THE Real Dirt

A PUBLICATION OF THE GCA HORTICULTURE COMMITTEE SPRING 2024 ISSUE 66

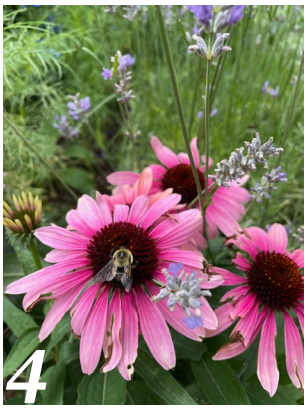
"A seed is the dormant dream of a new life. A hope, a prayer, the smallest version of an entire life."

— Jennifer Jewell

Contents SPRING 2024

Features

In Every Issue



On the cover: Photo courtesy of Jennifer Jewell. **Contents page photos, clockwise from top left:** Photo of pod and seed courtesy of Jennifer Jewell. *Taxus floridana* by John Evans, courtesy of Center for Plant Conservation. Purple coneflower (*Echinacea purpurea*) by Suellen White, Garden Club of Denver, Zone XII. Seed drawer by Julie Sakellariadis, GC of East Hampton, Zone III.

The Garden Club of America
14 East 60th Street,
New York, NY 10022
(212) 753-8287
www.gcamerica.org
trd@gcamerica.org

The Real Dirt is produced three times a year by the Horticulture Committee of The Garden Club of America. Submissions and comments are encouraged and welcome. Contact ***trd@gcamerica.org***.

FROM THE HORTICULTURE COMMITTEE CHAIR

Spring is a time of renewal and growth for all living things. Try to remember when you germinated your first seeds—was it in a childhood garden with a beloved relative, or in a classroom with a wonderful teacher, or as a new garden club member? Whenever it was, recall that primal joy of helping a seed come to life. Why not treat yourself to that again?

As noted in the updated GCA ***Sowing Seeds*** propagation handbook, "When you choose to propagate a plant by sowing its seeds, you are continuing nature's way of ensuring viability and sustainability on a most basic and important level."

We hope you will visit the Horticulture Committee's ***landing page*** and the ***GCA Seed Share Database*** and request seeds from other GCA club members. And if you are hoping to grow native plants from seed, consider getting them from sources in your own ecoregion so that you can continue to be a good steward of our beautiful land.

Enjoy this issue dedicated to propagation and seeds. Let's get growing!

Carrie

Carrie Waterman, Horticulture Committee Chair, Noanett Garden Club, Zone I

EDITOR'S MESSAGE

It seems like just yesterday that Annie Bigliani and I met each other enroute to the Denver Botanic Gardens, where the 2019 Shirley Meneice Horticulture Conference was being held. I had just boarded the bus when Annie joined me and introduced herself. She was the Chair of the Horticulture Committee and wildly curious about my experience as a first-time attendee and relatively new member of the GCA. I was smitten with the conference and impressed with the organization. After learning I had recently retired from a career in communications and management, she suggested I consider getting involved with the GCA.

Photo by Michel Attia

Not long after, I got a call from Annie, asking if I would consider serving as assistant editor of *The Real Dirt*. I was intrigued and honored. I said yes. The rest, as they say, is history. Now, after two years as assistant editor and two years as editor, it is time to move on to other adventures. It has been a fulfilling four years, filled with fabulous people and prose. A special thanks to Madeline Mayhood and Laura Case—both exceptionally talented and true professionals. I am grateful to have partnered with them and now count them as cherished friends.

I leave you in the able hands of Lisey Good. She is a gifted writer and artist. I have no doubt she'll soar in her new role. Where shall I go next? I can't say for certain. But you can surely always find me in my garden. Here's to warm-as-toast sunshine, nurturing rain, and exuberant growth in the years to come. Be well.

Dawn

Dawn Borgeest, Horticulture Committee Vice Chair,
Editor, *The Real Dirt*, Rochester Garden Club, Zone III

