Movement, for example, fails to show its influences in the United States, from California bungalows and Midwestern prairie gardens to New England Colonial Revival gardens.

For me, the book most comes alive in the discussion of the mid-20th century, with the work of pioneers Dan Kiley, Larry Halprin, and Isamu Noguchi. The author is on shakier ground when trying to sum up our own age—never an easy task. Including Alice Waters, Michelle Obama, and Martha Stewart in the same breath as Michael Van Valkenburgh, Kathryn Gustafson, and Oehme/van Sweden seems somewhat of a stretch.

American Eden is an ambitious book and certainly worthy of a long winter's read for anyone with an interest in landscape history and design.

—Judith B. Tankard

Judith B. Tankard is a landscape historian from Massachusetts and the author of Gertrude Jekyll and the Country House Garden (2011) and Beatrix Farrand: Private Gardens, Public Landscapes (2009).

Gathering: Memoir of a Seed Saver

Diane Ott Whealy. Seed Savers Exchange, Decorah, Iowa, 2011. 244 pages. Publisher's price, hardcover: \$25.

AT ITS HEART, Diane Ott Whealy's chronicle of the history of the Seed Savers Exchange is a story of generosity. The institution that she and Kent Whealy created is founded on the spirit of sharing and built around a community of like-minded people united by a common cause.



Ott Whealy begins by recounting the story of her grandparents and the dazzling pink and magenta flowers of their morning glories, the seeds of which were carried to Iowa by her Bavarian great-grandparents. As she and her then-husband Kent come to

understand the vulnerability of her grandparents' flowers and thousands of other heirloom varieties to disappearing forever, they recognize that the best way to ensure the survival of these plants is to develop a resilient network of gardeners and seed savers. *Gathering* traces the growth of Seed Savers from its launch at their kitchen table in 1975 to the present day, offering an insider's glimpse into the challenges and rewards of their work.

Much of the pleasure of this book lies in its gracious acknowledgement that the organization has flourished thanks to the gifts of many, and that in the end it will last beyond any individual. "It was not about what we sacrificed to make it all work," Ott Whealy writes. "Now that we had given this gift, it was no longer ours. It belonged to others, not us." As the organization grew beyond its founders, the book describes the sometimes wrenching changes it brought to their personal lives. But it also shines a spotlight on many others who were and are instrumental to the success of Seed Savers. The reader meets everyone from the amateur seed collectors at the heart of the organization to artists like musician Greg Brown and photographer David Cavagnaro, and author, philanthropist, and conservationist Amy Goldman.

Ott Whealy's warm, accessible writing and more than 100 color photographs and other illustrations weave together the story of an institution that belongs to everyone who cares about gardening, plant diversity and the quality of the food on our tables. For this reason, this book deserves a place on any gardener's shelf.

—David Buchanan

David Buchanan is a Seed Savers Exchange member and serves on Slow Food's Ark of Taste Committee. He runs a market garden and grows heirloom fruits and vegetables in Portland, Maine.

Seeing Trees: Discover the Extraordinary Secrets of Everyday Trees

By Nancy Ross Hugo, photographs by Robert Llewellyn. Timber Press, Portland, Oregon, 2011. 242 pages. Publisher's price, hardcover: \$29.95.

THERE ARE two kinds of bird watchers: those who travel the world seeking a glimpse of the rarest species, and those who watch cardinals and chickadees at their backyard feeders day after day, seeking to understand familiar birds' behavior and share their lives.



Nancy Ross Hugo is a backyard tree-watcher. She prowls her neighborhood (and the occasional botanic garden), delving into the deepest secrets of beeches, sycamores, and white pines. In mostly nontechnical, often poetic

language, and with the aid of remarkable close-up photography by Robert Llewellyn, she explains how trees grow, create leaves, reproduce, loft their seeds into the wind and, above all, differ. A continuing theme is how each species' evolutionary history and particular habitat have led to its traits, especially its reproductive peculiarities. Some of the book's most striking passages and pictures describe fruits and flowers you might hardly recognize as such.

The tree selection is solidly southeastern—both author and photographer live in Virginia—but while the book dwells at length on the Southern magnolia, it also includes wide-ranging species or points to similar relatives found in other climates.

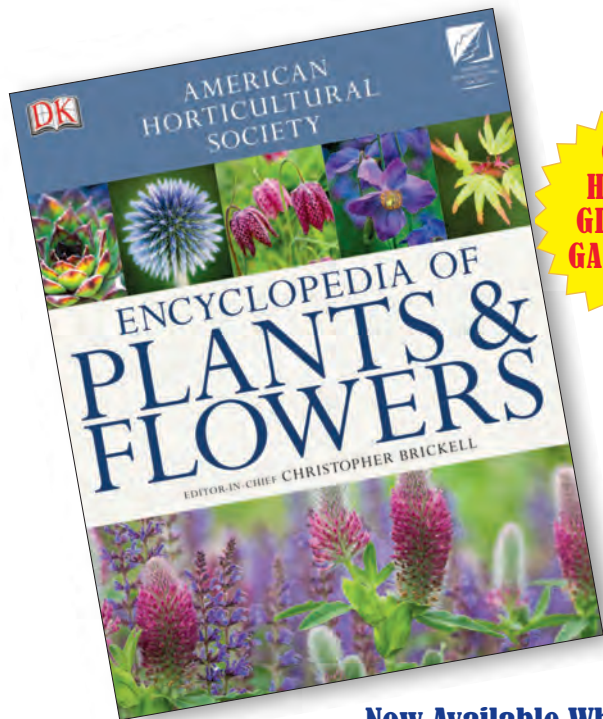
One of the endearing things about Hugo is her unwavering conviction that anyone else need only have the details of trees revealed to them to become as fascinated as she is. For those to whom a tree is a tree, this book would be a bit much. But for those like me—who consider ourselves tree lovers yet have never thought to examine an unfurling beech leaf with a magnifying glass, or watch, day by day, as a red maple's frowsy flowers become flitting helicopters—it's a revelation. To someone who thought it was enough to own half a dozen field guides, it was a reproach to see photos of the range of leaf colors on a single sweetgum or the balletic elegance of that emerging leaf, and have Hugo explain exactly what I've been missing. It sent me out to my own yard to peer at trees I'd lived with for years.

