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Plant Internets & Other Botanical Wonders

Gary Raham

I love the synergy of science journalism. For example, Marta Zaraska recently wrote an excellent article in the May 2017 issue of *Science News* called “Smarty Plants” in which she outlined some of the recent discoveries in plant behavior. This compelled me to check out some of her sources and I immediately logged onto the internet—that 35-year-old wonder of human technology—to do so. I soon found myself in the crossfire of global research on the subject that included the humbling fact that plants probably beat Al Gore and/or the scientists of ARPANET to an effective worldwide communication network by at least 390 million years—when the first terrestrial forests began to rise. Perhaps this epiphany comes because we humans are, as evolutionary ecologist Monica Gagliano contends, plant blind.

By ‘plant blind’ she means that we, as big-brained active vertebrates, just can’t appreciate the talents of green stay-at-homes no matter how tasty they are or how beguiling they look in our gardens. Even the phrase ‘plant behavior’ that I used so cavalierly in the first paragraph was once anathema to serious scientists. Only in recent years have researchers discovered that plants communicate, learn, respond to light and sound—even count, in the case of Venus flytraps. (See “Plants are aware, but do they care” in the Education 2013 issue of CG.) Now, less blind researchers are appreciating other plant talents, including a networking system mediated by the thread-like extensions (*mycelia* or *hyphae*) of fungi.

Suzanne Simard, for example, a forest ecologist at the University of British Columbia, gave a wonderful TED talk recently about her 30+-year career studying how trees talk to each other. (https://www.ted.com/talks/suzanne_simard_how_trees_talk_to_each_other) The passion that

jump-started her scientific interests began one day when the family’s pet dog fell into an outhouse pit and her grandfather had to dig the animal out. In the process, he exposed a section of forest soil. A welter of roots, silvery threads of fungal hyphae, worms and insects, layers of minerals and a host of other things demonstrated to her quite clearly that the realm beneath her feet was truly a vast interconnected living/geological puzzle.

As her knowledge grew and direct experience in Canadian forests deepened, she suspected that the communication between individual trees was more profound than anyone expected. She knew about mycorrhizal networks (MNs)—the tangled interplay between tree roots and fungal mycelia—and suspected there was more to the story than just an exchange of food and water between trees and fungi. In her TED talk she describes the logistics of experiments using radioactive tracers (all while avoiding the attentions of a female grizzly bear) that showed that Douglas fir and paper birch trees within a forest trade carbon compounds and other materials back and forth in a complex web of interactions below ground.

Ultimately, she and other scientists have been able to show that the connections underground in a forest act very much like an organic internet. Some connection points or nodes coordinate more traffic than others so that certain trees can be designated as hubs or ‘mother trees.’ The traffic over this network includes things like food exchange, information about pest infestation, toxins, disease resistance and much more. And the network can get hacked, like the human internet. Non-tree plants like the phantom orchid sometimes tap into food supplies transmitted over the network.

She urges people to be aware that while the mycorrhizal network is

resilient, it can be seriously damaged by the loss of mother trees or by loss of diversity in the system—a little reminiscent of the mother tree in the 2009 movie, *Avatar*, for those of you who appreciate the power of imaginative science fiction.

Monica Gagliano, who I also mentioned earlier, is a young ecologist at the University of

sensitive plants (*Mimosa*) whose leaves fold up when touched or disturbed, to accommodate to falling. When first dropped 6 inches, *Mimosa* leaves folded up, anticipating a bad time ahead. After 60 tries with no traumatic experience, the *Mimosa* ceased that behavior—although when given a new experience, like a violent

shake, their leaves folded up again. However, when dropped again a month later, they still remembered that falling was no big deal. A memory feat we might not readily attribute to a plant.

So, never take those garden veggies at face value. Don’t be plant blind. And I hope you can appreciate the synergy of scientific discovery—although

be warned: it can be an addictive pleasure.

Gary Raham is a nature writer and illustrator. He is the author of: The Restless Earth: Fossils, The Dinosaurs’ Last Seashore, A Singular Prophecy, and other titles of science fact and science fiction. Download a free sample of Confessions of a Time Traveler at <http://www.biostrat.com/books/CTTindex.html>



Forest Internet. ILLUSTRATION: GARY RAHAM

Western Australia who has taught pea plants how to connect stimulus and response, much like Pavlov taught dogs to salivate at the sound of a bell. Gagliano showed that the pea plants could associate the operation of a fan with access to blue light—which is to a plant like dog chow is to a dog. See her article in *Nature* magazine at <https://www.nature.com/articles/srep38427>.

Gagliano also taught so-called

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Harvest Issue Deadlines

Advertising – 7/31

Calendar – 8/7

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Printed by Publication Printers, Denver



Editor's Letter

There will be no more offhand pronouncements from me about the weather. After my comments last month – “Spring came early this year... dry conditions have prevented weeds from taking off... it's looking as though we may be in the clear” (re frost) – we had a major hailstorm that decimated a lot of Front Range gardens; a couple of frosts; several inches of snow (on the plains!) on May 18-19; more rain than we've had all year; and nighttime temperatures that are still below 40°F. Summer should be right around the corner, but don't hold me to it.

Here's a glimpse into our Summer issue.

Natural science writer and illustrator Gary Raham tells you about Plant Internets that beat our human technological communications wonder by at least 390 million years.

Eric Johnson promotes fruit growing and apple biodiversity in Boulder. He discusses the rich diversity that once existed in Colorado orchards and recent efforts to restore some of it by rescuing and propagating old apple cultivars through grafting. Some of the major players include: plant explorers Addie and Jude Schuenemeyer of the Montezuma Orchard Restoration Project (MORP) and Curtis Utley from the JeffCo Extension Office who have been teaching grafting skills for years; and Walt Rosenberg of Masonville Orchards who sells “living sticks” (scions) of over 200 types of apples and other fruit.

Ever wonder how the pain from various stinging insects measures up? Entomologist Eric Eaton introduces you

to the Schmidt Sting Pain Index. Like a wine-tasting connoisseur, Dr. Schmidt describes and rates the subtle nuances of stings from various wasps, bees, ants, and even a Colorado caterpillar. The results may surprise you.

Penn Parmenter has been dealing with an influx of larger, destructive critters – “ground animals” (i.e., rodents) - in her high altitude food gardens. They gained the advantage after several warm winters but a varmint in the bread drawer caused her to draw the line. In the process she's learned to highly value predators, wild and domestic.

When the soil finally warms up this year it will be time to plant squash, both summer and winter types. I've included an excerpt on the topic, adapted from my book: Organic Gardener's Companion, Growing Vegetables in the West.

Summer means more time spent outside. Bill Melvin, owner of Ecoscape Environmental Design, writes about the importance of outdoor living spaces for greater well-being and shows you several examples. From simple to complex, private backyard rooms can draw us out of the house and offer a retreat, a place to unwind, de-stress, and restore connection.

Harlequins Gardens Nursery co-owner Mikl Brawner selected three of his favorite floriferous xeric plants to profile: Russian Hawthorn, Filigree Daisy, and Bridges Penstemon (Penstemon rostriflorus). All three are in the Plant Select program. (Be sure to check the brand new Plant Select book, Pretty Tough Plants.)

Amy Yarger, Horticulture Director at the Butterfly Pavilion, tells you about

some of the community pollinator gardens that they've installed around Denver, including the Senior Habitat Gardening Program. Every year BP receives dozens of applications for this program. They select three or more centers and plant pollinator gardens there every year.

Two years ago, Panayoti Kelaidis of Denver Botanic Gardens traveled to Turkey and Greece to explore the endemic flora (and some fauna) of the two great Mt. Olympus', thanks to a scholarship from Chanticleer Gardens in Wayne, PA. In our April 2016 issue he wrote about his explorations in Turkey. Here he continues, chronicling hikes up the Greek Mt. Olympus. Sit back and enjoy a journey to the ancient Mountain of the Gods through the eyes of this renowned Greek-American plantsman.

Kelly Grummons answers questions about snow damaged trees, rejuvenating iris beds, plants that are both ornamental and edible, and Boxelder bugs.

We also include an excerpt from a new book by Adam Brock, co-founder and co-director of the GroHaus in Denver. Change Here Now: Permaculture Solutions for Personal and Community Transformation is more about social permaculture than gardening, but as he says, “many of the ecological metaphors we use in the garden apply equally well to community.”

Garden Tours are coming up. Check our Calendar and Marketplace Page for details. You may also be interested in a tour of the Hayman WildFire site (15 years later) offered on June 24: “See firsthand the surprising state of recovery and consequences on native plants, watershed conditions, and ecology.” To learn more and to register, go to: <https://npm.eventbrite.com>.

Jane Shellenberger

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NOTABLES

“Doing More With Less” Online film spotlights need for water-wise plantings

Don Ireland

We live in Colorado, a state with unparalleled beauty and so popular that thousands of millennials are moving here annually, fueling a building boom among the greatest in the nation. That boom is evident in increased traffic and traffic jams throughout the Front Range and into the mountains.

The growing population also creates additional demands for water. At home, people need it for daily essentials: drinking, bathing, laundry, and cooking. But local water authorities and providers estimate 40-60 percent of annual home water usage goes to outdoor watering. It's time to sound the alarm and consider what's important and what's not when it comes to outdoor watering and gardening.

A new 11-minute film, “Doing More With Less: The Challenge and Opportunity of Water Efficiency”, addresses all of us in Colorado. A cooperative effort of the Colorado Water Conservation Board and the One World One Water Center at Metropolitan State University of Denver, the film is available free online on YouTube (<https://www.youtube.com/watch?v=MyxxzugCFXs>) and on the water efficiency page of the CO Water Conservation Board's website. Supporters of the movie's message encourage water providers, conservationists, environmentalists, community organizations, and leaders to post the film link on websites and via social media outreach.

For years, organizations like Colorado Water-wise and Plant Select have touted the advantages of water-thrifty plants for our semi-arid climate. Aware gardeners have also been adding more native plants to landscapes both to save water and help preserve native pollinators that rely on these plants.

With ever-increasing water rates, some people decide to reduce the size of water-thirsty bluegrass lawns purely for financial reasons. But when the next drought inevitably occurs, many Coloradans may not be allowed to water lawns, and when that day arrives, the future of what is growing outside our homes will become a frequent topic of discussion for those who hadn't given it a thought previously. With the release of Colorado's first water plan in 2015, the Colorado Water Conservation



Artist's vision for xeriscape in Sterling Ranch development (photo courtesy of Havey Pro Cinema)

Board set a measurable objective of reducing water demand by 400,000 acre feet by 2050. To accomplish this, we all need to be smarter about “Doing More with Less”, especially outdoors, instead of pulling more water from our rivers.

Jim Havey of Havey Pro Cinema studio, which created the film, says the effort took more than 6 months and included shooting

locations from Denver to Fort Collins, the Western Slope to the Eastern Plains, the Roaring Fork Valley to the Fryingpan River, and many locations in between. Colorado water professionals have long advocated the importance of managing this vital resource but the filmmakers didn't just talk to experts. “We wanted to interview some everyday people who are concerned and doing things too,” says Havey.

Sterling Ranch, the futuristic, high-tech planned development in Douglas County, is spotlighted for its plans to manage water demands as the 12,000-home community is built in the coming decades. So is 51-year-old Cherry Creek 3 HOA in Denver, which has slashed its water consumption by more than 10 million gallons with high-efficiency toilets and water-wise landscaping.

“Doing More With Less” highlights the need for all regions and all residents to get involved with water efficiency, so Colorado can manage the needs of an ever-growing population in the years ahead. “Without water, you can't think about kayaking a river, drinking locally-crafted beer, or growing a tomato plant. Water is an essential ingredient for life and living well no matter where you are in the Centennial State,” said a person involved in the film. “Spreading the idea of water efficiency to our 5.4 million citizens is a daunting task, which is why the film sponsors hope everyone will use their online outreach and whatever means available to get the message to young and old and to every community in Colorado.”

(Havey Pro Cinema, known for its historical films and documentaries featuring Colorado, has won two Emmys and multiple other awards. It also produced “The Great Divide,” a full-length documentary explaining the importance of water from pioneer days to present-day Colorado.)



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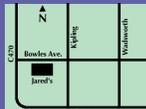


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Community Pollinator Gardens

Amy Yarger

When people ask me about the size of our gardens at the Butterfly Pavilion, I usually reply that our facility sits on about eleven acres, about half of which is developed habitat gardens. However, this time of year our gardens seem even bigger; indeed, they seem to stretch over the entire Denver metro region. I'm not just saying that because I have been weeding for hours this spring, either.