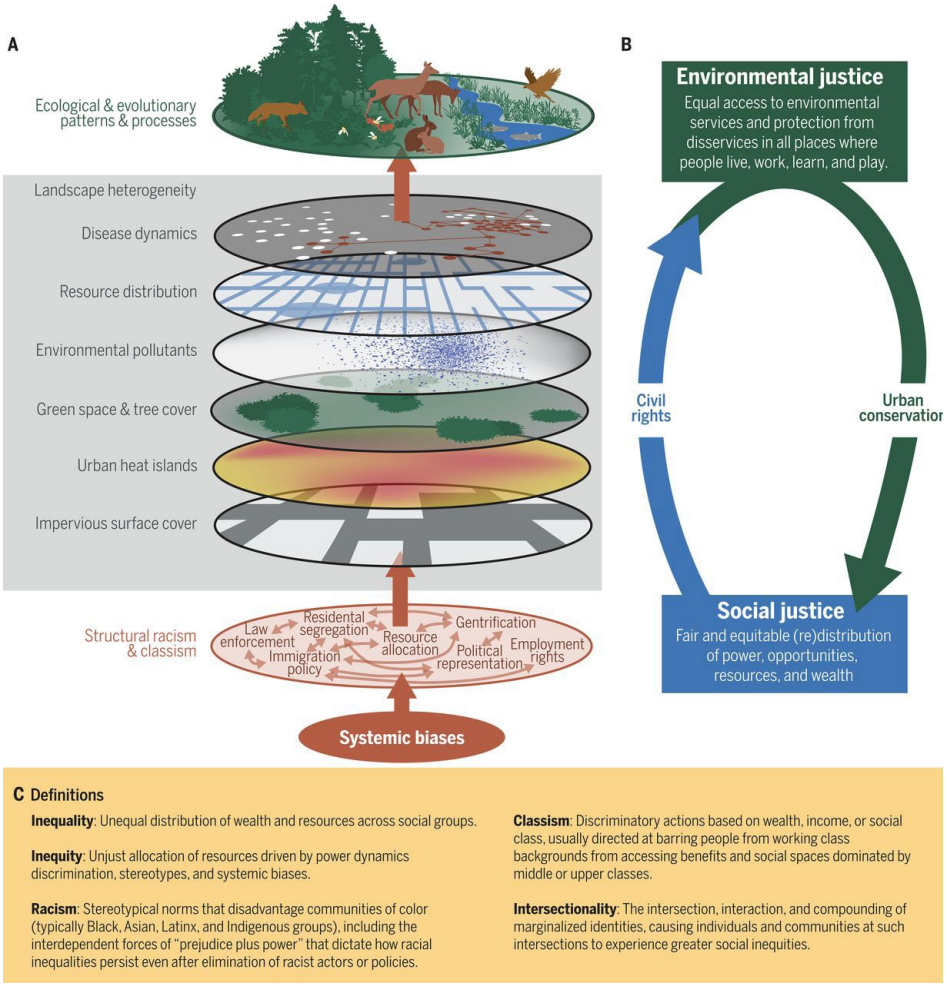
The Dirt

UPSCALE NEIGHBORHOODS HAVE BETTER BIRDS

A study, published in *Science*, purports that centuries of systemic racism have resulted not only in demographic segregation in cities, but have created an unequal division of nature.

The study, led by UC Berkeley ecologist Christopher J. Schell, titled "The Ecological and Evolutionary Consequences of Systemic Racism in Urban Environments," demonstrated how racist urban policies such as "redlining" (denying loans to a geographic area due to the residents' ethnicity) resulted in environmental imbalances that persist today, nearly 60 years after the Fair Housing Act made such policies illegal. In fact, more affluent, predominately white neighborhoods commonly have greater vegetation and tree canopy cover, cooler summer temperatures, better air and water quality, better soil, and even more bird diversity.

One real-world example:



A widely shared illustration from the 2020 study demonstrates how discriminatory urban planning practices have impacted the distribution of nature in American cities. Courtesy of the journal of *Science*.

Affluent white neighborhoods have been found to have an abundance of birds typically associated with forests, such as bluebirds, wrens, and warblers (shown here). Historically redlined neighborhoods with predominately black or Hispanic populations have been found to have fewer forest dwellers.

because of its prevalence of green spaces, trees, and flowers—and the insects that invariably visit them—predominately white Beverly Hills, California (median home price $3.6 million) attracts dozens more species of birds than nearby largely Hispanic Boyle Heights (median home price $628,000). It's not surprising, according to Dr. Schell. "Air pollution isn't just restricted to people. Other animals have lungs," he said in a recent *New York Times* article about the study's findings.

The landscape differences between neighborhoods clearly matter to birds and other wildlife, but they are just as strong an indicator of conditions that make life more difficult or unhealthy for humans as well. Biologists note that while the evolutionary impacts of redlining and other discriminatory policies are still being felt in urban wildlife populations, there are solutions. A start? Environmental interventions such as increased urban tree planting and more designated green space in traditionally marginalized neighborhoods can help to remedy the inequity, both for wildlife and humans alike.