I'm not likely to devote the decades of patient observation, research, and reflection to my trees that the author and photographer clearly have. But they still have taught me something worthwhile about paying attention.

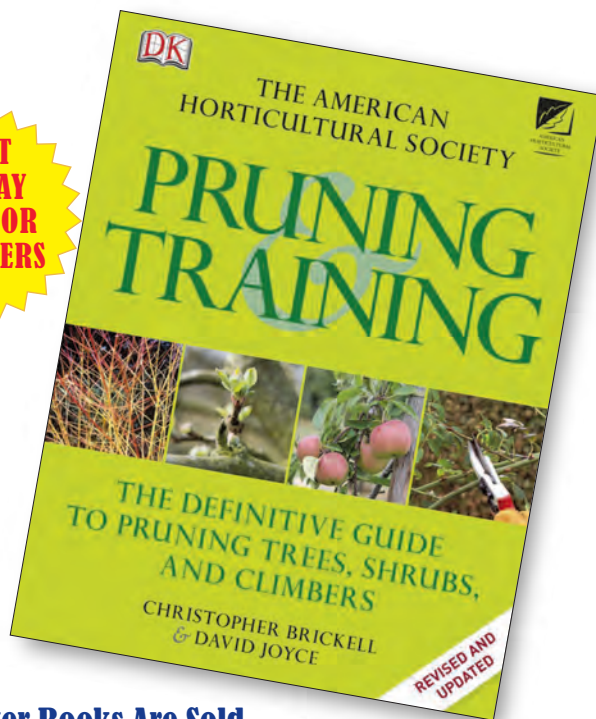
— Beth Botts

A garden writer and speaker in Chicago, Beth Botts is abashed at how little she has noticed about trees, considering that she was valedictorian of her Openlands TreeKeepers urban forestry class. She blogs at growinginchicago.com.

The American Horticultural Society References You Have Trusted for Years— Newly Revised and Updated!



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GIFTS FOR
GARDENERS**



Now Available Wherever Books Are Sold

GIFTS FOR THE GARDENER

Need some inspiration before you brave this year's holiday shopping rush? Here are several gift ideas ranging from practical to decorative for the gardeners in your life.



AHS Membership

Share inspiration, information, and a worthy cause with an American Horticultural Society membership. Your recipient will love a year's worth of *The American Gardener*, free admission and/or other discounts at more than 270 public gardens in the U.S. and Canada, an annual Seed Exchange, and much more. Membership starts at \$35. (703) 768-5700 or (800) 777-7931. www.ahs.org.



Dragonfly Drama Pot

Play up your garden's drama with this beautifully designed terra cotta planter and saucer. Made in Vietnam, the pots are molded by local artisans and then fired in an 800-degree kiln. Available for \$29 from Ten Thousand Villages. (877) 883-8341. www.tenthousandvillages.com.



Stretch Knee Pads

Made of flexible, machine-washable mesh fabric, these knee pads feature a half-inch gel cushion pad and adjustable Velcro straps. They come in three colors: rose, willow, and indigo. One size generally fits all. Available for \$19.95 from Gardener's Supply. (888) 833-1412. www.gardeners.com.



Mini Greenhouse

Get a head start on the spring growing season with this five-tier, steel-framed mini greenhouse. With a reinforced mesh cover to capture and retain daytime heat, it mimics the conditions of two hardiness zones further south. Available for \$59.95 from Plow & Hearth. (800) 494-7544. www.plowhearth.com.



Excalibur Food Dehydrator

Those with edible gardens will love drying homegrown fruits, veggies, and herbs in this nine-tray food dehydrator. It comes with a seven-inch fan, an adjustable thermostat, and 26-hour timer. Smaller four and five tray models are also available. \$259.95 from Excalibur. (800) 875-4254. www.excaliburdehydrator.com.

Solar Tea Lantern

Soaking up the sun's rays by day and emitting a warm glow in the garden after dark, this small tea lantern is both stylish and environmentally friendly. Each lantern contains an LED bulb and is made of hand-blown glass. Available for \$24.99 from Allsop. (866) 425-5767. www.allsopgarden.com.



Growums Garden Kits

Give kids a fun, easy introduction to gardening! With themes like Pizza, Taco, and Herb, Growums kits include seeds, coco pellets, and plant labels. Kids can also log on to the Growums website, which is full of games, garden cartoon characters, and tips for the pint-sized gardener. Available for \$9.99 from www.growums.com.