Truth is, Butterfly Pavilion has been responsible for the installation of pollinator gardens in schools, local community centers and parks as part of our mission to improve habitat for beneficial invertebrates locally and globally. Abiding by habitat gardening principles, the plants chosen provide food, shelter, water, and can thrive in our local conditions. The gardens also provide resources for the human community as accessible spots for education and enjoyment.

The Senior Habitat Gardening Program began in 2002 as the brainchild of Sarada Krishnan, Horticulture Director at the time, and the National Wildlife Federation. Every year since then, the Butterfly Pavilion has selected and planted butterfly gardens at three or more centers. Each winter, we receive dozens of applications for the program so the most difficult challenge is choosing the participants for that year! Once we narrow the applicants down to ten, a Butterfly Pavilion horticulturist visits each site for further evaluation. The communities that are chosen receive one of our stellar outreach programs about butterfly biology. Soon after, Butterfly Pavilion gardeners and volunteers bring plants, tools, soil amendments, and a lot of enthusiasm.

Planting day is always festive and exciting. Some residents can't wait to get their hands dirty and plant, while others tell us that they enjoy "watching somebody else work for a change." We make sure there is something for seniors at every level of ability to enjoy, whether it's planting seeds, helping to water the garden, or just chatting about their own experiences, gardening and otherwise. We're always amazed at the garden knowledge that many of these folks possess; some have gardened for more than 70 years. These folks are the true perennials, eager to experience life to the fullest no matter what their age.

Butterfly Pavilion also designed and planted a pollinator garden on Good Samaritan Hospital's Lafayette campus in 2015. Called the Healing

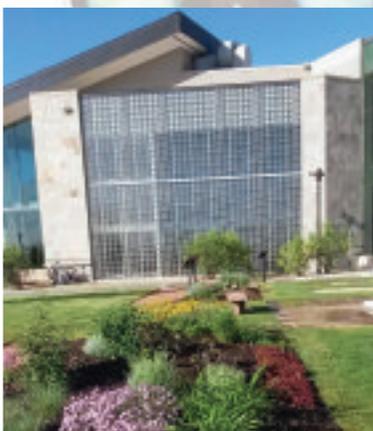
Garden, this blooming spot provides a quiet space for reflection in the sunshine and is also easily seen from the lobby windows. Viewed from the upper floors, the shape of the garden is a stylized butterfly. Numerous butterflies and hummingbirds were spotted during its first summer – a true mark of success!

I love pollinators for many reasons, but I won't deny that these creatures are important for keeping me well fed. Some of our newer community pollinator gardens make the connection plain. Thanks to support from an Adams County Open Space grant, we worked with Hyland Hills Recreation District last summer to plant a pollinator garden as a backdrop for the new community gardens at Clear Creek Valley Park between Lowell and Tennyson off 58th Avenue. By increasing the native pollinator population from our smallest solitary bees to the showy two-tailed swallowtail, local gardeners should see increased harvests of some of their favorite crops. Many of the community gardeners are also including flowering plants in their own plots, and a local beekeeper has been working to improve forage throughout the park.

The support of the Colorado Garden Foundation allowed us to collaborate with Sprout City Farms, a local urban farm organization, to begin planting over 6300 square feet of pollinator gardens at their three farms in the Denver metro region. The first of these gardens was installed last fall at the Mountair Community Farm; volunteers planted hundreds of native wildflowers and grasses in locations where nearby beehives and orchards would benefit most. This year, two more gardens will be completed at the Denver Green School and the Mental Health Center of Denver.

These small pocket gardens provide valuable habitat for native pollinators and improve sites that were often neglected or relatively barren. To me, however, the most important result is the engagement of local community members. A garden can be different things to different people – a living laboratory, a haven for meditation, a place to exercise, a way to give back. People of all ages and backgrounds have a stake in healthy pollinator populations. By raising awareness and spreading the message that everyone can help in measurable and significant ways, partners can make progress in conserving these imperiled animals.

Amy Yarger is Horticulture Director at the Butterfly Pavilion in Westminster



Good Samaritan Healing Garden, June 2016

At right, planting day at Sprout City Farms



Senior Habitat Gardening Program at Sunrise Senior Living Boulder PHOTOS: COURTESY OF BUTTERFLY PAVILION

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Adam Brock

As co-founder and co-director of The GrowHaus, Adam Brock helped transform an abandoned half-acre greenhouse into an award-winning hub for healthy food and urban agriculture. Located in Colorado's most polluted zip code, in Denver, The GrowHaus now engages thousands of low-income residents per year, grows 1,500 heads of lettuce per week (among other things), and has an annual budget of \$1 million.

Adam, a Denver-based facilitator, entrepreneur, and designer, is a co-chair of Denver's Sustainable Food Policy Council, a TEDxMileHigh speaker, and has been named one of "Colorado's Top Thinkers" by the Denver Post. He also currently serves as Director of Social Enterprise at Joining Vision and Action, Denver's premier consulting firm for social change organizations.

"Newawashi" is an excerpt from his newly released book, *"Change Here Now: Permaculture Solutions for Personal and Community Transformation"*. Why did Adam decide to write about effecting personal and social change?

"As I dove into the world of urban permaculture in starting up The GrowHaus, it quickly became clear to me that growing food would be the easy part—even with Colorado's notoriously fickle weather. Much more challenging was the work of gaining community buy-in, selling our vision to funders, and jumping through many layers of regulatory hurdles. Eventually, though, I realized that these problems, too, could be approached using permaculture

thinking, and that many of the ecological metaphors we use in the garden apply equally well to community. This was the impetus for my journey into 'social permaculture' that led to the writing of my book."

Nemawashi

From *Change Here Now: Permaculture Solutions for Personal and Community Transformation* by Adam Brock

Every group goes through a distinct process of "forming," "norming," and "storming" before the members can work together cohesively. Honor this process and allow it to take its time.

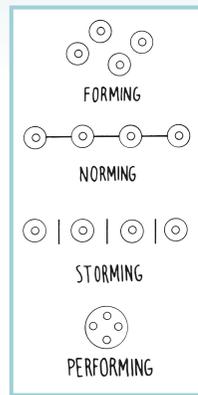
Just like people themselves, groups of people have a life cycle. Generally, that cycle starts with a lot of excitement and energy, but before too long, the going gets tough. Financial challenges, personality conflicts, differences of opinion—any number of things can send the group spinning out of control, its original idealism devolved into squabbling over petty differences. In many cases, this squabbling deflates the energy so much that the group falls apart. What's the trick to avoiding these pitfalls of group implosion? It's not about avoiding conflict; instead, we need to learn to honor conflict as a healthy and necessary part of the group life cycle.

In his book *In the Bubble*, futurist John Thackara describes the use of the Japanese word *nemawashi* to encapsulate a whole process of community building—a process which many of us Westerners seem to have forgotten. The word literally means "turning the roots," referring to the transplant shock a plant experiences when put in new soil. In colloquial Japanese culture, however, *nemawashi* refers to the process of the members of a group getting to know each other. Implied in the term is the recognition that every group goes through a distinct series of phases, and honoring the steps is vital to healthy group success.

Generally, *nemawashi* takes place within "human polycultures"—groups of three to ten that are brought together via circumstance rather than blood ties. Ideally, the end result is an interdependent community, a group of people who need each other, who can accomplish things as a team that they can't alone. Each member

trusts his or her peers and feels secure about his or her role in the group.

Here in the United States, a more familiar framework for the *nemawashi* process is Bruce Tuckman's four-stage model of group development, originally proposed in 1965. While Tuckman's model is ordered as forming, storming, norming, performing,



Next comes the norming phase, where the group determines the types of behavior and members of the group that are acceptable. This can happen deliberately—as in a process of naming norms—or unconsciously, when one person's specific patterns of behavior or language are replicated by the rest of the group. It's generally the phase in which rituals are established, when meeting times and processes start to become formalized, and when people begin to differentiate their respective roles in the human polyculture.

After norming comes storming—the phase of conflict. This conflict can take many forms—the

tension between elders and radicals, financial struggles, a disconnect between the vision of champions and the day-to-day needs of mavens, members getting burnt out, or any number of external pressures. Regardless of its proximate causes, conflict frequently leads to a shakeup of group membership or identity, resulting in what some have labeled as the sub-phase, mourning.

Finally, the group reaches the fourth and final stage of performing. Just as a storm can bring much-needed moisture to a parched landscape, the storming phase of *nemawashi* can bring the group to a new level of cohesiveness. With healthy conflict resolution strategies and skilled facilitation, the storming phase actually brings the group closer together, creating intimacy through adversity and establishing a new level of trust between group members.

Understanding the process of *nemawashi* allows us to consciously design the groups we're a part of. In fact, the connections between *nemawashi* and the creative process are striking—forming is equivalent to setting goals, while the norming phase mirrors analysis and assessment. Storming represents the messy process of design itself, in which potential conflicts among sectors are resolved into a harmonious whole. Finally, the performance phase represents the implementation of the design, in which the original goals of the group are made real.

Of course, no group will proceed through these steps as clearly as they are outlined here. Just as the creative process is realistically more of a looping spiral than a straight line, the various stages of *nemawashi* are continually intermingling throughout the lifecycle of a group. The important thing is to be aware of which phases are at play and to navigate them with clarity.

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Grafting to Preserve Apple Diversity

Eric Johnson

Backyard gardeners have access to tremendous vegetable diversity through seed catalogs and exchanges. As a result, we can enjoy colors, flavors, and textures never found in grocery produce aisles. That's because outstanding cultivars, many of historic importance, don't meet the packing and uniformity needs of large commercial growers.

Similarly, a huge variety of tree fruits is available to do-it-yourselfers, but fruit growing skills are not as widespread as gardening skills are. Therein lies an opportunity because starting new trees by grafting superior fruit cultivars onto rootstocks is not hard and the potential reward is great.

Apples are a good example. Once, there were more than ten thousand apple cultivars in the United States. Families would grow one apple for sauce, another for pies, and others for drying or winter storage. The trees were often regional varieties adapted to local climates, pests, diseases, and traditions. Sadly, when apples became a supermarket commodity, thousands of cultivars fell off the radar in favor of the few types commonly found in stores.

Different rootstocks produce different tree sizes and vary in their ability to resist high winds, drought, and disease, so choose carefully. Cambium – the living tissue that generates new wood to the inside and new bark to the outside – is exposed in a cut made through the rootstock with a sharp knife. A scion, from a tree with the desired variety of fruit, is cut so that when attached to the rootstock, the cambial tissues of both are in close contact. The graft is wrapped to prevent moisture loss, and cell growth joins the rootstock and scion in a few weeks. The grafted tree can be planted out in the spring. With a little instruction, it's relatively easy to graft with no more than a cutting board, very sharp knife, and some strips of stretchy plastic.

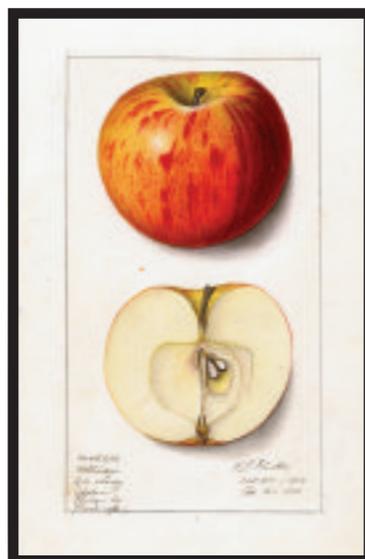
The Montezuma Orchard Restoration Project

Through grafting, heritage varieties have been rescued from the brink of extinction. Dedicated "fruit explorers" like Addie and Jude Schuenemeyer of Montezuma County, through the Montezuma

"Now we get teenagers right on up through baby boomers." Years of effort have renewed community interest in apples and orchard history in Montezuma County. Last year, a pilot project harvested apples from historic orchards to make juice for several cideries. There are new orchards being planted, including at schools in Cortez and elsewhere in the community, and a new planting this year at Colorado State University's research station in Yellow Jacket.

JeffCo Extension Grafting Workshops

Of course, CSU Extension has long been a mainstay of horticultural education in Colorado. Curtis Utley, Horticulture Extension Agent for Jefferson County, has been teaching grafting workshops since 2012. Initially his audience was Jeffco Master Gardeners. This year, he offered four public workshops and filled all of them. He also led workshops for



The Walbridge Apple, currently lost to horticulture, may be alive somewhere on the Front Range. (U.S. Department of Agriculture Pomological Watercolor Collection. Rare and Special Collections, National Agricultural Library, Beltsville, MD 20705)

students at Arvada West and Green Mountain high schools. Green Mountain High will be planting out young trees, including the Colorado Orange, on school grounds. Utley plans to continue the workshops in the future, usually around the first week of April.