BIRDS, BEES, AND PANSIES

A study published by the New Phytologist Foundation in December 2023 concludes that some flowers, lacking needed birds and bees to pollinate them to create the next generation of the plant, are self-pollinating. The study focused on the field pansy. Historically, the pansies rely on bees to help them reproduce. But as the bee population declines, the pansies use their own pollen to fertilize their seeds. The risk of "selfing" means that there is no longer a new mix of DNA to help plants evolve into new combinations that strengthen the plant's long-term survival. The researchers also found that self-pollinated plants tended to produce smaller flowers and less nectar. When they tested how bees reacted to old field pansies vs. new field pansies, they found that the bees were more inclined to visit the old pansies. Hence an evolutionary downward spiral, caution the botanists conducting the study, that may result in the extinction of the plants.

—Dawn Borgeest, Rochester Garden Club, Zone III

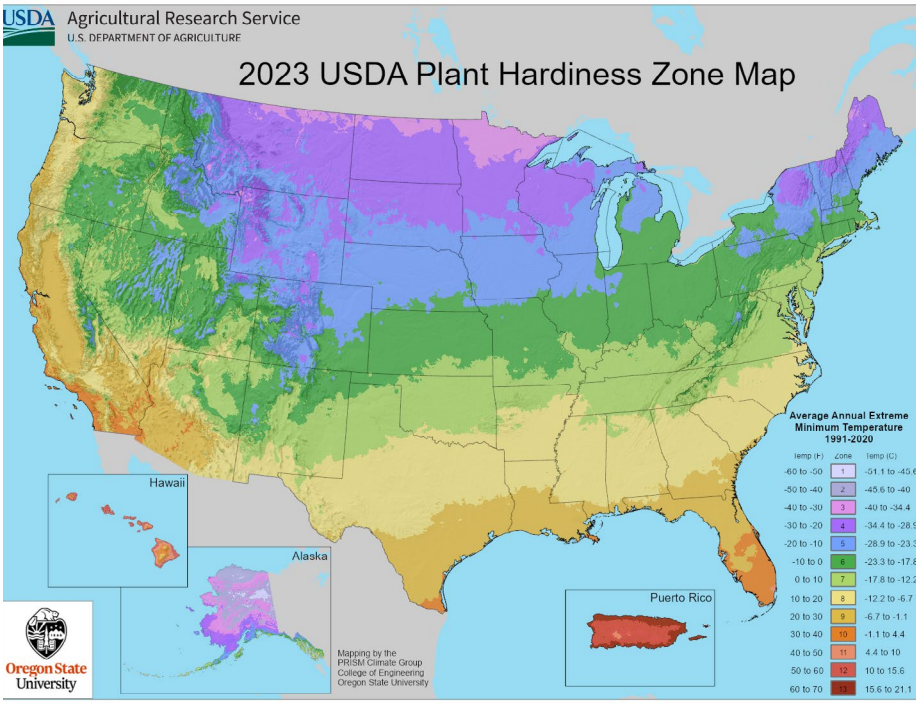
PLANT HARDINESS ZONES SHIFT

Do you know what plants can survive in your hardiness zone? You might need to rethink that.

For the first time in over a decade, the U.S. Department of Agriculture has released an updated Plant Hardiness Zone Map that makes official what many of us have already experienced in our own gardens: the climate is warming and impacting what plants can thrive—or simply survive—in our backyards. The new map reveals that just over half of the country has already moved into a slightly warmer zone, with the biggest changes seen in Arkansas, Kentucky, Missouri, and Tennessee, where temperatures have already warmed as much as 5°F.

The warming is consistent with climate change predictions. In fact, Art DeGaetano, Director of the Northeast Regional Climate Center at Cornell University, said in a *New York Times* article, that the warming is "very much in line with what we expect to see from climate change," adding that "not every cold temperature is going to get warmer, but on average, things will get warmer." Indeed, the last USDA zone map, released in 2012, revealed that most of the USA had already shifted one-half zone warmer from the previous map released 12 years before.

The zone map is based on 30-year averages for the lowest annual winter temperatures. In the U.S., the coldest areas were remote regions of Alaska, which reached as low as negative 60°F. The warmest annual winter temperatures, as high as 70°F, occurred in Puerto Rico.



HOW BUGS COULD TRANSFORM AN INHOSPITABLE PLANET

With the help of fly larvae, scientists researching space agriculture have been able to grow English pea plants in barren, "alien" soil.