Natural Soy Candles

These soy candles could be just the thing to bring a little botanical flair into a home or workplace. They come in re-usable glass tumblers designed by six different artists, and many feature nature and plant themes. Available with or without fragrance for \$24 from Crash Candles. (847) 813-9866. www.crashcandles.com.



REGIONAL HAPPENINGS

Horticultural Events from Around the Country

NORTHEAST

CT, MA, ME, NH, NY, RI, VT

RAP THROUGH DEC. 18. **Trees and Gardens: Photography by Joseph Flack Weiler.** Exhibit. The Arnold Arboretum at Harvard University. Boston, Massachusetts. (617) 524-1718. www.arboretum.harvard.edu.

RAP NOV. 19. **Wave Hill History Walk.** Wave Hill. Bronx, New York. (718) 549-3200. www.wavehill.org.

RAP DEC. 3. **Holiday Bazaar at Merryspring.** Plant and arrangement sale. Merryspring Nature Center. Camden, Maine. (207) 236-2239. www.merryspring.org.

RAP DEC. 3. **Shrubs in Winter.** Class. The Garden in the Woods. New England Wild Flower Society. Framingham, Massachusetts. (508) 877-7630. www.newenglandwild.org.

RAP DEC. 3-FEB. 26. **Terrarium: Works by Jae Hi Ahn.** Art exhibit. Brooklyn Botanic Garden. Brooklyn, New York. (718) 623-7200. www.bbg.org.

Looking ahead

RAP JAN. 23. **Soil: When Geoscience Meets Botany.** Class. New England Wild Flower Society. Wellesley College. Wellesley, Massachusetts. (508) 877-7630. www.newenglandwild.org.

RAP JAN. 31. **Plant-O-Rama.** Trade show, lectures, workshops. Metropolitan Horticulture Group. Brooklyn Botanic Garden. Brooklyn, New York. (718) 623-7200. www.bbg.org.

MID-ATLANTIC


DC, DE, MD, NJ, PA, VA, WV

THROUGH JAN. 8. **Winter Flower Show.** Holiday display. Phipps Conservatory & Botanical Gardens. Pittsburgh, Pennsylvania. (412) 622-6914. www.phipps.conservatory.org.

RAP NOV. 19. **Thanksgiving Design.** Workshop. Green Spring Gardens. Alexandria, Virginia. (703) 642-5173. www.fairfaxcounty.gov/parks/gsgp.

RAP NOV. 19-DEC. 18. **Potomac Viewing Stone Group.** Bonsai exhibit. National Bonsai & Peijing Museum. U. S. National

Botanical gardens and arboreta that participate in AHS's Reciprocal Admissions Program are identified with the **RAP** symbol. AHS members showing a valid membership card are eligible for free admission to the garden or other benefits. Special events may not be included; contact the host site for details or visit www.ahs.org/rap.

Flower and garden shows that offer free or discounted admission to AHS members or present AHS awards are designated by a  symbol. For details on the specific benefits offered, visit www.ahs.org/events/index.htm and click on "Flower and Home and Garden Shows."

Arboretum. Washington, DC. (202) 245-4523. www.usna.usda.gov.

NOV. 24-JAN. 2. **Season's Greenings.** Exhibit. United States Botanic Garden. Washington, DC. (202) 225-8333. www.usbg.gov.

DEC. 2. **Turning a New Leaf.** Conference. Chesapeake Conservation Landscaping Council. Lancaster, Pennsylvania. (410) 212-7014. www.chesapeakelandscapes.org.

RAP DEC. 3. **Great Greens Sale.** Lewis Ginter Botanical Garden. Richmond, Virginia. (804) 262-9887. www.lewisginter.org.

RAP DEC. 7. **Transforming Public Spaces and Individual Lives.** Lecture. Morris Arboretum of the University of Pennsylvania. Philadelphia, Pennsylvania. (215) 247-5777. www.morrisarboretum.org.

RAP DEC. 10. **Conifers and the Winter Garden.** Guided walk and talk. Winterthur Museum, Garden, and Library. Winterthur, Delaware. (302) 888-4600. www.winterthur.org.


DEC. 15. **Floral Design Demonstration.** Brookside Gardens. Wheaton, Maryland. (301) 962-1400. www.brooksidegardens.org.


DEC. 18. **Taking Care of Your Christmas Flowers.** Class. Phipps Conservatory & Botanical Gardens. Pittsburgh, Pennsylvania. (412) 622-6914. www.phipps.conservatory.org.

Looking ahead

JAN. 11-13. **The Mid-Atlantic Nursery Trade**

Show. Baltimore Convention Center. Baltimore, Maryland. (800) 431-0066. www.mants.com.

 JAN. 14 & 15. **Virginia Home & Garden Show.** Doswell, Virginia. (804) 425-6556. www.agievents.com.

 JAN. 20-22. **Virginia Flower and Garden Expo.** Virginia Beach, Virginia. (757) 523-4734. www.vafgs.org.

SOUTHEAST

AL, FL, GA, KY, NC, SC, TN

RAP NOV. 19 & 20. **Annual Garden Festival.** Heathcote Botanical Gardens. Fort Pierce, Florida. (772) 464-4672. www.heathcotebotanicalgardens.org.

NOV. 25-DEC. 31. **Magic Christmas in Lights.** Garden display & activities. Bellingrath Gardens and Home. Theodore, Alabama. (251) 973-2217. www.bellingrath.org.

RAP DEC. 1-31. **Holly Hike.** Self-guided tour. Memphis Botanic Garden. Memphis, Tennessee. (901) 576-4100. www.memphisbotanicgarden.com.