Some of the interest Utley has

Once, there were more than ten thousand apple cultivars in the United States... The trees were often regional varieties adapted to local climates, pests, diseases, and traditions. Sadly, when apples became a supermarket commodity, thousands of cultivars fell off the radar in favor of the few types commonly found in stores.

Masonville Orchards

There are still a thousand or more available today, but not in a shopping cart. For example, Colorado's Masonville Orchards sells living sticks (scions) for grafting. Owner Walt Rosenberg has scions of more than 200 types of apples and other fruit, available February through April and listed on the Masonville Orchards website. I received a handful of Winesap apple scions from Rosenberg this spring, and grafted them to a semi-dwarf rootstock. He says that most of his customers are hobbyists, serious backyard gardeners, and small growers – indicating that grafting skills are out there, even if they aren't viewed as an everyday gardening skill.

Dormant Grafting

A fine way to start propagating apples is with dormant grafting, typically done in late winter. The rootstock, which will form the new tree's root system, can be mail ordered or propagated at home.

Orchard Restoration Project (MORP), have located a few regional apples previously thought to be lost. One is the interestingly-named Colorado Orange, a late-ripening winter storage apple that originated near Canon City before becoming popular both in Colorado and nearby states. Very few people alive today have ever tasted a Colorado Orange. Fortunately, its rescue from obscurity gives us a chance for a new culinary adventure as well as a piece of living history.

MORP's work extends far beyond those rediscoveries. Recent genetic analysis of 295 old orchard trees in the area, indicate about 130 different cultivars in the group. In other words, there was remarkable diversity in these orchards a hundred years ago. Some remain to be rediscovered. On top of that, MORP has identified a number of promising seedling apples that may be propagated and named.

The Schuenemeyers have been teaching grafting skills around southwest Colorado for years. "Ten years ago most of the people that cared about grafting were in their 80s and 90s," Jude told me.

WANTED – BIG OLD APPLE TREES

Widespread Malus, an apple advocacy project I dabble in with my neighbor Brant Clark, is on the lookout for old, historic apple trees along the Front Range. We want to get them propagated and identified. We want to find them before they're lost to old age, disease, or development.

Montezuma Orchard Restoration Project (MORP) has a list of more than 200 apple cultivars once grown in Colorado that are considered lost. A hundred years ago there were local orchard industries in several locations scattered between Canon City and Fort Collins, and many more small home/small farm orchards and individual backyard trees. Included on the MORP list are apples of Front Range origin, such as St. Vrain and Longmont, and others like Walbridge and Shackleford known to have been grown here in large quantity.

Are these apples lost forever? Undoubtedly some are, but others are surely still alive. They may be trees in poor health that have few remaining living branches. Other indicators can be historical knowledge (through families, stories from prior owners, etc.) or very large trunk size. Older neighborhoods, and newer ones built in areas where orchards once stood, are great places to look.

If you know of historic apple trees, and especially if you'd like to learn how to propagate them through grafting and budding, we'd like to hear from you.

Contact us via our web site at www.widespreadmalus.org

This very old apple tree in Boulder is 3' across at its base. Cultivar unknown, but it's currently being propagated. PHOTO: ERIC JOHNSON





Jude Schuenemeyer mapping an historic Montezuma Valley orchard. PHOTO COURTESY OF MONTEZUMA ORCHARD RESTORATION PROJECT



Curtis Utley has been teaching grafting workshops through Jeffco Ext since 2012.



Root Graft. Photo: Janet Wood

received comes from property owners who have an old tree they don't want to lose. I've seen that phenomenon where I live in Boulder, too. This Spring I grafted about ten old trees from Boulder backyards. Several homeowners will plant new trees to replace those in decline, and one attended an informal grafting class held on my back porch.

It's true that there's much more to growing fruit than grafting and planting a tree. Maintenance needs include thinning fruit, avoiding damage from pests and diseases, pruning, and other tasks. But, if you've always wanted to grow fruit trees, why not think ahead toward grafting next March and April? Between now and then you can select a site, amend the soil, and, if necessary, improve drainage. By grafting your own trees, you'll have a much larger pool of cultivars from which to choose, and you'll always have the satisfaction of having made them yourself. Once they're in the ground, you can embark on the next fascinating steps in caring for trees that produce fruit for your table.

Eric Johnson promotes apple biodiversity and fruit-growing in Boulder and at <http://www.widespreadmalus.org>.

Resources:

Masonville Orchards – www.masonvilleorchard.com

Montezuma Orchard Restoration Project – montezumaorchard.org

Rootstock Sources: Cummins Nursery – cumminsnursery.com,

Raintree Nursery – www.raintreenursery.com



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The Sting of Summer

Eric R. Eaton

On a scale of zero to four, zero being barely perceptible and four being agonizing, how would you rate Colorado's stinging insects? Before you answer, or worse yet begin experimenting, consider that one scientist has already endured many a self-inflicted wound to create the Schmidt Sting Pain Index.

Dr. Justin Schmidt is a curious and independent scientist. The media makes him out to be a playful masochist, a poster child for "don't try this at home," and an eccentric. The reality is an intelligent man who asks questions that escape the minds of others, and then formulates unique ways to test his hypotheses. Schmidt concluded the only fair way to test the intensity of insect stings was to experience them himself. His colorful prose, and humorous comparisons to ridiculous scenarios used to describe stings, adds to his acclaim. The lower end of his scale evokes wine-tasting. For example, this "1" rating of the sting of a sweat bee, genus *Lasioglossum*: "Light and ephemeral, almost fruity. A tiny spark has singed a single hair on your arm."

We have many species of sweat bees in Colorado, so it is nice to know they don't

this would be excruciating, but it manages "only" a "2."

Wasps, sleek and shiny cousins to bees, have an undeserved reputation for hostility. Truly unprovoked stings are rare. Social paper wasps and yellowjackets are protecting large numbers of helpless eggs, larvae, and pupae inside their nests, so they aggressively defend their homes. While our Western Yellowjacket, *Vespa pensylvanica*, rates a "2," the Golden Paper Wasp, *Polistes aurifer*, gets a "2.5":

"Sharp, piercing, and immediate. You know what cattle feel when they are branded."

Polistes nests typically have fewer than 100 occupants, so what they lack in numbers they make up for in voltage per sting. Yellowjacket nests can house an average of 1,800

tip of their abdomen; but "primitive" ants have stingers and are not afraid to use them. In Colorado, harvester ants, genus *Pogonomyrmex*, rate a "3" on the pain scale:

"Bold and unrelenting. Somebody is using a power drill to excavate your ingrown toenail."

- *P. badius*, Florida Harvester Ant:
"After eight unrelenting hours of drilling into that ingrown toenail, you find the drill is wedged in the toe."

- *P. maricopa*, Maricopa Harvester Ant, a Colorado species.

Only female ants, bees, and wasps can sting. The stinger is a modified egg-laying organ called an ovipositor. It has become "weaponized" over

Watch out for nests of social wasps in birdhouses, overturned flower pots, and other concealed locations. Do not reach where you cannot see.

Inspect your yard for ant, bee, or wasp nests before running equipment.

Never serve canned beverages outdoors lest a wasp crawl inside unseen.

Get a professional bee-removal service if you must destroy a nest of social wasps.

Schmidt restricts his Sting Pain Scale to ants, bees, and wasps, but we also have stinging caterpillars in Colorado. The IO Moth, *Automeris io*, is studded with branching, venomous spines in its larva stage. So are caterpillars of buck moths and the Sheep Moth, genus *Hemileuca*.

Ready to enjoy the outdoors now? Fear not, but respect our stinging insects. Remember that bees are important pollinators, and ants and wasps kill pest insects that are more damaging to our health and livelihoods than the stinging critters dispatching them.



Left to right, climbing the pain scale are: Sweat Bee; Western Honey Bee; Bumble Bee; Western Yellowjacket; Golden Paper Wasp; Maricopa Harvester Ants; Tarantula Hawk. PHOTOS: ERIC R EATON

pack much of a punch. Bumble bees, those social, endearingly fuzzy pollinators in the genus *Bombus*, rate a "2":

"Colorful flames. Fireworks land on your arm."

The Western Honey Bee, *Apis mellifera*, can sting only once. The stinger is barbed, and so once implanted in your limb, it stays there. The bee flees, but vital internal organs are torn from its body. She will die. The disembodied venom gland continues to pump its poison into the wound. You would think

workers.

Like bees, most wasp species are solitary, each female creating her own nest, and rarely defending it. Why, then, are their stings so heinous? Our champion "hum-stinger" is the tarantula hawk, a gargantuan iridescent blue, orange-winged wasp in the genus *Pepsis*. It rates a full-blown "4":

"Blinding, fierce, shockingly electric. A running hair dryer has just been dropped into your bubble bath."

Most "advanced" species of ants bite and spray formic acid from the

eons, used mostly for paralyzing or killing prey. Only bees use their stings solely for self-defense.

The Schmidt Sting Pain Index applies to average, healthy human beings, and represents a single sting incident. People with compromised or hypersensitive immune systems, the very young, the elderly, and those enduring multiple stings, can suffer a much different experience, if not a life-threatening event. Consult your physician to determine if you or other family members are allergic to insect venoms. Meanwhile, try to avoid stings:



Stinging caterpillar of the IO Moth

Eric R. Eaton is principal author of the Kaufman Field Guide to Insects of North America and writes the blog "Bug Eric." He lives in Colorado Springs with his wife, Heidi.

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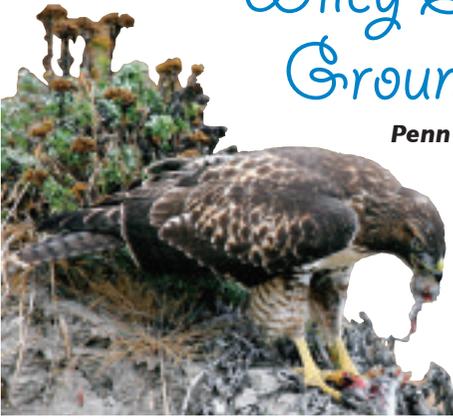
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Wiley E, Invisible Cats, and the Ground Animals That Fear Them

Penn Parmenter



Juvenile red-tailed hawk eating its prey
PHOTO BY JURVETSON (FLICKR)

O kay, so the ground animals are really starting to piss me off. We ain't playin' anymore Fuzzy, you're goin' down! Mountain folk, hang on, we're going through this and it might include violence. Read on at your own risk.

There comes a time when we decide we just can't take it anymore; we need to draw a line. This happened many years ago before we put in our deer fence. It happened again last fall when a big ol' wood rat appeared out of my bread drawer and tried to stare me down. He considered intimidation. I considered a weapon. It came in the form of a live trap and a boy named Beau. Forty-five minutes later the wood rat came out of the bread drawer and went for the peanut butter in the live trap

We heard the door slam shut from 10 feet away. Beau got up and took care of it. I headed for the bleach wipes.

Then there are the predators, a beautiful bunch. Can't live with 'em, can't live without 'em. As a Rocky Mountain gardener, I have found that the benefits of predators far outweigh the problems they might bring. Besides a brazen wood rat in the bread drawer, we advocate living with our environment rather than fighting against it. We observe and respond to the situations that arise on our mountain property (and beyond) in a way that's as close to natural systems as we can get. That doesn't mean the "Critter Gitter", (the family .22), doesn't come out occasionally to put a rabbit in the freezer, but mostly we just don't mind sharing.

We've experienced four warm winters in a row, giving the ground animals a big advantage. They are fat, happy, and bolder than ever; they look us in the eye and consider the situation before disappearing. Their encroachment must be stopped. But how? Nature will work it out in the long run to restore balance but in the meantime, what to do? A cold winter dance is needed to cull out the excess and restore order. Remember the movie

"Willard"? No, never mind.

We practice IPM (Integrated Pest Management), which uses a combination of controls to keep rodent numbers low enough to be able to grow and eat more food

than they do. Predators, wild and domesticated, are a big part of this program. We count on them to help keep the balance healthy and manageable. Mountain gardeners already have enough to deal with, right?

Predators do most of their hunting at night, stretching into dawn and dusk. This is their time and I expect them to hunt my gully, gardens, and meadow.

Coyotes are opportunists, both as hunters and scavengers, and they will eat any small animals they can catch. This includes rats, gophers, mice, mountain beavers, rabbits, squirrels, snakes, lizards, frogs, fish, birds, and carrion. They eat grass, fruits, and berries during summer and fall. Mountain coyotes can and do take down adult deer. They also eat bugs! Grasshoppers are a favorite.

Fox are perfectly happy with hares, rabbits, and other small animals. The fox and the bobcat will come for your chickens but if they can't get in they will opt for the ground animals. Making your livestock pens 'bear-proof' ensures the bobcat can't get in, either. Raccoons and skunks will kill chickens too so seal the coop up tight! A baby monitor in livestock pens or coops can really help you get out there in time to save the day.