If humans are ever to successfully colonize Mars, they're going to have to take a Noah's Ark of sorts with them—and that includes plenty of tiny flying creatures or creepy crawlies. Insects—or, more specifically, their manure—are absolutely vital to creating healthy, productive soil. In fact, in recent years, researchers at institutions across the globe have been experimenting with how bugs could be enlisted to help transform Mars' dry, mineral-packed, and granular soil into something rich enough to grow food crops.

Scientists at Texas A&M University have even been able to grow English pea plants in soil designed to mimic that of Mars by using bug poop as fertilizer. Once the insects have consumed and digested organic material, they create "frass," which is rich in the bacteria as well as in nutrients such as phosphorus, potassium, and nitrogen—all essential to healthy soil. It also contains chitin, a derivative of glucose. By tinkering with the percentage of frass to simulated alien soil (purchased from a company called The Martian Garden), they were able to hit upon a recipe that yielded pea plants which performed as if they were grown in rich potting soil.

Which insects will prove the best help to future Martians? Many of the researchers, such as Hellen Eissen of Wageningen University in the Netherlands, choose black soldier flies for her team's alien soil enhancement experiments. "They eat almost anything," she says, but unsurprisingly, her experiments have revealed that higher energy food scraps yield better frass fertilizer. "You know what they say about you are what you eat? The same goes for larvae," says Eissen.

> "You know what they say about you are what you eat? The same goes for larvae."
>
> —Hellen Eissen

HOW GARDENERS CAN REDUCE PLASTIC USE

Making your own compost can reduce garden waste and the amount of trash you add to the waste stream. Photo courtesy of Lisey Good

Did you know that 350,000 pounds of horticultural plastic, made primarily from crude-oil polypropylene, enters the U.S. waste stream annually? Conservation-minded gardeners can reduce environmental impact—and the amount of plastic that ends up in oceans—with some simple changes. Read on for tips to green up your garden.

Choosing biodegradable, plantable pots for seed propagation saves plastic. Photo courtesy of Cheryl Welch, Garden Club of Jackson, Zone IX

Recycle plant containers. That is, if you can. Very few municipal centers accept the plastic containers that nurseries most commonly use. Home Depot and Lowes will recycle containers purchased from their stores, but you must first check with the specific store to ensure they're participating in the program.

Choose biodegradable pots. Options include coconut coir, recycled paper, or "cow pots," made from cow manure and cardboard. When propagating seeds, you can follow a tip from Cheryl Welch (Garden Club of Jackson, Zone IX) and make your own pots from recycled toilet paper tubes.

Make your own fertilizer. In case you need another reason to compost, remember that plastic fertilizer bags often make their way to the ocean where they harm birds, seals, and fish. Try making your own fertile soil by composting.

Skip bagged mulch. You can make your own mulch using seaweed, shredded leaves, grass clippings, pine needles, or compost. Or consider buying wood mulch by the yard from your local supplier. However, using mulch from your local transfer station is not recommended because it may be contaminated with Asian jumping worms or invasive plant seeds.

Better tools. Invest in longer lasting, "old-fashioned" garden tools made from wood and metal rather than plastic. Consider borrowing less frequently used tools from a neighbor.

Use the right weed barriers. Plastic sheeting leeches toxic chemicals into your soil, and even landscape "fabric" is made of woven plastic. Better alternatives include jute or hemp burlap sacks, 100 percent cotton sheets, or good, old-fashioned cardboard covered with mulch.

Recruit the next generation. Reducing plastic will take all of us working together, so we need to teach our kids and grandkids to reduce, reuse, and recycle. A great teaching tool? The children's book *One Plastic Bag* by Miranda Paul, is the inspiring true story of a woman who started a recycling movement in her native Gambia.

SEND US YOUR PHOTOS!

The Real Dirt wants to publish club member photos—on our cover and in our pages—and we heartily welcome submissions from novices and seasoned pros. Send your garden-related shots, in any and all seasons, to ***TRD@gcamerica.org***. For tips on good garden photography, check out these helpful ***guidelines***.