RAP DEC. 2. **Plant ID Workshop.** Fairchild Tropical Botanic Garden. Coral Gables, Florida. (305) 667-1651. www.fairchildgarden.org.

RAP DEC. 3. **Holiday Greenery Wreath.** Workshop. Daniel Stowe Botanical Garden. Belmont, North Carolina. (704) 825-4490. www.dsbg.org.

RAP DEC. 3. **The Fairchild Challenge: Botanical Fashion Show.** Fairchild Tropical Botanic Garden. Coral Gables, Florida. (305) 667-1651. www.fairchildgarden.org.

RAP DEC. 3 & 4. **Orchid, Garden and Gourmet Food Festival.** Bonnet House Museum & Gardens. Fort Lauderdale, Florida. (954) 563-5393. www.bonnethouse.org.

RAP DEC. 5. **Grow Your Own Fruit for Stocking Stuffers.** Talk. Burden Horticulture Society. Baton Rouge, Louisiana. (225) 763-3990. www.burdenhorticulturesociety.com.

RAP DEC. 6. **How Do Trees Work.** Talk. Durham Garden Forum. Sarah P. Duke Gardens. Duke University. Durham, North Carolina. (919) 668-1707. www.gardens.duke.edu.

Mid-Atlantic Horticulture Short Course

LOOKING TO brush up on the basics, get certified, or learn the latest techniques? The Virginia Horticultural Foundation's Mid-Atlantic Horticulture Short Course offers all this and more to both professionals and home gardeners. This year, it will be held January 30 through February 2 in Newport News, Virginia, instead of Virginia Beach, where it was held for more than 40 years. There will be more than 50 classes and workshops to choose from, taught by horticultural experts from around the region and beyond. Topics include ikebana and bonsai, landscape architecture and design, arboriculture, plants and production, and business management.

The short course will feature two keynote speakers. On January 30, dressed in full colonial garb, Kirk R. Brown will personify John Bartram to speak about the life and times of America's original botanist and horticulturist. The next day, garden writer Amy Stewart will discuss insects in the garden and her recent book *Wicked Bugs*. The last day of the event will be devoted to the "Home Gardener Day Program" for a more general audience, with book signings, workshops, and refreshments. For more information or to register, go to www.mahsc.org.

—Helen Thompson, Editorial Intern

Wright, and My Small Garden. Lecture. Morton Arboretum. Lisle, Illinois. (630) 968-0074. www.mortonarb.org.


RAP DEC. 3. **Wreath Making Workshop.** Reiman Gardens. Ames, Iowa. (515) 294-2710. www.reimangardens.iastate.edu.

RAP DEC. 10. **Winter Conifer Walk.** The Brenton Arboretum. Dallas Center, Iowa. (515) 992-4211. <http://thebrentonarboretum.org>.

RAP DEC. 18. **Windy City Harvest Workshop: Fruit Tree Pruning.** Class. Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

Looking ahead

RAP JAN. 7. **The History of Botanical Art & Illustration.** Class. Morton Arboretum. Lisle, Illinois. (630) 968-0074. www.mortonarb.org.

 JAN. 20–29. **Cleveland Home & Garden Show.** The Great Lakes Expo Center. Euclid, Ohio. (800) 600-0307. www.homeandflower.com.

RAP DEC. 17. **Tuck Your Roses in for the Winter.** Workshop. Witherspoon Rose Culture. The Gardens at Witherspoon. Durham, North Carolina. (800) 643-0315. www.witherspoonrose.com.

Plants. Outdoor workshop. Birmingham Botanical Gardens. Birmingham, Alabama. (205) 414-3950. www.bbgardens.org.

NORTH CENTRAL

IA, IL, IN, MI, MN, ND, NE, OH, SD, WI

Looking ahead

RAP JAN. 14. **Winter ID of Native Woody**

RAP DEC. 1. **Jens Jensen, Frank Lloyd**

SOUTH CENTRAL

AR, KS, LA, MO, MS, OK, TX

RAP THROUGH JAN. 1. **Tremendous.** Exhib-

COLONIAL WILLIAMSBURG'S 66TH ANNUAL GARDEN SYMPOSIUM

BEAUTIFUL GARDENS: BOUNTIFUL OPTIONS



APRIL 15-16, 2012

Whether you garden for beauty or for food production, there will be plenty of "food for thought" at Colonial Williamsburg's 66th Garden Symposium. Guest speakers and Colonial Williamsburg landscape staff will offer a bounty of tips and ideas to make the best use of your time and space. Join us and discover alternative plant choices and techniques that will help you grow gardens that are beautiful and productive.

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Program information available at history.org/conted or call 1-800-603-0948
dchapman@cwf.org



Vertical Garden of Native Plants Unveiled in San Francisco

A UNIQUE vertical garden designed by Parisian research scientist, artist, and botanist Patrick Blanc enhances the new LEED-Gold certified Samuel Cuddeback Assembly Wing at Drew School in San Francisco, California. Blanc's Drew School vertical garden—his largest project to date in the United States—features a colorful plant palette comprising more than 100 California native species; some 4,500 plants cover a span of 1,720 square feet.