Hawks, eagles, and owls are all excellent hunters of small critters but they may also attack a cat or



Those pesky meadow voles are essential prey for raptors and important for carnivorous mammals too.
PHOTO: GREG TALLY, WIKIPEDIA

other small pets. Owls hunt mostly at night; hawks and eagles hunt closer to dusk and dawn – prime hunting hours.

During the day I sic my cats on the gardens and they sure pull their weight. I 'train' (ha!) my cats and have kept them alive in the wilderness until they die of old age. What I've observed over all these years with a string of mountain garden cats is that adopting a spayed

hunt rodents relentlessly. A good guard dog can protect the garden at night if you lack predators.

The Stairway to Heaven is a control you might use in desperation. Place a 5-gallon bucket in the garden with some water in it and make sure there is no other standing water available for varmints. Lean a piece of wood up against the bucket (a 'rodent ramp') and fill the water to about half, depending on what you are trying to control, and then wait.

It can take a while but if there are no other readily available water sources, many critters will climb the ramp and jump in.



Coyote in mid pounce
PHOTO: THE GREENMAN/SHUTTERSTOCK

If they can't reach the top of the bucket they will drown. You can catch multiple animals in one night this way and clean-up is easy. This approach is not for everyone but it is one of many ways to reduce the numbers without using toxic chemicals.

If you have small livestock like chickens, I realize it's difficult to imagine attracting Wiley E. Coyote and his friends to the garden at night, but a little bit of thought and planning can get you, your garden, and the predators into a symbiotic relationship with everybody helping one another. Now there's an idea.

Penn & Cord Parmenter garden and grow food and seed near Westcliffe. Both are regional high-altitude gardening instructors and the founders of Smart Greenhouses LLC, a sustainable greenhouse design company, and Miss Penn's Mountain Seeds. You can see their work at www.pennandcordsgarden.com

(Ed's Note: Domestic cats will focus on where the best action is, which in this case means rodents, but there's no doubt that most will kill birds. Don't allow cats to roam free at will, especially during nesting season, and check out birdsbesafe.com)

female with no white on her coat is best. Right now I have the perfect twosome; they will hunt as a team. They are "Torties" - tortoiseshell colored cats, black with tan and orange mottling but no white like a Calico. They blend perfectly into this environment of decomposed granite earth, Piñon/Juniper/Ponderosa forest with black trunks and branches, brown and tan mulch, sandy/pink terrain in the distance. Grey tigers blend in well too.

I let my cats out a couple of hours after sunrise and bring them in a couple of hours before dark. As kittens, I train them to a litter-box filled with pine-needle mulch from the beginning. When they are outside, they automatically go under the trees in the mulch instead of in my garden beds. I throw the poopy mulch back into the forest, leaving a crunchy treat for the coyote or fox. Starting when they are very young, the cats follow me to the garden in the morning with my cup of tea and before you know it, they are stalking something. When I praise them they bring me their catch and roll all over the place with glee. Then they bite the tiny heads off the pocket gophers they just pulled out of the ground to get the job done.

I hear that several breeds of dogs, many terriers, for example, will

Outdoor Rooms for Greater Well-being

Bill Melvin

As a landscape designer, I see the exterior of a house and the property surrounding it as merely an extension of the interior living space. I believe a house should be designed to connect seamlessly to the outside world and this fusion should draw us outward. Outdoor living rooms can entice us beyond the walls that enclose us.

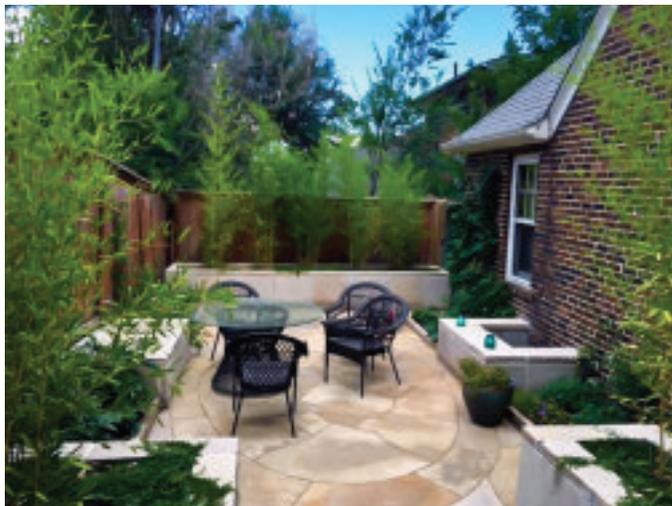
Within the greater landscape, outdoor living areas can create places of retreat, comfort, or a meaningful destination, each with its own character. And just like a house, these spaces can be enjoyed year-round given the climate of Colorado's Front Range. With its plethora of sunshine and winter days with temperatures that climb into the 60's (or higher), our area is ideal for outside enjoyment any day of the year.

I love our change of seasons with the evolutions of time, space, color, and light in our yards and the world around us. Integrating outdoor rooms into our landscape gives us the ability to rotate through our property at different times of the year. We move through the house to soak up the sun's warmth through south-facing windows in winter or to seek out a tree's cooling shade canopy in summer. In spring and fall we dwell in transitions of light and temperature with each day. We can move through the spaces of our landscape in a similar way with some careful thought and planning.

University studies have shown that just several moments of sitting in a natural surrounding has a wealth of positive impacts on our psyche and physical being. The stress from our day drains away, our blood pressure decreases, feelings of anger dissipate, and our sense of well being increases. With today's hectic pace and the constant static and noise that surround us, enjoying a peaceful moment outside can profoundly affect our long-term health, the health of our family, and our quality of life.

If we think about a prosperous, thriving landscape, we might imagine vivid flowers in bloom, sweet smelling herbs, sounds of trickling water, juicy tomatoes and peppers, and the buzz of pollinators harvesting nectar from our gardens. But we rarely reflect on the emotions that stir within while looking at or relaxing in our own

Just several moments of sitting in a natural surrounding has a wealth of positive impacts on our psyche and physical being...



Bamboo fencing and plantings combine to create screening, privacy, and intimacy in this small backyard in Boulder's Chautauqua neighborhood. Colorado Buff flagstone is used for raised beds and a Turtle Island patio design. ALL PHOTOS BY BILL MELVIN EXCEPT WHERE INDICATED



A client who relocated from Connecticut wanted lush gardens at this very challenging, exposed site at 8000' up Sunshine Canyon. Using drip irrigation run off of a well and a hardy palette of plants, Bill worked with Mr. Pool to create this stunning, flagstone in-ground hot tub "garden room".

little piece of nature. These positive emotions, including a sense of peace, wonder, and connection, are the real gifts of our landscape. Creating a place to experience them more fully is one of the best ways to restore our sense of well-being.

Colorado's natural wonders are what brought many of us out here. By making special outdoor living spaces we can mimic the beauty of the natural world and give ourselves a private retreat from the busyness of daily lives.



Recreating the peace felt in nature is what draws many of us to gardening.

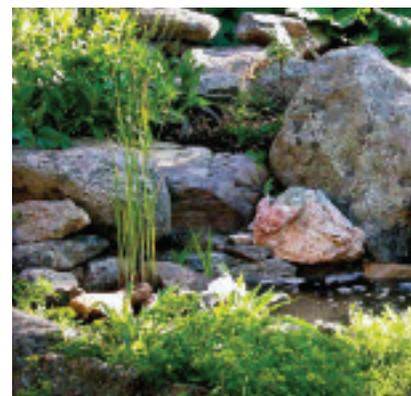
A designer colleague recently shared a story. One night a client called to thank him for everything he had done to transform the man's back yard. The client said he had just experienced one of the worst days of his life. He left work feeling overwhelmed and despondent, but on his way home he knew he was going to be okay because his family would be there enjoying a summer evening barbeque together in that special space. The relief he felt while returning to his own little paradise made him feel more whole, prompting him to spontaneously call and express his gratitude.

For some, paradise means lounging around a hot tub patio after a relaxing soak. For others it's the solace of a Zen garden, a place for retreat and meditation surrounded by the simplicity of nature. A single bench in a favorite shady corner with a mountain view may be all that's needed, or an exuberant flower bed next to the deck. With each passing month outdoor living spaces change character: silent and still in the snow, alive with songbirds in spring, earthy with the musky scents of a wet fall day.

Sensory and aromatic gardens can be strategically designed to arouse the senses with sights,

sounds, scent, and touch. A variety of textures combine for brushing fingertips against: wispy grasses, velvety lambs ears, lavender spikes, or sweetly fragrant jasmine. Add simple seating like a boulder to enjoy the space.

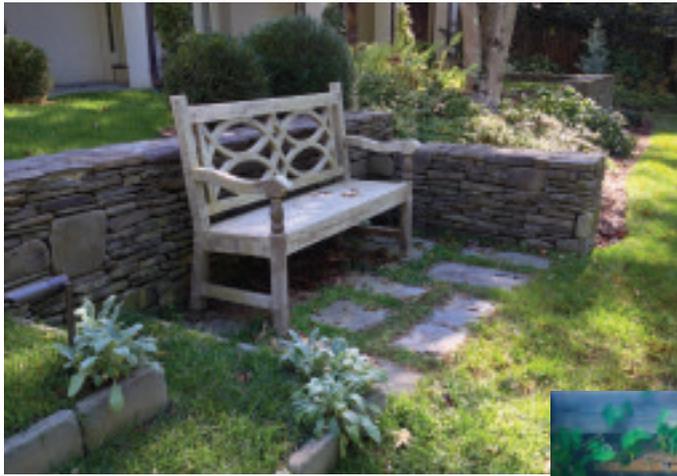
The sound of trickling water is incredibly soothing. For me it conjures memories of sitting beside a creek in dappled light deep in the forest. Whether it's a simple dribble of water bubbling out of a boulder, a small stream rolling over rocks into a basin, or a flowing creek with cascading waterfall into a pool, the diversity of water sights and sounds can fit any back yard.



Bill Melvin built this soothing water feature at his old house at Colorado and western native plants. He also included an Italian brought from Italy to Colorado which can still be found growing

Left: a very low water site on a well at 7000' in the foothills with planting beds of colorful natives and low water perennials including echinacea, Russian sage, agastaches, centranthus and ferns. A mix of buffalograss with some added blue gramma and a tou





A simple bench with a view placed in its own shady nook becomes a special spot for relaxing.

Even if you're not a gardener, soak up the sun and settle into the personal nook of your landscape that entices you.



Left: A moon gate announces the entrance to a Zen garden in Santa Fe. Stone steps slow the visitors' approach.

Right: This inviting outdoor dining and seating area with grape-covered pergola also includes an outdoor kitchen and fireplace. Designed by Jim Haswell Landscapes, now lead designer for Ecoscape Environmental Design.
PHOTO: JIM HASWELL



Above: this house in a suburban setting sits on a sloped hillside with other houses looking into its back yard. Ecoscape was hired to create an intimate outdoor space that would address drainage mitigation and privacy issues. This small, 20' X 12' outdoor room is packed with features that compliment each other. A gas fireplace set off by placing a rusted metal panel behind it is a major focal point from inside the house. Soft buff flagstone patio and walls contrast with the fireplace and a black quartz pyramidal water feature close to the house, which is echoed by large natural boulders at left front. 'Moon Glow' junipers behind the fire and a "forest planting" of evergreen and deciduous trees separate the patio from the driveway.



7200' up Four Mile Canyon, planted with mostly an rhubarb (top center), a variety that miners dig in the mountains.

as transformed by including: penstemons, bush. The lawn is a patch of bluegrass.

Fire excites the soul. What better experience is there than gathering around a campfire on a brisk night? The variety of fire elements that can be integrated into landscapes these days is boundless. Gas fire torches offer heating and visual appeal; simple discs allow for wood burning fires on patios; gas fire pits enhance a wide variety of outdoor living rooms or create a destination in the landscape. The simple, primal pleasures of water and fire speak to us and they can easily be integrated into outdoor rooms.

When we take the time to transform our yards into special spaces, whether

simple or complex, and spend time soaking up their beauty, we can connect with our surroundings and relax. If all it takes to improve our personal well-being is a few moments in nature, let's be drawn outside every day. Even if you're not a gardener, soak up the sun and settle into the personal nook of your landscape that entices you.

Bill Melvin is the owner of Ecoscape Environmental Design in Boulder, specializing in native and edible landscapes as well as exceptional outdoor living environments.

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Rocky Mountain District Rose Show

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7:00 am - 9:30 am
Entries Accepted
10:00 am - 12:30 am

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The DRS is hosting the District show this year, and the theme is "Birthday Bash," in honor of the 70th birthday of the Denver Rose Society. New and experienced rose growers are welcome to enter (\$20 fee). Or come by and view the winners - FREE w/paid entrance to DBG.