The Dirt is written and curated by Lisey Good, Cohasset Garden Club, Zone I, Assistant Editor of *The Real Dirt*

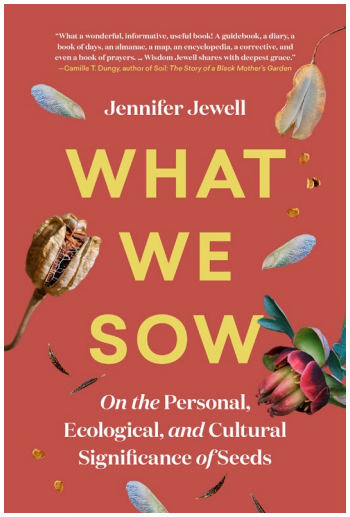
Sowing Hope

By Dawn Borgeest, Rochester Garden Club, Zone III

In her latest book, *What We Sow: On the Personal, Ecological, and Cultural Significance of Seeds* (Timber Press, 2023), Jennifer Jewell observes that seeds "might seem still, quiet, passive. But in them all is a forceful dynamism not to be underestimated." The same could be said of Jewell herself—the creator, writer, and host of *Cultivating Place: Conversations on Natural History and the Human Impulse to Garden*, a podcast downloaded more than one million times annually—and the author of *The Earth in Her Hands, 75 Extraordinary Women Working in the World of Plants* (Timber Press, 2020) and co-creator of *Under Western Skies, Visionary Gardens from the Rockies to the Pacific Coast* (Timber Press, 2021). In 2023, the American Horticultural Society honored her with the B.Y. Morrison Award for outstanding, effective, and inspirational horticultural communication.

What We Sow packs a punch that, we hope, awakens many to the power—and peril—of seeds.

"A seed is the dormant dream of a new life. A hope, a prayer, the smallest version of an entire life," Jewell writes. "Many seed keepers describe seeds as embodied prayers for the future from the past, full of adaptive and encoded history of time and place, full of history of people, places and cultures, full of environmental lessons and learning, all of which imbue surviving seed with strength, with resilience."



Yet she cautions that seeds—and our future—are in peril. She asks, "Are we headed toward a silencing of spring monumentally farther reaching than Carson forewarned?"

Could small but mighty seeds determine our destiny? Jewell would empathically say yes. She suggests that seeds should be considered the fifth element—water, fire, earth, air, *and seeds*. "Seed is the source of life," she says. "...all seed, spark thoughts of food, family, impossibly elegant engineering ... and the possibility of having our futures literally flung at us."

Seems rather poetic. Yet, according to Food & Power, an online food policy forum, the seed business is one of the most concentrated agricultural industries. Four petrochemical corporations control 60 percent of the world's market share for seeds—the wide majority of which are genetically modified. Cornell University defines genetically modified as "organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally."

"When a preponderance of genetic resources is controlled by institutions with a profit motive, our ecosystem is threatened," Jewell warns. An analysis from Food & Power also notes that much of that market share is being protected by "designing seeds to terminate—or, to fail to germinate after one harvest, forcing farmers to purchase new seeds from them each season." The seed is also designed to work with the pesticides they produce, forcing farmers onto a "pesticide treadmill."

For the likes of Monsanto, seed is a commodity for profit. But others see it as cultural treasure and legacy. They are "keepers of culture and seeds," who are committed to ensuring we protect this precious resource:

- Keepers like Leah Penniman, Founding Co-Director and Farm Manager of Soul Fire Farm—an Afro-Indigenous centered community farm committed to uprooting

racism and seeding sovereignty in the food system—who is growing out seeds of the African diaspora.

- Keepers like Diane Wilson, of the Rosebud Reservation in South Dakota and the former Executive Director for Dream of Wild Health, an Indigenous nonprofit farm, and the Native American Food Sovereignty Alliance, a national coalition of tribes and organizations working to create sovereign food systems for Native people.
- Keepers like Vandana Shiva, the founder of Navdanya. Navdanya, based in India, describes its work conserving "... our rich seed heritage of nutritious, climate resilient food. For us food is not a commodity produced with toxic and artificial chemicals pushing species to extinctions, driving climate change, and spreading sickness, disease, and pandemics. Food is life, food is health."

Businesses like Second Generation Seeds are also leading the way as seed keepers. The firm is tending "the kinship between the Asian and Southwest Asian/North African...by preserving, adapting, and breeding beloved crops, we affirm that culture is rooted in our imaginations, not just our memories."

These are just a few of the seed keepers Jewell introduces to us. They all believe in the ability of seeds to connect us to our legacy, history, and culture. "Telling these stories cultivates empathy and different world views to reconnect to cultural significance that

"Seeds connect us to our history, our culture," says Jewell.

shifts everything. It leads us to understanding people, plants, and places differently, more compassionately," she writes.