Completed this past April, the floral façade is punctuated by the colorful blooms of salvias, strawberries, and scarlet monkey flowers—plants that thrive in the temperate San Francisco climate. To promote biodiversity in urban landscapes, Blanc included arrays of orange- and red-flowering natives in the design scheme to create a habitat attractive to hummingbirds and beneficial wildlife. Further enlivening the wall's foliage displays are shrubby specimens such as chapparal nightshade (*Solanum xanti*) and *Ribes speciosum* and rare species like Channel Island snapdragon (*Galvezia speciosa*).

The Drew School vertical garden of natives is already a landmark watched with interest by green-wall aficionados, tourists, and passersby, alike. To learn more, visit www.drewschool.org.

—Alice Joyce, *Garden Walks* columnist for the San Francisco Chronicle

Botanica: Not Your Garden-Variety Ballet

IF YOU'RE LOOKING for something different than Tchaikovsky's "Waltz of the Flowers" in the Nutcracker, the Desert Botanical Garden (DBG) in Phoenix, Arizona, will deliver. On January 27 and 28, the garden and Ballet Arizona will team up to produce a limited performance of the contemporary flora-and-fauna-themed ballet, *Botanica*, at the local Orpheum Theater.

The brainchild of choreographer and gardener Moses Pendleton, *Botanica* will be performed by Pendleton's contemporary dance company, Momix. The ballet depicts the wonder of the natural world through three interwoven timelines—the passing of a day, the four seasons, and the evolution of life on Earth. It will feature vibrant costumes, acrobatic dancing, elaborate props, and a soundtrack that mixes classical themes from Vivaldi's "Four Seasons" with bird song and folk music.

Botanica is part of a larger program called "Dance in the Desert," for which DBG plans to build an on-site 350-seat theater with the Sonoran Desert as its backdrop. The theater will open in May 2012 with the inaugural performance of *Topia*, a new ballet by Ballet Arizona's artistic director Ib Andersen that is inspired by plants and creatures of the desert's ecosystem. For more information and to purchase tickets, visit www.dbg.org.

—Helen Thompson, *Editorial Intern*



Three ballerinas portray marigolds in *Botanica*.

it. Missouri Botanical Garden. St. Louis, Missouri. (314) 577-5100. www.mobot.org.

RAP NOV. 26. **Gardening 101 Workshop.** Garvan Woodland Gardens. Hot Springs National Park, Arkansas. (800) 366-4664. www.garvangardens.com.

RAP DEC. 1. **Orchidology.** Class. South Texas Botanical Gardens & Nature Center. Corpus Christi, Texas. (361) 854-7624. www.stxbot.org.

RAP DEC. 3. **Birds' Christmas Tree.** Bird-feeding activities, music, food. Fort Worth Botanic Garden. Fort Worth, Texas. (817) 871-7686. www.fwb.org.

RAP DEC. 10. **Natural Holiday Swag.** Workshop. Powell Gardens. Kingsville, Missouri. (816) 697-2600. www.powellgardens.org.

RAP DEC. 10. **Annual Holiday Open House.** Crosby Arboretum. Mississippi State Univer-

sity. Picayune, Mississippi. (601) 799-2311. www.crosbyarboretum.msstate.edu.

RAP DEC. 20. **Birding at Botanica.** Guided tour. Botanica, The Wichita Gardens. Wichita, Kansas. (316) 264-0448. www.botanica.org.

Looking ahead

JAN. 15. **Lively Gardens: Flora and Fauna.** Symposium. Hilltop Arboretum. Baton Rouge, Louisiana. (225) 767-6916. www.lsu.edu/hilltop.

SOUTHWEST

AZ, CO, NM, UT

RAP DEC. 2–JAN. 1. **Blossoms of Light.** Holiday display. Denver Botanic Gardens. Denver, Colorado. (720) 865-3500. www.botanicgardens.org.

DEC. 15. **Historical Tour of the Gardens.** Guided tour. Tucson Botanical Gardens. Tucson, Arizona. (520) 326-9686. www.tucsonbotanical.org.

Looking ahead

🌸 JAN. 13–15. **Maricopa County Home & Garden Show.** Arizona State Fairgrounds. Phoenix, Arizona. (602) 264-4161. www.maricopacountyhomeshows.com.

WEST COAST

CA, HI, NV

RAP NOV. 19. **Heritage Oak Walk.** Descanso Gardens. La Cañada Flintridge, California. (818) 949-4200. www.descansogardens.org.

RAP DEC. 4. **Window Box & Deck Gardening.** Class. San Francisco Botanical Garden. San Francisco, California. (415) 661-1316. www.sfbotanicalgarden.org.

DEC. 9. **Holiday Swags.** Workshop. Lyon Arboretum. Honolulu, Hawaii. (808) 988-0456. www.hawaii.edu/lyonarboretum.

RAP DEC. 10–29. **'Tis the Season for Holiday Plants.** Display, tours. San Francisco Botanical Garden. San Francisco, California. (415) 661-1316. www.sfbotanicalgarden.org.

DEC. 12. **Growing Proteas in Your Garden.** Lecture. San Diego Horticultural Society. Encinitas, California. (619) 296-9215. www.sandiegohorticulturalsociety.org.

Looking ahead

JAN. 12–14. **Conservation Conference.** California Native Plant Society. Town and Country Resort and Conference Center. San Diego, California. (916) 447-2727. www.cnps.org/2012.

NORTHWEST

AK, ID, MT, OR, WA, WY

RAP NOV. 19. **Dried Flower Wreath.** Workshop. Idaho Botanical Garden. Boise, Idaho. (208) 343-8649. www.idahobotanicalgarden.org.