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Kelly's Gardening Q&A



Boxelder Bug



Kelly Grummons

Q: *That last heavy snow split my young cherry tree in half. Also, a major side branch of our Korean Maple split down. The leaves aren't wilting so I'm wondering if we can tape it back together or something? I love my trees. I wish I had swept the snow off them!*

A: It certainly is possible to repair the trees. It works better on younger trees. Gently put the split parts back together and bind with masking tape in one ring near the top. You might need a helper. Near the top of the split and in the middle area of the split, drill a hole (approximately 3/8 to 1/2 inch drill bit) through both halves so that you can push through a stainless-steel bolt. Put a washer on both ends to stabilize the bolt and create strength. Put on a nut and tighten moderately (not to cause more damage). Remove the masking tape. With a razor blade, trim away any frayed or loose bark. Leave the wound edges open and clean. Do not apply any type of tree paint or sealer. You will permanently leave the bolt in the tree. It will disappear under the new bark over time. You'll know soon if you are successful if new growth resumes. If half of the tree dies, you can remove the dead portion and with creative pruning, gradually restore the shape of the tree.

Q: *My Irises haven't made many flower stalks the last few years. My neighbor's Irises are gorgeous! How can I help them get back to their previous beauty?*

A: It's one (or both) of two things. Irises need full sun for at least six hours of the day. Sometimes, over time the Iris plant get enveloped in the shade of a near-by tree and stops blooming. Also, when Irises become over-crowded, their blooming will diminish. In July, dig up, divide and replant the Irises. I'm assuming they are bearded Iris. In that case, make sure that the tops of the rhizomes (they look like crabs) remain visible at the soil's surface and are NOT buried. Mix in some bone meal to provide extra phosphorus. In a year or two, the plants should be stunning. Feed with bone meal every July or August.

Q: *My husband and I are at a stand-off about updating the landscape. He says "If we can't eat it, why waste water on it"! What are some plants that are both edible and ornamental? We need small trees, shrubs and perennials.*

A: He's a smart man! Make those landscape plants earn their keep! On the top of my list is Sea Kale (*Crambe maritima*). The broccoli-like florets and tender, young leaves in April and May are delicious. The rest of the summer and fall is a grand display of huge, waxy-blue leaves. Another favorite that is both beautiful and edible is Rhubarb (*Rheum rubarbarum*). Most folks prefer the red-stemmed types like 'Canada Red', 'Valentine' or 'Strawberry'. The red stems and huge, umbrella sized leaves are beautiful in the landscape. Contrast the coarse texture



Sea Kale, *Crambe maritima*

with the finer texture of ornamental grasses or another pretty ornamental, Purple Asparagus!

I'm very fond of the native shrub Black Currant (*Ribes odoratum*). The plant gets about 3 feet high and 6 feet wide. Glossy, green foliage turns red and gold in the fall. The super-fragrant yellow flowers in April are followed by sweet-tart, glossy black berries that make great juice, jelly or wine!

A small tree with edible fruit is the Serviceberry (*Amelanchier alnifolia*). The silvery trunks support leaves that turn scarlet and orange in Autumn. In June, handfuls of delicious blue berries ripen for your picking.

Q: *Our garage is completely covered with Boxelder Bugs. We don't even have a Boxelder Tree! How can we make them go away?*

A: Boxelder Bugs feed on the "flowers" of the Boxelder Tree (*Acer negundo*) and the Silver Maple. The nymphs seek out warm places like the south side of the house or garage. You can wash them away with some soap put into a hose-end sprayer. Also, try adding a few drops of peppermint extract. This seems to really get them moving on. You may need to do this every week or so in the spring.

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THREE PLANT SELECT XERIC FAVORITES

Mikl Brawner

Here are three hardy, xeric and floriferous plants that are successful in western gardens.



Russian Hawthorn in bloom. PHOTO: JANE SHELLENBERGER

Russian Hawthorn, *Crataegus ambigua*, was tested at the Cheyenne Horticultural Station and found to be well-adapted to the West. It is native to Armenia, Iran, Russia, Ukraine, and Turkey. I have a 20 year-old specimen growing without irrigation along with many native shrubs.

The mature size is 15'-20' high and wide in our area. The branches grow quite horizontally which gives it natural character. It lends itself well to a bonsai/character style and I have been growing one in a big ceramic pot for 10 years.

The finely cut leaves give a soft appearance. It blooms in May with profuse white flowers that are attractive to bees and butterflies, followed by showy red berries in August/September that are eaten by birds. Very dry



Mikl's Russian Hawthorn bonsai has been growing in this pot for 10 years. PHOTO: MIKL BRAWNER

conditions can result in fewer flowers and fruit. As with apples, to which Hawthorns are related, the seeds contain some cyanide, so should not be eaten, but the berries are edible and make a respected heart tonic.

Russian Hawthorn is usually propagated by seed and there are often variations in the prevalence of thorns. I've seen a few with practically no thorns and some that are quite thorny. The tree is deer resistant, pest-free, and long-lived. It actually likes our alkaline conditions but tolerates a variety of soils as well as urban pollution. It is hardy to zone 4. Fall color is yellow and the bark is a golden yellow. This is a great tree for planting under power lines or where a tall tree would block a good view. It was a Plant Select Winner in 2011.

Russian Hawthorn is a great tree for planting under power lines or where a tall tree would block a good view.



Filigree Daisy PHOTO: EVE RESHETNIK BRAWNER

Filigree Daisy, *Anthemis marschalliana*, is a very long-blooming, tough perennial. The silvery, feathery foliage makes a mat that is beautiful by itself, but also sets off the mass of 1"-1½" yellow daisies that stand on sturdy 10" stems. These bloom for weeks in early summer in full sun or part shade. Filigree Daisy looks good as a single specimen or in groups, planted 8"-10" apart. It performs well in a xeriscape or in a perennial garden, is not fussy about soils, and will not seed about.

The foliage does not decay after flowering as does Silver Mound *Artemisia*, but can deteriorate in wet winter conditions. It is a native of Turkey, hardy to zone 4, and promoted in 2012 as a Plant Select Introduction.

All of these sun-lovers have performed well in the low water conditions at Harlequin's Gardens. They are among our favorites from the Plant Select Program.

Mikl Brawner and his wife Eve co-own Harlequins Gardens in Boulder, specializing in organic veggie starts and herbs, natives, sustainable roses, xeriscape, unusual perennials, and products to build healthy soil.



Bridges' Penstemon. PHOTO: DAVID WINGER FOR PLANT SELECT

Penstemon rostriflorus, also known as Bridges' Penstemon, is a summer bloomer with scarlet, tubular flowers that are magnets for hummingbirds and other pollinators. This very drought tolerant native of southwest Colorado, New Mexico, and California, blooms in the hot summer, after many penstemons have finished. A dark evergreen mat pushes up 16"-30" spikes of showy red flowers. Bridges' Penstemon is hardy to zone 4b, quite long-lived, and its life can be extended by dead-heading the first year and removing half of the spent flowers after that, to leave some seed to self-sow. It was a 2006 Plant Select Winner.

Extension

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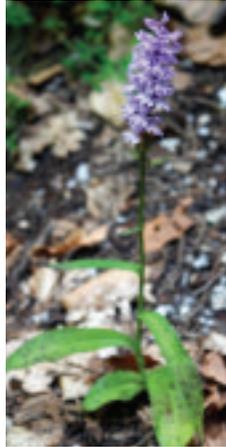


Olympic Journey

After being awarded the Chanticleer Scholarship from Chanticleer Garden in Wayne, PA, Panayoti Kelaidis traveled to Turkey and Greece in the summer of 2015. His idea was to do a comparative study of the flora of the two principal Mount Olympus of ancient times: the Mysian Olympus, now known as Ulu Dag or the "Great Mountain" of Turkey, and the more well known Thessalian Olympus north of Athens, Greece. He wrote about his plant treks in Turkey for the April 2016 issue of Colorado Gardener. This is the story of his subsequent hike up Mount Olympus in Greece.



Panayoti Kelaidis



Left to right, *Genista radiata*, the most common broom on the mountain; Thyme relative, *Thymbra capitata*; *Dactylorhiza*, a common orchid in Greece; The yellow flax, *Linum elegans*



At some point most everyone makes The Trip to Greece: Athens, Mykonos, Santorini. Usually in the height of summer, you trudge up to the Parthenon in 100°F heat and perhaps make the drive to Delphi. But there's another Greece better known to Europeans. The flower lovers come in March and April, when the almonds and redbuds, the bulbs and other wildflowers are blazing along all the roads. The weather is cooler and the ruins aren't so crowded. I've come in April and it's glorious.

I'd gone to Greece four summers in my youth, looking up at the heights knowing there had to be things blooming up there. On one trip we climbed over a pass in the Peloponnes but I was too shy to ask my relative to stop and let me poke around where there was still some green grass and the flash of a few yellow and white wildflowers.

As a Greek American horticulturist with a special interest in mountain plants, it struck me as ironic that I'd never explored the flora of my ancestral home, which has the highest biodiversity of any country in Europe. So a couple of years ago, thanks to a scholarship from Chanticleer Garden in Pennsylvania, I envisioned a summer trip dedicated to that very goal, without doing the rounds of History or spending most of my time with family.

We began appropriately at Mt. Olympus, which is not only the highest mountain in Greece at 2,918m (9,573'), but a major center of biodiversity in the Balkans. Olympus isn't a single mountain so much as a small range with 52 peaks and dramatic topography. It is also a National Park; you must reserve space in the alpine huts months in advance.

As a Coloradoan, the idea of climbing a peak at a mere 9500 feet didn't strike me as especially challenging – forgetting that you start much closer to sea level at only 1000! It's easier to fantasize about an experience than to suddenly find yourself at the trailhead, looking at a 10-mile, rather steep climb just to the first Refuge (A'). The excitement I felt to be at my destination, the home of the Ancient Greek Gods, cheered me up. And the trip was lightened by

the companionship of Eric Hsu, record keeper at Chanticleer, and our local authority, Liberto Dario (real name, Eleftherios Dariotis). A very late spring and perfect summer weather topped off the experience. Many early blooming species were delayed and had come up with the plethora of species that always bloom this time of year. Flowers seemed to be in peak bloom from the upper foothills where we started to the alpine tundra at the top!

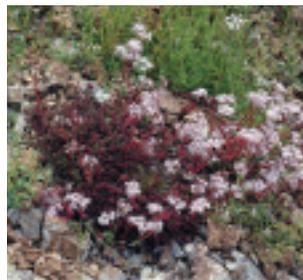
Considering that people have lived in the region for millennia, I was amazed at the pristine freshness of the woods and meadows everywhere we climbed on Olympus. Even more stately than our Subalpine woods, the dense forests of silvery blue Mediterranean fir – *Abies ferdinandi-regis*, an intermediate between the Alpine *Abies alba* and *Abies cephalonica* found more commonly in Greece – clothed most of the slopes of the mountain.

The climb was steady and steep. We passed the donkey trains that bring goods to the high mountain refuges both on their climb and return, and raucous groups of young people from all over Europe marched past us. They seemed to be louder the further from Greece they originated; Greek University students were appropriately reverent and intent in their climb.

I saw many plants that I expected; so many of our garden flowers originate in the Mediterranean highlands. I was not surprised that *Geranium macrorrhizum* was common in all the woods and was as richly aromatic in the wild as in the garden. *Alchemilla*, looking every bit the same as our garden Lady's Mantle, was another common wild plant, although probably its own local species. Numerous species of many garden herbs were there: several germander, thymes, hoarhound, Stachys and, of course, *Salvia*. There were many species of broom, although *Genista radiata* was by far the commonest on

the mountain, making bold mounds of bright yellow a yard or more in height all over the sunny slopes. I had grown for years at Denver Botanic Gardens, not realizing how emblematic it is of this mountain. The bulbs had bloomed months earlier and were already dormant, with one notable exception.

In the dappled woodland shade I was thrilled to find a bright pink orchid that looked like a svelte *Cattleya* at first, on low stems. We were to meet *Cephalanthera rubra* again and again; it is one of the most common and widespread Eurasian woodland orchids, but I never tired of seeing it. There were many other orchids blooming in the woods too, like *Epipactis helleborine* (which has even appeared in Boulder as a weed!), and the raucous *dactylorhizas* that grew in sunny meadows, seeps, and on road cuts all over Greece. These striking and graceful plants adapt well to gardens



Above, *Sedum album* in bloom; *Edraianthus graminifolius* with *Sedum album* at right



in America. They spread all over the Rock Alpine Garden, but they don't like being fertilized with nitrogen, which is how I lost most of mine.