Jewell also takes us to seed banks, where seeds are being preserved and protected, including Svalbard Global Seed Vault, founded by GCA Medalist Cary Fowler. Also referred to as the "doomsday vault," this is a collaboration of the 1,700 seed banks in the world to create "the backup copy of the backup copy."

Jewell gives us not only the gift of knowledge in her new book, but the gift of her journal, making observations throughout the year, beginning with the season of seed—October. Her observations and reflections are a much-needed respite to offer some heartfelt hope amid the dispiriting data. "The diary of my own garden gave me therapeutic relief," she says, noting that the research was complicated and disheartening. Yet she never loses heart and hope.

"If we as humans see ourselves in our seed, perhaps our seed can help us see and save the best of who and what we are," she says. "The seeds of change are in all of us if we wish to nurture them, to save them, and grow them out and on. Can the contours of our humanity expand back out to be that infinitely diverse, artful, flavorful, and generative? The seed and the seed keepers among us believe they can. They see, seed, and re-seed their great expectations and faith that we can meet this moment—these many moments—for and with the seeds in our crops, in our wildlands, in our communal food and festivals, art and ceremonies. For the seeds in our collective hearts, minds, and bodies—our hopes, prayers, and blessings."

SEED SENSE

A few tips from Jennifer Jewell before you buy that seed packet ...

- *Keep gardening!*
- *Be intentional about what you're buying.*
- *Call the companies that send you catalogs. Ask them if their seeds are GMO, organic, open pollinated, or treated with any chemicals.*
- *Purchase organic seeds.*
- *Go to farmer's markets and talk to the farmers. Ask them:*
  - *Is your farm all natural?*
  - *Is your farm organic?*
- *Participate in Seed Share, an initiative of the GCA Horticulture Committee, **click here** to learn more.*

“The seeds of change are in all of us if we wish to nurture them, to save them, and grow them out and on.”

Seeding Our Future

By Julie Sakellariadis, Garden Club of East Hampton, Zone III

Dr. Mauricio Diazgranados, the newly appointed Chief Science Officer and Dean of the International Plant Science Center at the New York Botanical Garden, is passionate about seeds. Seeds have been a central feature of much of his research during the last decade, and, he insists, are vital components in any legitimate, nature-based plan for ecological restoration.

Diazgranados is a native of Colombia. He earned his Ph.D. at St. Louis University-Missouri Botanic Garden and conducted postdoctoral research at the Smithsonian before returning to Colombia to serve as the Scientific Director of the Jardín Botánico de Bogotá, where he initiated major rebuilding efforts of the herbarium and display greenhouses. Along the way, he also led a project to propagate a rare sunflower species, thought to be extinct, from wild collected seed—this sunflower now flourishes throughout Bogota. In 2016, Diazgranados moved to the Royal Botanic Gardens Kew, to take a research position at the Millenium Seed Bank facility in West Sussex. Ever since, his research has focused on ecological restoration of degraded habitats, and he says seeds are the key.

Diazgranados explains that there are two kinds of seeds, called orthodox and recalcitrant. Orthodox seeds are typical of temperate climate plants. They evolved dormancy as a way to survive winter conditions, and consequently, most can be stored for long periods of time. Kew's Millenium Seed Bank, the world's largest

Dr. Mauricio Diazgranados, Chief Science Officer, and Leeann Dabydeen, Lewis and Dorothy Cullan Program Laboratory Manager, at New York Botanical Garden. Photo by Julie Sakellariadis, Garden Club of East Hampton, Zone III.

facility of its type focusing on non-crop plants, contains over 2.4 billion seeds for about 40,000 species of plants. These seeds, owned by their country of origin but housed at Kew, are sometimes given back to the countries of origin when the seeds are required to restore extinct natural populations. Recalcitrant seeds, on the other hand, are largely from tropical plants and evolved to germinate roughly as soon as they hit the ground. They never needed nor evolved dormancy, and as a consequence, they are very difficult to store. The best way to propagate plants with recalcitrant seeds is to continuously collect seeds, plant them, and grow them in situ.

Hence Diazgranados' research focus—leading multidisciplinary teams in South America and around the world to help local communities in the tropics develop markets for seeds of key native species, giving people an economic incentive to plant and cultivate them. Since the level of species interdependency in the tropics is high, focusing on creating markets for a handful of economically valuable seeds becomes the cornerstone for incentivizing people to restore plant communities and entire ecosystems.