RAP NOV. 26–DEC. 31. **Garden d'Lights.** Holiday display. Bellevue Botanical Garden. Bellevue, Washington. (425) 451-3755. www.bellevuebotanical.org.

DEC. 3. **Kadomatsu Workshop.** Floral design. Portland Japanese Garden. Portland, Oregon. (503) 223-1321. www.japanesegarden.com.

RAP DEC. 9 & 10. **Gifts & Greens Galore.** Plant sale. The Arboretum Foundation. Washington Park Arboretum. Seattle, Washington. (206) 325-4510. www.arboretumfoundation.org.

Looking ahead

🌸 JAN. 25–29. **Tacoma Home & Garden Show.** Tacoma Dome. Tacoma, Washington. www.otshows.com.

CANADA & EUROPE

DEC. 2–21. **Milner Christmas Magic.** Holiday display. Milner Gardens & Woodland. Qualicum Beach, British Columbia. (250) 752-6153. www.milnergardens.org.

DEC. 8. **Cedar Lecture.** VanDusen Botanical Garden. Vancouver, Canada. (604) 257-8335. www.vandusengarden.org.

DEC. 10 & 11. **Holiday Wreath & Centerpiece Sale.** VanDusen Botanical Garden. Vancouver, Canada. (604) 257-8335. www.vandusengarden.org.

Looking ahead

APR. 5–OCT. 7. **Floriade: World Horticultural Expo.** Venlo, The Netherlands. +31 77 399 81 30. www.floriade.com.

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PRONUNCIATIONS AND PLANTING ZONES



Most of the cultivated plants described in this issue are listed here with their pronunciations, USDA Plant Hardiness Zones, and AHS Plant Heat Zones. These zones suggest a range of locations where temperatures are appropriate—both in winter and summer—for growing each plant.

While the zones are a good place to start in determining plant adaptability in your region, factors such as exposure, moisture, snow cover, and humidity also play an important role in plant survival. The zones tend to be conservative; plants may grow outside the ranges indicated. A USDA zone rating of 0–0 means that the plant is a true annual and completes its life cycle in a year or less.

A–G

Acer griseum AY-sur GRIS-ee-um (USDA Zones 4–8, AHS Zones 8–1)
Acorus calamus AK-or-us KAL-uh-mus (4–11, 12–2)
Amsonia hubrichtii am-SO-nee-uh hew-BRIK-tee-eye (6–8, 8–5)
Aronia arbutifolia uh-RO-nee-uh ar-byew-tih-FO-lee-uh (4–9, 9–4)
A. melanocarpa A. mel-an-o-KAR-puh (3–8, 8–1)
Bulbine frutescens bul-BINE-ee froo-TES-enz (9–11, 11–8)
Calamagrostis × acutiflora kah-luh-mah-GROS-tiss ak-yew-tih-FLOR-uh (5–9, 9–5)
Callicarpa americana kal-lih-KAR-puh uh-mair-ih-KAN-uh (7–10, 9–6)
C. bodinieri var. giraldii C. boh-dih-NYE-air-eye var. jir-ALL-dee-eye (5–8, 8–3)
C. dichotoma C. dy-KOT-o-muh (5–8, 8–7)
C. japonica C. jah-PON-ih-kuh (5–8, 12–3)
Caltha palustris KAL-thuh pah-LUS-triss (5–9, 9–4)
Carex lurida KAIR-eks LEW-rih-duh (5–9, 9–5)
Chamaepericlymenum canadense kam-ee-pair-ih-KLY-men-um kan-uh-DEN-see (2–7, 7–1)
Collomia debilis kaw-LO-me-uh DEB-ih-liss (4–7, 7–1)
Cypripedium acaule sip-rih-PEE-dee-um uh-KAWL-ee (3–7, 7–1)
Dennstaedtia punctilobula den-STEED-shee-uh punk-tih-LO-bew-luh (3–8, 8–1)
Deutzia gracilis DOOT-see-uh GRUH-sih-liss (5–8, 8–5)
Edithcolea grandis ee-dith-KOHL-ee-uh GRAN-diss (min. 50°, 12–10)
Euphorbia characias ssp. wulfenii yew-FOR-bee-uh chuh-RAY-see-us ssp. wool-FEN-ee-eye (7–10, 10–7)
Festuca californica fes-TEW-kuh kal-ih-FORN-ih-kuh (6–10, 10–6)
F. glauca F. GLAW-kuh (4–8, 8–1)
Fothergilla major fah-ther-GIL-uh MAY-jer (5–8, 8–5)
Gaultheria procumbens gawl-THEER-ee-uh pro-KUM-benz (3–8, 8–1)
Gaylussacia baccata gay-loo-SAK-ee-uh buh-KAY-tuh (3–7, 7–1)

H–L

Heteromeles arbutifolia het-ur-ah-ME-leez ar-byew-tih-FO-lee-uh (8–10, 12–8)
Huernia kennedyana hoo-URN-ee-uh ken-neh-dee-AY-nuh (min. 50°, 12–10)