Occasionally we'd glimpse a high escarpment along the trail (are we getting any closer?). Then the trail would wind into another woodland full of interesting shade loving plants: Solomon's seal, oak fern...there! Lily of the Valley! Strange to see old-fashioned garden clichés right next to strange plants – a dozen strange Umbels for instance – I'd not known where to identify. I found only one tuft of *Achillea ageratifolia*, which I've grown for



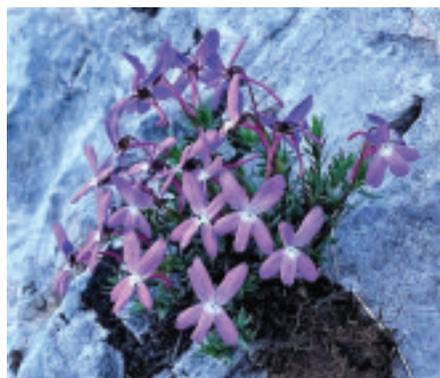
years and expected to be common. But there were several species of flax: bright yellow *Linum elegans*, the heavenly blue *Linum spathulatum*, and white *Linum tenuifolium* with a darker center to the blossom. New species of *Campanula* and *Sedum* showed up every so often, as well as the grassy leaved *Edraianthus graminifolius*, which I was hoping to find. By the time the trip was over, Liberto had tallied nearly 200 kinds of wildflowers—very respectable for a few days hike on just one transect of one side of a mountain.

We did eventually reach Retreat A', perched picturesquely on a steep cliff overlooking the vast valley that tapers down toward the sea. Our tasty dinner was undoubtedly enhanced by the long hike, crisp



One of the 54 peaks of Mt. Olympus

Five petal form of *Campanula oreadum*



Cutleaf shrubby violet, *Viola delphinantha*

As exhilarating and rewarding as the first day hike may be, the real thrill of Olympus is the next day when you venture towards the high ridges. Hut A' is built amid a huge grove of stately Bosnian pines (*Pinus heldreichii*) massive trees mostly found just below tree line. The trunks on a few were nearly a yard across, and the huge spreading crowns were deliciously, picturesquely

air, and cheerful company of many young people at the hut. I can recommend the hike to anyone with the proviso that you have the best hiking boots you can afford (my old pair left me with aching feet for months).

windswept. This wonderful tree is beginning to be planted more in Colorado, where it makes a more graceful and seemingly just as tough alternative to overplanted Austrian pines (*Pinus nigra*). If ours age half as gracefully as the timberline giants

on Olympus, we should plant many more.

The second day, not far above the Hut we found one of the great glories of the mountain: *Viola delphinantha* is one of three cutleaf, shrubby violets that occur in Southern Europe. (The other two, *Viola cazorensis* from Spain and *Viola kosaninii* of Albania, are likewise rare and choice.) I couldn't imagine anything lovelier than the Olympic violet, with bright pink flowers on a twiggy mound of foliage tucked here and there on the cliff, until we realized on our return that the violet had distracted us from another gem, the Olympic columbine (*Aquilegia ottonis v. amaliae*). It has similar coloration and flower form as our Colorado columbine, only the flowers are semi-nodding and the plant grows mostly in cracks of solid rock.

As the last Pine trees fell behind, the meadows were thick with dozens of kinds of flowers: many species of pea (especially Lady's fingers, *Anthyllis vulneraria*, like robust yellow clovers); the brassy yellow Umbel, *Smyrniium perfoliatum*, which I've grown from time to time, but never with the profusion I saw on Olympus; several species of veronica, including the local specialty, *Veronica thessalica*, providing a blue counterpoint; Sun roses, *Helianthemum nitidum*, in several forms; and finally, on the ridge top, the endemic *Campanula oreadum* covered with bright purple blue elongated bells.

We had only one day to explore the alpine vegetation on Mt. Olympus, which is really not enough. I'd recommend staying at one of the two other refuges a

Field of *Smyrniium perfoliatum* (see inset) with Olympus in background



second night; there are so many areas to visit and so many commanding views from the top. (Not that we climbed Mt. Mitikas, the highest point of the mountain.) Given another day or two, most hikers could make it to one or another of the many summits of the mountain.

The path was so steep coming back that it wasn't much easier than the climb. But we saw a whole new suite of plants in the process; you

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Advertiser Profiles

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The Gardens on Spring Creek opened in 2004 after a founding non-profit group convinced Fort Collins' city council to initiate a city-funded community horticulture program and voters subsequently approved \$3 million. The Children's Garden opened in 2006, the Garden of Eatin' and Wetland Demonstration Site in 2009, and the Rock Garden in 2010. Funds are now being raised for several new gardens. One of the largest cultural venues in northern CO with over 65,000 annual visitors. The Gardens vision is: To be a world-class botanic garden that is community oriented, educational, experiential & sustainable. fcgov.org

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Metro Denver Farmers' Market began over thirty years ago in downtown Denver in an Auraria campus parking lot, on Saturdays only. They now have 5 different market locations: Saturdays at Southwest Plaza and in Lakewood thru Oct. 28, Sundays in Highland Ranch thru Oct. 29, Wednesdays in Littleton thru Oct. 11, and Thursdays in Wheat Ridge thru September 28. Their aim is to bring the freshest, local produce directly to you. All locations are part of the SNAP Program and accept EBT card for payment! Denverfarmersmarket.com, 303 887-FARM.

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Calendar

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CSU Extension Native Plant Master Program Classes. Register: nrm.eventbrite.com

CSU Twilight Garden Series, Fort Collins. **6/13: Celebrating Native Plants - Native Woody & Perennial Plant Walks. Designing with Native Plants Tips & Tricks at The Gardens on Spring Creek,** 2145 Centre Ave. **6/20: Promoting Pollinators- Bee Friendly Plants, Native Pollinators, Plants that Attract Butterflies** at Trial Gardens, 1401 Remington St. **6/27: Bringing the Trial Gardens Home- Top Perennials from CSU Trials. New Perennial Display/Research Garden Tour, New and Unique Annuals at Trial Gardens.** Tuesdays, 6-8pm. \$10 one event, all 3 events \$25. More info: 970-491-7019 hortla.agsci.colostate.edu

Denver Botanic Gardens. 1007 York St, Denver. **6/2: Workshop- Residential Greywater Reuse,** 9am-4pm. **6/8, 6/17, 6/21, 7/1 & 7/5: Every Drop Counts Tour,** 5-6pm or 9:30-10:30am (check website), \$14/\$12. **6/8: Troubleshooting in the Vegetable Garden: If a Tomato Could Talk,** 6-8pm, \$31/\$26. **6/10: Cooking with Fresh Herbs,** 2-4pm, \$51/\$46; **Cherokee Late Spring Nature Hike** - at Cherokee Ranch & Castle, 8-10am, \$25/\$20; **Invitation to Ikebana- Traditional,** 2-4pm, \$44/\$39. **6/14: Free day at DBG.** **6/15: Lecture: Under the Colorado River,** 6:30-8pm, \$20/\$15. **6/16: Beginning Farmers Workshop Series: Harvest,** 9am-3pm, \$20, Chatfield Farms. **6/18-20, 6/29, 7/2 & 7/7: Midsummer Nights Tour,** 6pm, \$14/\$12. **6/23: Horticulture Home Garden Tour: Habitat Hero Gardens,** 9am & 1pm, \$51, \$46. **6/24: Ooh La Lavender,** 9am-2pm, \$67/\$62, at Chatfield Farms. **6/27: What Made My Good Plant Go Bad?** 6-9pm, \$44/\$39. **6/30: Beginning Farmers Workshop Series: Post-Harvest & Food Safety,** 9am-3pm, \$20, Chatfield Farms. **7/9: Cooking 101: The Basics,** 10am-12pm, \$49/\$44. **7/11: Home Cheesemaking,** 6-8pm, \$44/\$39. **7/14: Beginning Farmers Workshop Series: Plant Pest, Disease & Weed Management,** 9am-3pm, \$20 at Sprout City Farms. **7/16 & 7/30: Seasonal Discoveries Tour,** 9:30-10:30am, \$14/\$12. **7/22: Drip Irrigation for Home Gardeners,** 1-2pm, \$20/\$15. **7/24: Garden Guru Tour,** 11am, \$17/\$15. **7/28: Beginning Farmers Workshop Series: Small Fruits & Orchard Crops,** 9am-3pm, \$20. Registration: BotanicGardens.org or (720) 865-3500.

Denver Rose Society. Monthly meeting open to the public at Denver Botanic Gardens Plant Society House, 1007 York St. Denverrosesociety.org, 303 880-7415. Visitors & guests always welcome.

Desert Canyon Farm, 1270 Field Ave, Canon City. **6/3: Plants of the Desert Garden Tour,** 10-11am; **Making Herbal Salves Demo,** 1-2pm. **6/4: Herbs for a Fragrance Garden,** 1-2pm; **Desert Canyon Farm Tour Walk-About,** 2:30-3:30. No pets, Info: DesertCanyonFarm.wordpress.com

Fort Collins Nursery, 6/18: **Classic Miniature Gardening,** 11-12:30 & 1:30-3. 2121 E Mulberry St. Fortcollinsnursery.com

The Gardens on Spring Creek Urban Homesteading Series. **6/14: Introduction to Loom Knitting,** 6/21: **Seed to Face: Gardening for Healthy Skin.** **6/28: Pesto Quintet- Preserving Your Garden Herbs Five Ways.** **7/12: Building Backyard Greenhouses.** Classes 6-8pm, \$14. 2145 S Centre Ave, Ft. Collins. fcgov.com/horticulture or 970 416-2486

Growing Gardens Greenhouse. 1630 Hawthorn Ave, Boulder. **6/17: Pests & Diseases in the Garden,** 9am, \$40. **6/22: Garden to Table Cooking Class 1,** 6pm, \$40. **6/24: Beekeeping Class V, Practical Lab 1.** **7/6: Garden to Table Cooking Class 2,** 7/20: **Garden to Table Cooking Class 3,** 6pm, \$40. **7/29: Beekeeping Class VI, Practical Lab 2.** For more info: growinggardens.org

Harlequin's Gardens Sustainable Nursery. **6/3: Beneficial Insects,** 10am; **Growing Antique Roses for Beauty, Fragrance, & Reliability,** 1pm. **6/4: Berries & Small Fruits for Colorado,** 10am; **Habitat Hero Wildscaping 101,** 1pm. **6/8: What's Wrong with my Tomato Plant?** 5pm. **6/11: Living with Emerald Ash Borer and Japanese Beetles,** 1pm. **6/17: Colorado Native Bees,** 10am. **6/24: Honey Bee Meet & Greet,** 10am. **6/25: Managing Garden Pests without Poisons,** 1pm. **7/9: Butterflies of the Colorado Front Range,** 1pm. **7/15: Basic Landscape Design,** 1pm. **7/16: Tips and Tricks of Xeriscape,** 1pm. **7/23: Gardening with Mushrooms,** 1pm. Pre-registration advised for classes. www.HarlequinsGardens.com 4795 26th St, N. Boulder. (303) 939-9403.

Tagawa Gardens. 7711 S Parker Rd, Centennial. **6/3: Magical Moon Gardens w/ Night Blooming Perennials,**

Low Tech Greenhouse Design and Operation, 1pm. Pre-registration advised for classes. www.HarlequinsGardens.com 4795 26th St, N. Boulder. (303) 939-9403.

Events, Workshops & Symposia

June 8-10

Four Corners Horticultural Conference, Ft Lewis College campus, Durango. Nationally recognized horticultural professionals will share their knowledge, experience and love of plants! 9am June 8th to 7pm June 10th. Durangobotanicalsociety.com

June 17

Harding Nursery Open House. Hardingnursery.com 721 N Powers Blvd, Colorado Springs 719-596-5712

June 19-25

Pollinator Week. Many events around the state at local garden centers & elsewhere. Pollinator.org

July 7-9

Colorado Lavender Festival, Palisade. July 7th, motor coach tours. July 8th, Festival in the Park 9-4. July 9th self guided tours. Coloradolavender.org



10-11am; **Made in the Shade Perennials,** 12-1pm; **Gardening for Colorado Butterflies,** 2-3pm. **6/4: Unique to the Creek Trail Walk,** 9:30am; **Shrub Roses,** 1-2pm. **6/10: Planting for Four-Season Color,** 10-11am; **Vermicomposting: Turning Kitchen Garbage into Gardening Gold,** 12-1pm; **Xeriscape Plants - Shrubs** with Craig Miller, 2-3:15pm. **6/11: Growing a Cutting Garden Your Landscape,** 1-2pm. **6/17: Herb Day: Using Groundcovers in Your Garden,** 10-11am; **Tammi Hartung's Favorite Herbs,** 12-1pm; **Cooking with Fresh Garden Herbs,** 2-3:15. **6/18: Low-Water Gardening,** 1-2pm. **6/25: Common Problems in the Landscape & Best Design Solutions,** 1-2pm. TagawaGardens.com or 303 690-4722.