One of his nature-based restoration efforts is adapted for South America's tropical dry forests—the most threatened ecosystem on earth. One of the projects centers around a tree called *guáimaro* or Maya nut tree (*Brosimum alicastrum*). An excellent source for timber, the tree has been overexploited, yet it also produces abundant nuts with potential value as a food

crop. Diazgranados' team has been helping to create and nurture the market for these nuts by convincing restaurants, including many with Michelin stars, to incorporate its flour in their cooking for cakes, breads, and biscuits. Diazgranados believes it also has potential as a substitute for coffee.

He has no doubt that ecological restoration efforts must recreate biological diversity in order to succeed. In addition, in the tropics, badly degraded soils in deforested areas are typically overwhelmed by invasive species that are quite effective at excluding indigenous plants. But if people have an economic incentive to pull weeds, plant seeds, and nurture seedlings, he says there is a path forward. He chuckles softly at the suggestion that he's just described gardening.

Soil—The Foundation of Gardening

By Meg Tapp, The Garden Club of Houston, Zone IX

We all want our gardens to flourish—we are members of The Garden Club of America, after all (plus you're reading *The Real Dirt*). The key to a vibrant garden is soil, unexciting as that may sound. The plant that you see above ground is a product of a complex and extraordinary web of activity going on in the soil. While you can't see what is happening in the soil, it is quite amazing.

The cycle of decay, transformation, translocation, and absorption needs no interference from us to function perfectly. Think about an undisturbed forest—it has no human interference, and it does just fine. But our gardens are different than that forest. There is nothing wrong with planting what we like to look at and to eat. We just need to actively participate in keeping our soil healthy to compensate for disturbing the natural soil cycle.

Everything that lives in the soil (microbes, fungi, worms, nematodes, etc.) has a function. We need to build and maintain that habitat so the cycle can produce healthy plants. Here are some ways you can do that:

Meg Tapp, The Garden Club of Houston, Zone IX

- **Leave plants that die.** If your plant died because of disease, you definitely want to remove it. But if your plant died because it is the wrong plant for the location or had heat stress or froze, consider cutting it at the soil line and leaving the roots in the soil. Those roots provide air pockets, channels, and nutrients to the soil. Consider replacing it with native plants, as they have a greater chance of surviving future droughts and freezes. Look around your community and see what plants fared well—those could be good choices.
- **Test your soil for nutrient deficiencies and pH.** Nitrogen, phosphorus, and potash/potassium (N-P-K) are the three main nutrients that all plants need. There are chemical symbols on every bag or jug of fertilizer to show the ratio of these nutrients. It will look something like 10-4-8—that is 10 percent nitrogen, 4 perecent phosphorus, and 8 percent potash.
  - Nitrogen is for foliage growth.
  - Phosphorus is for root and flower/fruit growth.
  - Potash is for overall strength and disease resistance.

  You can't know what fertilizer to add if you don't know what your soil needs. Knowing your pH helps because nutrients can't be as readily used by plants if the pH is off. There are a variety of ways to test your soil:
  - Connect with your local AgriLife or Cooperative Extension office to learn what options they offer (often easy and very affordable).

Photo courtesy of USDA

- Test with a handy at-home kit called RapiTest Soil Tester Kit.

- **Add what's deficient or depleted.** Going organic is the ideal way to create and maintain healthy soil systems. Here are some ideas to accomplish that:
  - Nitrogen—blood meal or fish emulsion. Look for a high first number on label. (example 18-0-2).
  - Phosphorus—bone meal or composted chicken manure. Look for a high second number on label (example: 0-10-4).
  - Potash—greensand, compost, liquid seaweed. Look for a high 3rd number on label (example 0-1-6).

The key to a vibrant garden is soil, unexciting as that may sound. The plant that you see above ground is a product of a complex and extraordinary web of activity going on in the soil. While you can't see what is happening in the soil, it is quite amazing.

- **Humic Acid.** This provides a general boost to soil and grass any time but especially after drought or freeze. This helps get and keep activity going in soil. Think of it as a multi-vitamin or a probiotic.
- **Earthworms.** This is an added step if you are a go-the-extra-mile type of person. They can be ordered from companies like Uncle Jim's Worm Farm, and a box of worms will be delivered to your doorstep. Earthworms are different than composting worms—you want earthworms living in your soil.
- **Soil and compost.** Add soil and compost to build up the level and structure of the soil.
- **Lawns.** Grass can benefit from a horticulture molasses application (dried is easier to spread than liquid, which can be sticky) and a thin layer of fine compost spread on the grass.
- **Water.** Treated municipal water, which is what we must use during a drought, contains chemicals that are hard on the soil and plants. Once a drought is over, pay attention to the rain cycle and adjust your watering accordingly. For most people overwatering is more of an issue than underwatering. Once a healthy soil system is established, not as much water is needed. Selecting plants, particularly natives, that do well in your area also helps.