H. namaquensis H. nah-muh-QUEN-sis (min. 50°, 12–10)
H. pillansii H. pih-lan-SEE-eye (min. 50°, 12–10)
H. schneideriana H. schny-dur-ee-AN-uh (min. 50°, 12–10)
H. zebrina ssp. magniflora H. ze-BRY-nuh ssp. mag-nih-FLOR-uh (min. 50°, 12–10)
Hydrangea arborescens hy-DRAN-juh ar-bo-RES-enz (4–9, 9–1)
H. paniculata H. pan-ik-yew-LAY-tuh (4–8, 8–1)
Ilex decidua EYE-leks deh-SID-yew-uh (5–9, 9–1)
I. serrata I. sair-RAY-tuh (5–7, 7–5)
I. verticillata I. vur-tih-sih-LAY-tuh (5–8, 8–5)
Iris virginica EYE-ris vir-JIN-ih-kuh (5–9, 9–5)
Juncus effusus JUNG-kus eh-FEW-suss (6–9, 9–6)
Juniperus virginiana joo-NIP-er-iss vir-jin-ee-AN-uh (3–9, 9–1)
Kalmia angustifolia KAL-mee-uh ang-gus-tih-FO-lee-uh (7–8, 8–7)
Leucophyllum frutescens loo-ko-FIL-um froo-TES-enz (8–9, 9–8)
Lindera benzoin lin-DAIR-uh BEN-zo-in (4–9, 8–1)
Lycopodium obscurum ly-ko-PO-dee-um ob-SKYUR-um (3–8, 8–3)

M–R

Magnolia virginiana mag-NOLE-yuh vir-jin-ee-AN-uh (6–9, 9–6)
Mahonia aquifolium mah-HO-nee-uh ah-kwi-FO-lee-um (6–9, 9–6)
M. bealei M. BEEL-ee-eye (6–8, 8–6)
M. nervosa M. ner-VO-suh (5–7, 7–5)
Maianthemum canadense my-AN-theh-mum kan-uh-DEN-see (3–8, 8–3)
Malus sargentii MAL-us sar-JEN-tee-eye (4–8, 8–1)
Matteuccia struthiopteris muh-TEW-key-uh strew-thee-OP-tur-iss (2–8, 8–1)
Metasequoia glyptostroboides met-uh-suh-KWOY-uh glip-toh-stro-BOY-deez (5–10, 12–8)
Mimulus lewisii MIM-yew-lus loo-ISS-ee-eye (5–8, 8–5)
Myrica cerifera my-RIH-kuh seh-RIF-er-uh (7–10, 10–5)
M. pensylvanica M. pen-sil-VAN-ih-kuh (3–7, 7–1)
Oemleria cerasiformis ohm-LAIR-ee-uh seh-ras-sih-FOR-miss (6–10, 10–6)
Orbea schweinfurthii OR-be-uh shwine-FURTH-ee-eye (min. 50°, 12–10)
Osmunda cinnamomea ahz-MUN-duh sin-uh-MO-mee-uh (4–8, 8–1)
O. claytoniana O. klay-toh-nee-AN-uh (2–10, 9–1)
Pennisetum alopecuroides pen-ih-SEE-tum al-o-pek-yew-ROY-deez (6–9, 9–6)

Penstemon centranthifolius PEN-steh-mon sen-tran-thee-FO-lee-us (8–10, 11–7)
Pteridium aquilinum tuh-rih-DEE-um ak-wee-LIN-um (3–10, 10–1)
Pyracantha coccinea py-ruh-KAN-thuh kok-SIN-ee-uh (6–9, 9–3)
Quercus rubra KWER-kus ROO-bruh (4–9, 9–3)
Rhapis excelsa RAY-pis ek-SEL-suh (min. 60°, 12–10)
Rhus aromatica RUS ah-ro-MAT-ih-kuh (4–9, 9–1)
R. glabra R. GLAB-ruh (3–9, 9–1)
R. typhina R. tie-FEE-nuh (4–8, 8–1)
R. × pulvinata R. pul-vih-NAY-tuh (2–8, 8–3)
Rubus idaeus ROO-bus eye-DEE-us (4–11, 10–1)

S–Z

Salix discolor SAY-liks DIS-kul-ur (4–8, 8–2)
Sambucus caerulea sam-BOO-kus see-ROO-lee-uh (5–8, 8–4)
S. canadensis S. kan-uh-DEN-siss (4–9, 9–1)
Schizachyrium scoparium skits-ah-KEER-ee-um sko-PAR-ee-um (2–7, 7–1)
Sequoia sempervirens see-KWOY-uh sem-pur-VY-renz (8–9, 9–8)
Shepherdia argentea shep-HURD-ee-uh ar-JEN-tee-uh (3–7, 7–1)
S. canadensis S. kan-uh-DEN-siss (2–6, 6–1)
Stapelia flavopurpurea stuh-PEE-lee-uh flay-vo-pur-PUR-ee-uh (min. 50°, 12–10)
S. gigantea S. jy-GAN-tee-uh (min. 50°, 12–10)
S. grandiflora S. gran-dih-FLOR-uh (min. 50°, 12–10)
S. hirsuta S. her-SOO-tuh (min. 50°, 12–10)
Stipa californica STY-puh kal-ih-FORN-ih-kuh (4–10, 11–3)
Symphoricarpos albus sym-foh-rih-KAR-pos AL-bus (3–7, 7–1)
S. orbiculatus S. or-bik-yew-LAY-tus (2–7, 7–1)
Symplocos paniculata sim-PLO-kus pan-ik-yew-LAY-tuh (4–8, 8–4)
Taxodium ascendens taks-O-dee-um uh-SEN-denz (5–11, 12–5)
T. grandiflorum T. gran-dih-FLOR-um (4–7, 7–3)
Vaccinium angustifolium vak-SIN-ee-um an-gus-tih-FO-lee-um (2–8, 8–1)
V. corymbosum V. kor-im-BO-sum (3–7, 7–1)
Viburnum dilatatum vy-BUR-num dih-luh-TAY-tum (5–8, 8–5)
V. lantana V. lan-TAN-uh (4–8, 8–1)
V. nudum V. NEW-dum (5–9, 9–5)
V. trilobum V. try-LO-bum (2–7, 7–1)
Zelkova serrata zel-KO-vuh sair-RAY-tuh (5–9, 9–5)