August Classes, Presentations, Meetings

Denver Botanic Gardens. 1007 York St, Denver. **8/4: Sunset on the Prairie,** 6:30-8:30pm, \$15/\$12, meets at Plains Conservation Center in Aurora. **8/11: Beginning Farmers Workshop Series: Beekeeping,** 9am-3pm, \$20. **8/17: Cottage Foods Safety Training** with CO State University, 5:30pm, \$65/\$60. Botanicgardens.org

Growing Gardens Greenhouse. 1630 Hawthorn Ave, Boulder. **8/3: Garden to Table Cooking Class 4,** 6pm, \$40. For more info: growinggardens.org

Harlequin's Gardens Sustainable Nursery. **8/5: Foraging Rocky Mtn Mushrooms: Regional Mushroom ID,** 1pm. **8/6: Pruning for Strength, Health & Beauty,** 1pm. **8/13: Make your own Hyper-Tufa Trough,** 10am. **8/27:**

July 16

Crested Butte Wildflower Festival. Over 200 events offered. Crestedbuttewildflowerfestival.com

Sat, July 15

Jefferson Park Farm & Flea Market. 60+ artisans, local food & music, urban homesteading education & ideas including: gardening, composting, rain-water harvesting, bee-keeping, pollinator planting, plus raising chickens & goats. JPFleaMarket.com

Lavender Festival, Denver Botanic Gardens at Chatfield Farms, 9am-5pm, free. Enjoy a variety of food, dessert and drink vendors, educational programs, and lavender products made by local growers and artisans. 8500 W Deer Creek Canyon Rd, Littleton

July 23-28

Perennial Plant Symposium & Trade Show, Denver. Tours, speakers, trade show. More info and complete schedule: ppdenver.com

July 29

6th Annual Saguache Hollyhock Festival, 10-3. Flower art contest & show. Self guided walking tour of Saguache gardens, Hollyhock artwork, souvenirs, mementos, plants, & awards for the Hollyhock art & garden contestants. Saguache community building, 525 7th St, Saguache. info@saguachechamber.org

Aug 5

Cultiva Farm Dinner at Growing Gardens, 1630 Hawthorn, Boulder. Growinggardens.org

Water Garden Society Water Blossom Festival, 9am, at the Monet Pool, Denver Botanic Gardens. Botanicgardens.org

Aug 6

Pikes Peak Urban Gardens hosts a screening of award winning documentary Seed: The Untold Story, featuring Vandana Shiva, Dr. Jane Goodall, Andrew Kimbrell, Winona Laduke, Raj Patel, Stargazers Theatre, 10S, Parkside Dr. Colorado Springs. PPUg.org 719-651- 3416

Aug 12

Colorado Foodways: A Celebration of Local Food. 5:30pm, Denver Botanic Gardens at Chatfield Farms. Annual celebration of Colorado history, music & food. \$42/\$39.

Aug 17-20

Palisade Peach Festival. Peach mania! Plenty of great food, entertainment, contests, activities for kids & opportunities to explore Palisade at one of the original Colorado agricultural fests. PalisadePeachFest.com

Plant Shows & Sales

Sat, June 3

Fairmount Heritage Rose Sale, 8am until sold out. Follow signs to Chapel in the Pines, Fairmount Cemetery, 430 S. Quebec St, Denver. 303-399-0692

Sun, June 4

Colorado Water Garden Society Annual Plant Sale. CWGS Members Only, 9am – 10am; General Public, 10am – 2pm. The Hudson Gardens & Event Center. Contact: Vicki Aber, (303) 423-9216 For more details, go to: <http://www.colowatergardensociety.org/>

KGNU Annual Plant Sale. 9am-3pm. Trees, veggies, bushes, flowers, house plants, you name it! All proceeds go to KGNU. 4700 Walnut St, Boulder.

Mountains & Plains Iris Society Show, 11:30am-4pm. Tall Bearded & other iris that thrive here will be displayed, with members on hand to answer questions. Gates Hall, Denver Botanic Gardens, 909 York St, Denver.

Sun, June 18

Denver Rose Society Annual Rose Show, entries accepted 7-9:30, judging 10-12:30. Open to the public 1-4:30pm at Denver Botanic Gardens, 1007 York St. denverrosesociety.org

Sat, July 22

Mountains & Plains Iris Society Iris Rhizome Sale, 10am-3pm. Excellent assortment of tall bearded irises, plus standard dwarf bearded, intermediate bearded, border bearded, & miniature tall bearded varieties - \$5 each. Tagawa Gardens, 7711 S. Parker Rd, Centennial.

Garden & Other Tours

Sat, June 3

Whittier-Mapleton 15th Annual Garden Tour, Boulder, 10am-3pm. Showcasing eight outstanding gardens in the historic Mapleton Hill neighborhood. All tickets sales directly support Whittier International School. \$15 before June 3rd, \$20 day of event. WhittierGardenTour.com

June 9 & 10

40th Annual Longmont Symphony Festival of Flowers Garden Tour. 9am-3pm. Features five unique gardens ranging from patios to an expansive country home. Supports the Longmont Symphony Orchestra. Tickets \$12 online or at select Longmont garden centers. Longmontsymphony.org

Sat, June 10

Co Native Plant Society Denver Garden Tour, 8am-4pm. Tour eight gardens for \$35. CoNPS.org

Enchanted Gardens of Northwest Denver Tour. Tickets \$20, available at the Conflict Center. Proceeds benefit www.conflictcenter.org 303-433-4983

Old Town Lafayette Garden Tour, 9am-2pm. Five cottage gardens, Artist Demo at

10am at Sister Carmen's Community Garden. Free artist reception & demonstration at 2pm at The Collective, 201 N Public Rd. Tickets \$10, Advance tickets \$8 at Lafayette Florist.

Montrose Garden Tour, 9am-2pm. Self-guided tour of 5 beautiful home landscapes plus the Montrose Botanic Gardens. Tickets online or at the Botanic Gardens day of tour. www.MontroseGardens.org 303-765-2237

Sat, June 17

Denver Water Wise Garden Tour, 10am. Self-guided tour of local urban water-wise gardens. \$10. Botanicgardens.org

Park Hill Garden Walk, 9am-3pm. Proceeds benefit Greater Park Hill Community, Inc. Info & tickets: Parkhillgardenwalk.org

Loveland Garden Tour & Art Show, "Unique Cottage Gardens." Benefits Loveland Youth Gardeners. 8am-2pm. \$15 in advance, \$18 day of tour. Lovelandyouthgardeners.org

Sat, June 24

Greeley Garden Tour. Self guided tour of lovely and unique gardens around Greeley. Tickets are \$15 available at various Greeley nurseries, for info: GreeleyGardenTour.org

Junior League of Fort Collins 35th Annual Garden Tour, 8:30-1. \$20. Annual Terrace & Garden Tour takes event attendees through beautiful landscapes in the Country Club neighborhood of Fort Collins.

Lakewood Arts Council Garden Tour, 8am-2:30pm. Eight beautiful gardens to explore this year! Thoughtful xeriscaping examples, a large community garden, homestead gardens, and two model railroad gardens! Tickets include lunch at our co-op Gallery, 11-2, while you relax and refresh. \$20 for adults, children 7-12 half price, under 7 free. Tickets available at Lakewoodarts.org or at each garden day of the tour. \$25. Lakewood Arts Council, 6731 W. Colfax Ave, Lakewood. 303-980-0625

Sat, June 24

Explore the site of the 2002 Hayman fire, largest recorded fire in Colorado history. See firsthand the surprising state of recovery and consequences on native plants, watershed conditions and ecology. Your guide will be Milt Robinson, formerly with the State Forest Service and Denver University. 9am-1 pm. To learn more and to register: <https://npm.eventbrite.com>

June 24 & 25

11th Annual Purely Ponds Parade of Ponds self guided Charity pond tour, 9-5. All net profits will be matched & donated to the Boys & Girls Club of the Pikes Peak Region by Purely Ponds Fine Landscapes. Tickets with tour map just \$5. Available online at purelyponds.com/parade-of-ponds/ & at all 3 Pioneer Sand locations in CO Springs, Monument, & the Black Forest. 717-896-0038

FOX Open Garden Tour in Colorado Springs, 9am-3pm. Proceeds support projects for CO State University Extension in El Paso County. Tickets \$20, more info: extensionfriends.org

Sat, July 1

Co Native Plant Society Boulder Garden tour, 8am-12pm. Tour 5+ gardens for \$30 on CoNPS.org.

Sat, July 15

Kitchen & Garden Tour presented by Strings Music Festival, Steamboat Springs, 9am. Start: at the Strings Pavilion with a continental breakfast and live music, followed by a self-guided tour of Steamboat's loveliest kitchens and gardens. Each location will showcase live music and host a Master Gardener on site to answer questions. Tickets \$40 through June 30, \$45 after; available online at Steamboatchamber.com

July 22

NoCo Urban Homestead Tour. Tour-goers will be treated to 6 tour stops, 3 homesteads in Fort Collins & 3 in Loveland. The mission of this event is to educate the public about a self-sustainable lifestyle that includes growing your own edibles, raising backyard chickens, season extension, ducks & bees, fruit trees, greenhouses, & incorporating

useful & repurposed garden structures. \$15, children 12 & under free. Benefits the Gardens on Spring Creek & Loveland Youth Gardeners. Fcgov.com/gardens

July 29 & 30

Rob Proctor's Garden Tour to benefit Dumb Friends League! 3030 West 46th Ave, Denver, 7am-1pm. Garden Expert Rob Proctor

& partner David Macke open their gardens to benefit the Dumb Friends League. Visit this garden retreat that features over 600 container gardens as well as beautiful perennial borders, sitting areas, large vegetable gardens & more! Tickets are \$10 suggested donation at the garden the day of the tour, or advance purchase at Tagawa Gardens. Tour sponsored by Tagawa Gardens.



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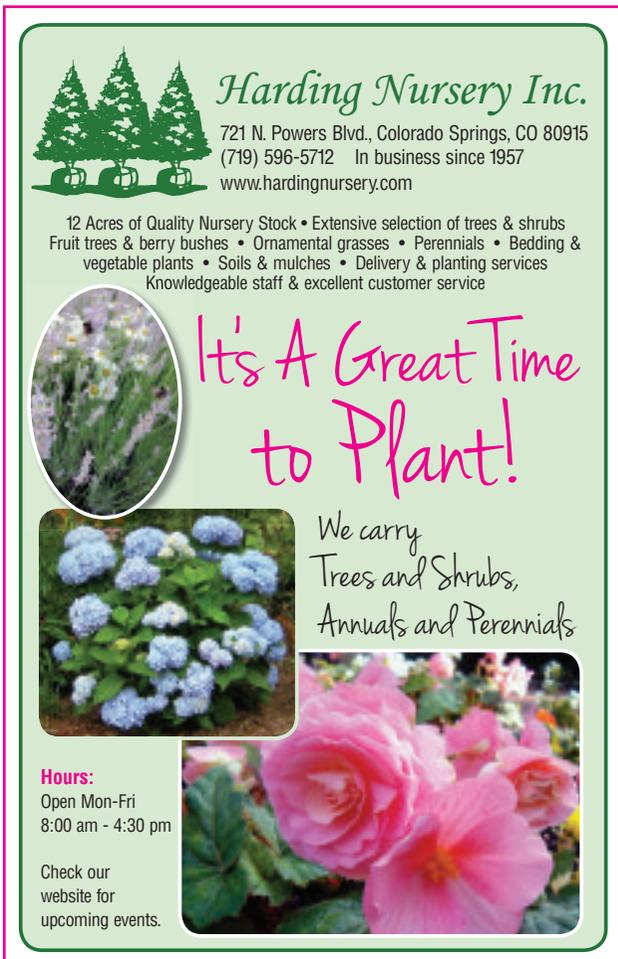
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Summer & Winter Squash

Jane Shellenberger

There are four species of squash: *Cucurbita maxima* (hubbard, buttercup, kabocha, banana, some pumpkins), *Cucurbita mixta* (cushaw pumpkin), *Cucurbita moschata* (butternut), and *Cucurbita pepo* (most have ribbed fruit, pentagonal stems with prickly spines—most pumpkins, acorn squash, spaghetti, delicata, summer squash, crooknecks, pattypan, scallops, zucchini).

Depending on required days to maturity, both winter and summer squash are good plants for the mountains and the plains. They don't mind cool nights and they love our intense high-altitude sun.

Summer squash is native to North America and grows very well in the West. It matures in a shorter season than winter squash, has a thinner, edible skin, and doesn't store well. Wait until after the last frost, when the soil is warm, to plant seeds. All squash like full sun, consistent moisture, and warm soil that's well-amended with compost.

Zucchini is an easy, very productive plant that makes even beginner gardeners feel successful. One or two plants are all you'll need but plant a few extra seeds and thin out all but the most vigorous. Give each plant plenty of room, at least a 4-foot-diameter circle.

Keep picking zucchinis when they're about 6–12 inches long, but if you miss one and it morphs into a big luncker, which can happen quickly, it's still good—not as tough and inedible as usually described. Pick it right away and put it in the shade where it will keep outside for a few weeks without taking over your refrigerator. A friend of mine even prefers the big ones because the seeds contain lots of protein.

Costata Romanesca (62 days) is an Italian heirloom. Cocozelle,

Black Beauty, and Grey Zucchini (excellent flavor and good keeper) all mature in 53 days. At the Zweck Farm in Longmont, one of the oldest family-owned organic farms in Colorado, they say striped zucchini grows the best. Magda is a sweet nutty-tasting Lebanese squash that resembles a short, pale green zucchini with more of a teardrop shape.

Steve Solomon says in *Gardening When It Counts* that many OP squash varieties degenerated as hybrids came to dominate seed catalogs, but Yellow Crookneck (58 days) is the exception. It's a great-tasting summer squash and a prolific yielder. Many of the hybrids yield more, but they don't taste as good.

Some consider Benning's Green

sizes, and textures that you would be hard-pressed to grow them all over the course of a lifetime. Their lush, prolific vines and leaves wouldn't mind taking over the entire garden. It's advised to remove squash volunteers since they cross freely within their species and mostly create inferior offspring, but I allowed an especially vibrant one to mature. Without any attention at all, it sent out 15-foot vines in several directions and yielded nine nutty, sweet, delicious, dark green kabocha squashes. Seed must have arrived in my compost.

Heavy-duty trellises or fences that allow winter squash (or melons) to grow vertically and off the ground are a good solution to the space issue. One friend lets them climb through

kabocha-type that also stays fairly compact, forming a lush mound of green. Its immature fruits are delicious eaten as summer squash earlier in the season. Hopi Blue Ballet is a Native American semibush type with a vine that grows 3–5 feet. The plants each bear two fruits weighing 4–6 pounds, with a blue-gray exterior and sweet, fiberless deep orange flesh.

Another Native American is Hopi Orange (90–110 days). It has beautiful, bright orange, round, flattened 10-to-15-pound fruits with yellow-orange flesh and good squash bug resistance.

I like the warty French Galeux d'Eysines, with smooth sweet orange flesh. Then there's the Pink Banana Jumbo (makes great pies!) and several delicious hubbards in many sizes, shapes, and colors, including the elongated blue-gray Pikes Peak or Sibley.

Winter squash can usually withstand light fall frosts, especially if you use row cover. When harvesting, make sure to cut off each squash with a knife and leave a couple of inches of stem attached, otherwise it won't store well. If the stem breaks off, cook and eat it soon. Ideal storage conditions are 50–55 degrees and dry. A cool basement usually works. Most winter squash, except delicata, acorn, and sweet dumpling, benefit from curing, which means keeping them at about 70 degrees for 10 days or so before moving them to a cooler spot.

The best culinary pumpkins have firm flesh and a sweet taste: Small Sugar, Winter Luxury, Cheese, Golden Cushaw, Jarrahdale (a gray-blue Australian) and Rouge vif d'Etampes (Cinderella). Lady Godiva is a good thin-skinned variety for nutritious pumpkin seeds.

Growing giant pumpkins has become a cult hobby with a 2016



Searching for zucchini below the leaves; at right, heirloom winter squashes: warty Galeux d'Eysines, blue-gray Jarrahdale, Banana Jumbo



PHOTOS: JANE SHELLENBERGER

Tint (55 days, pattypan) the best-tasting summer squash. White Bush Scallop (49 days) has a delicate nutty flavor, is high in vitamins and minerals, and easy to grow. The pattypan are best when harvested small (3–4 inches) and tender.

Winter squash and pumpkins. There are so many varieties of squash in so many colors, shapes,

her trees and festoon the branches with hanging squash "lanterns". The stem always holds the weight of the fruit. They need all that growth and photosynthesis to produce fruit, so don't prune the vines.

Some more-compact growers are Sweet Dumpling, Bush Buttercup, and Table King Bush Acorn. Sunshine is a hybrid orange

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Bees Win One in Court

Neonicotinoid pesticides were banned in France 17 years ago when over a million bee colonies died in less than two years after Imidacloprid was used on Sunflowers, the most profitable honey crop in France at that time. As Graham White, a Scottish beekeeper and leading global spokesman on bee issues, explains, there were later crop-specific bans in some other EU countries but it took 13 years before neonics were banned on "bee attractive crops" for all 28 countries in the European Union. The ban was imposed in December 2013.

A huge scientific review has recently been carried out by the European Food Safety Authority, (EFSA), by a panel of expert toxicologists, agronomists, and entomologists from 28 countries. The results, from over 99% of 1100 independent studies, confirm the findings of the 1999 report by the French Government's top Science Commission that triggered the partial ban in 2013 – namely, that neonics are the number one cause of global bee deaths, says White.

For all of that time, the U.S. EPA refused to reconsider any of the registrations it had given for neonic pesticides. Meanwhile, we lost 20,000,000 bee colonies and

uncounted numbers of wild bees, butterflies, and other insects.

The pesticide manufacturers still say that no definitive link has been proven between neonicotinoids and the sharp decline in bee populations.

With assistance from the Sierra Club, Pesticide Action Network, the Center for Food Safety and the Center for Environmental Health, four professional beekeepers, including Tom Theobald of Niwot, CO, filed suit against the EPA in 2013. And now, finally, on May 8, 2017 the bees won a small legal victory. Federal Judge Maxine Chesney ruled that the EPA violated federal laws protecting wildlife by issuing 59 pesticide registrations between 2007 and 2012 for a wide variety of agricultural, landscaping, and ornamental uses.

The case is not over, but Center for Food Safety's legal director described the ruling against the EPA as "a vital victory."

The lawsuit made multiple claims that the EPA failed to follow proper regulatory procedures and the plaintiffs had hoped the pesticides in question might be taken off the market until proven safe. But the judge did not agree.

Jane Shellenberger

SQUASH FROM PAGE 20



Pattypan



Crookneck squash

world record of 2624.6 pounds set in Belgium. The Colorado state record was broken at Jared's Garden Center weigh-off in 2016, with an amazing 1,685.5 pounds grown by Joe Scherber. There's nothing culinary about these pumpkins.

Squash blossoms are delicious but highly perishable and must be used right away; morning is the best time

to pick, before the flowers close up. The female blossoms develop into the fruits at the end of thick buds, but the male flowers on longer, thin stems can be harvested without reducing your squash harvest.

Adapted from Organic Gardeners Companion, Growing Vegetables in the West by Jane Shellenberger

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GARDEN TOURS & EVENTS

6th Annual Saguache Hollyhock Festival
July 29th
10 am - 3 pm

- Flower Art Contest & Show
- Gardens Contest (\$100 1st prize) & Show
- Loads of fun for kids of all ages

Enjoy self-guided tours of hollyhock, flower & vegetable gardens of Saguache.

Saguachechamber.org
or call 719-850-0051

The Lakewood Arts

Garden TOUR

Saturday, June 24th 2017
8am to 2:30 pm
Advance Tickets: \$20 at gallery or website
Tickets at the Gardens: \$25
Includes Lunch at the Gallery
Gallery Hours: Wed - Sunday, 11 to 5

LAKEWOOD ARTS
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www.lakewoodarts.org

ENCHANTED GARDENS TOUR
of Northwest Denver

SATURDAY, JUNE 10
\$15 THRU MAY 15,
\$20 THEREAFTER

PROCEEDS FROM THE EVENT BENEFIT

the Conflict Center

VISIT WWW.CONFLICTCENTER.ORG
OR CALL 303-433-4983 FOR MORE INFO.

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GARDEN TOUR

June 10, 2017
9am-2pm

TICKETS \$10
Advance Tickets \$8
Lafayette Florist

FIVE COTTAGE GARDENS
Artist Demo at 10am
SISTER CARMEN COMMUNITY GARDEN
655 Aspen Ridge Dr

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GARDEN TOURS

LOVELAND

GARDEN TOUR & ART SHOW

SATURDAY, JUNE 17 8am - 2pm

TICKET INFO: LovelandYouthGardeners.org

15TH ANNUAL WHITTIER-MAPLETON GARDEN TOUR

TOUR EXCLUSIVE, UNUSUAL, PRIVATE GARDENS ON BOULDER'S HISTORIC MAPLETON HILL

SATURDAY, JUNE 3 10am-3pm BOULDER

TICKETS AND INFO AT www.WhittierGardenTour.com

JUNIOR LEAGUE OF FORT COLLINS 35TH ANNUAL GARDEN TOUR

Fort Collins in Bloom

PRESENTED BY FORT COLLINS NURSERY

Country Club Neighborhood

SATURDAY, JUNE 24, 2017 8:30 a.m. - 1:30 p.m.

GENERAL ADMISSION: \$20 | VIP: \$25

WP listed includes a food and beverage sample at each of the featured properties.

Purchase tickets at www.jlgardentour.org

Park Hill Garden Walk

Saturday, June 17 9am - 3pm

For Tickets & Info www.parkhillgardenwalk.org

Olympic Journey FROM PAGE 17

notice different things from that angle. We also came surprisingly close to a Chamois and her fawn. I was chagrined when I processed the picture to see her seeming to stick her tongue out at me.

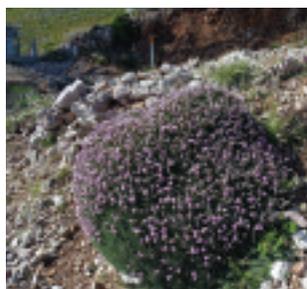
After our days on Olympus, which included nearly a day circumnavigating the massive on a loop road through rich montane meadows and woodlands, we decided to spend the following week visiting other mountains on the mainland. Each mountain had a new group of flowers and a very different feel. Mt. Tymphristos was where I first saw *Acantholimon ulicinum* in its massive glory in



Storks of Greece

Greece; we'd seen a much more petite form on Turkish Kaz Dag. The brilliant red *Lilium chalcedonicum* flashed by on several mountains, but we'd seen it most commonly on Mt. Olympus' lower slopes.

Numerous Mulleins in all shapes and sizes greeted us again and again. On Vardousia we saw a petite golden leaved mullein that may be *V. reiseri*, and a giant branched species that was probably *V. mallophorum*; both would be welcome in my garden! A special treat for



Acantholimon ulicinum Tymphristos

me was seeing *Daphne oleioides* on practically every mountain we visited, often making massive clumps a meter or more across though rarely



The brilliant *Lilium chalcedonicum* outnumbered with Eric Hsu & Eletherios Dariosis and inset.



Verbascum guilcardii 'Vardousi'



Chamois with her fawn

more than a foot high. On every mountain we found some variation on Myrtle Spurge (banned as a weed in Colorado), which seemed anything but weedy in Greece. One form had brilliant red flower bracts. Dianthus and foxglove species grew on every mountain. It quickly became apparent that I could spend many trips exploring the mountains of Greece and not begin to exhaust them (or my own patience). I would love to go back!

We did brief part day trips to Mt. Parnitha above Athens and Mt. Parnassos above Delphi. These

were so richly diverse and different in their flora from the mountains further to the north and west that I couldn't begin to recap them: the flora of Greece has far greater species variation from one mountain to the next than we are accustomed to in the Rockies. When I returned to my ancestral island of Crete and drove over the White Mountains on several occasions, pausing briefly to walk

around, I experienced botanical surfeit; Crete is almost another world with dozens of distinct and endemic plants.

The promise of finally exploring the natural world in Greece opened far more doors than I'd expected. Rather than fulfilling my dream, I now have many more mountains to return to. Aside from the heavily trafficked



Digitalis ferrugineum

trail to the refuge on Olympus, we were the only hikers on most of our sojourns in the mountains, passing few cars on the road. The tourist destinations in the various famous "hot spots" were another story – crawling with people and truly hot in midsummer. That alone is an excellent reason to be botanically inclined.

Panayoti Kelaidis is Senior Curator and Director of Outreach at Denver Botanic Gardens. He grew up on the Front Range and gardens at his home in Denver.



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▶ IT RUNS OFF

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