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1. Publication Title: *The American Gardener*. 2. Publication No. 1087-9978. 3. Filing Date: September 13, 2011. 4. Issue Frequency: Bi-monthly. 5. No. of Issues Published Annually: 6. 6. Annual Subscription Price: \$35. 7. Complete Mailing Address of Known Office of Publication: *The American Gardener*, American Horticultural Society, 7931 East Boulevard Drive, Alexandria, Virginia 22308-1300. 8. Complete Mailing Address of Headquarters or General Business Office of Publisher: Same as above. 9. Full Names and Corporate Mailing Addresses of Publisher, Editor, and Managing Editor: Publisher—American Horticultural Society, same address as above. Editor—David J. Ellis, same address as above. Managing Editor—Mary Yee, same address as above. 10. Owner: American Horticultural Society, same address as above. 11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities: None. 12. The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during the preceding 12 months. 13. Publication Name: *The American Gardener*. 14. Issue Date for Circulation Data Below: Nov./Dec. 2010–Sept./Oct. 2011. 15. Extent and Nature of Circulation:

	Avg. No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Issue Published Nearest to Filing Date
a. Total No. Copies (Net Press Run)	19,019	19,289
b. Paid Circulation		
(1) Mailed Outside-County Paid Subscriptions Stated on PS Form 3541	17,158	16,341
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f. Total Distribution (Sum of 15c and 15e)	17,544	16,901
g. Copies Not Distributed	1,475	2,388
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Index compiled by AHS Volunteer Katherine Hoffman.

Bulbine frutescens: One Tough Beauty

by Paul Lee Cannon

LIKE MOST home gardeners, I have those “problem” areas—spaces with poor soil or root competition from large, shallow-rooted trees where little seems to grow. If you reside within USDA Hardiness Zones 9 to 11 and AHS Heat Zones 11 to 8 and share my pain, *Bulbine frutescens*, a succulent, evergreen groundcover native to South Africa, could provide a pleasing solution for those challenging spots.

Inside and out, bulbine (pronounced bul-BINE-ee) is a plant of many virtues. So let’s start with its good looks. The matte green leaves are linear and fleshy, like chives. A fast grower that reaches a height and spread of one to two feet, bulbine has an upright, clumping habit and spreads by underground stems or rhizomes. (Despite its name, it is not a bulbous plant.)

Reed-thin, leafless stalks rise above the foliage and culminate in spikes of star-shaped, lemon-yellow flowers with fuzzy stamens—that’s for the straight species. The cultivar ‘Hallmark’, however, is more compact and boasts orange buds and flowers that open to reveal bright yellow, fuzzy stamens. Whichever color you choose, bulbines offer year-round interest in Mediterranean climates. Their flowers, which bloom from spring through fall, also attract butterflies.

PUT TO THE TEST

My love affair with bulbine began with a small cutting from a neighbor five years ago. I literally jammed it into the soil of the parking strip in front of my home and gave it an occasional splash of water. Within weeks, the cutting took hold. After only a few months, I, as well as passersby, enjoyed lush green clumps bursting with blooms that danced in the breeze.

This initial success inspired further experimentation—in a planter box, on sloped borders to control erosion, and as a simple, fast-growing filler that morphed eyesores into eye candy. Bulbine delivered on all fronts.

The biggest challenge I put this plant through was as a groundcover underneath three 80-foot-tall coast redwoods (*Sequoia*



‘Hallmark’ is a compact cultivar of *Bulbine frutescens* with orange-yellow flowers.

sempervirens) in my backyard. Bulbines prefer well-drained, loamy, normal to alkaline soil, though they also grow admirably in poor, dry soil. The redwoods stood in heavy, acidic clay soil, where I’d tried (and failed) to establish other shrubs and groundcovers. So last fall, I took divisions of the bulbine from my parking strip and planted them in the redwood grove, leaving about six inches between each cutting. The rains came, the rhizomes took hold, and by the following April, *voilà!*—

a patch of deep-green foliage and fuzzy wisps of yellow filled most of the area.

LOVELY YET LOW MAINTENANCE

Once established, bulbine tolerates drought and is ideal for rock gardens, but it would be equally at ease in a tropical garden. Although plants can live on little water, they look and flower better with occasional irrigation during very dry or hot conditions. Otherwise, they need little care. Simply remove spent flower stalks to encourage new blossoms. When you’re ready to share the love, thin plantings by dividing the clumps in spring and handing them out at your next plant swap. 🌿

Sources

Arid Lands Greenhouses, Tucson, AZ.
(520) 883-9404.

www.aridlands.com.

Gardino Nursery, Delray Beach, FL.
(888) 323-1333. www.rareflora.com.

Paul Lee Cannon gardens in Oakland, California, and has written for Pacific Horticulture and the San Francisco Chronicle.



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