Sowing your own seeds can provide an opportunity to grow hard to find plants that are often not available in garden centers. This GCA ***handbook*** offers you a step-by-step guide with instructions, pictures and diagrams for sowing seeds, caring for seedlings, and how to select the strongest seedlings for transplanting and repotting.

Hats Off to Hort Judge

By Elkie Muller, Woodside-Atherton Garden Club, Zone XII

Peg Thompson, a member of Woodside-Atherton Garden Club, has been an approved horticulture judge for 38 years, making her the longest serving judge in Zone XII. At flower shows she loves to pass as much as she enjoys judging. In our club and at other clubs in the West, Peg continues to teach her well-executed, informative, and thorough propagation classes that she shares annually with our provisional members.

Peg's history and enthusiasm for gardening goes back to her youth. In her early years she was interested in growing vegetables. Since she was raised on a cattle ranch where she still lives, she had a strong connection with nature early on. Her journey from studying horticulture at UC Davis to becoming a dedicated horticulture educator and advocate is inspiring. It was UC Davis that laid the foundation for her deep knowledge and understanding of plants. She decided to major in horticulture when she realized that she repotted her house plants every time she had finals. The plants were doing a lot more than just providing greenery—they were relieving stress. One of her biggest challenges was memorizing the scientific and common names of over 300 plants. She feels that botanical nomenclature is essential for effective research and communication within the field.

After graduating, Peg worked at a retail plant nursery for a year, then she pursued a career at *Sunset* magazine and books. There she worked on the iconic *Western Garden Book* for two years and became the Southwest Garden editor of *Sunset* for

six years. This position allowed her to share her expertise and enthusiasm for gardening with a much broader audience.

Peg's commitment to raising her three children led her to make the difficult choice to leave her job. After stepping away from one career, Peg felt a strong urge to share her love for plants and horticulture with others. She found an outlet for this passion first in the Garden Club of Santa Barbara, and then in Woodside-Atherton Garden Club.

It was UC Davis that laid the foundation for her deep knowledge and understanding of plants. She decided to major in horticulture when she realized that she repotted her house plants every time she had finals. The plants were doing a lot more than just providing greenery, they were relieving stress.

Peg Thompson is indeed a lady of many talents and diverse interests. Her achievements in journalism, gardening, and cattle ranching are testament to her versatility and passion for exploring various aspects of life. However, it's her 18-year role working with cadaver dogs (canines trained to detect human remains) as a trainer and handler for several search and rescue teams, that she considers her most rewarding and challenging endeavor. "I love being able to give families closure and to help put bad people in jail," she says. Her involvement reflects her remarkable ability to excel in diverse areas, her passion for community service, and working with animals.

The sense of community and shared achievements Peg found in the GCA is a testament to the positive and meaningful relationships that can develop within our organization. It's a reminder of the powerful impact that shared interests and camaraderie can have on one's life and sense of belonging.

Propagating with a Purpose

by Lisey Good, Cohasset Garden Club, Zone I

What keeps Dr. Carlos de la Rosa up at night? De la Rosa, CEO and President of the Center for Plant Conservation (CPC), has two thoughts that occasionally rob him of sleep: one that frightens him, and one that sustains his innate optimism. First, the alarming one—4,000-plus North American plants are at risk of imminent extinction, and their demise could threaten entire ecosystems, as well as prevent any as-yet-unknown benefits these plants might provide to humans. The thought that energizes and motivates him? CPC already knows *how* to prevent plant extinctions. In fact, over half of North America's imperiled plant species are currently in conservation, and the nearly 40-year-old California-based nonprofit knows what needs to be done to safeguard the rest. Together with its partners, it is racing against the clock with one goal—no more plant extinctions.

CPC is a collaborative network that unites plant conservationists, arboretums, botanical gardens, and other plant-focused conservation groups to save North America's rare plants. With more than 75 institutional partners, CPC oversees the National Collection of Endangered Plants, a living collection of more than 2,600 of America's imperiled native plants, comprised of seed banks, nurseries, and garden displays. But CPC doesn't just collect plant materials—as a "scientific synthesis" organization, it is also committed to collecting and disseminating data as well as the methodologies and best practices for rare plant conservation.

Exactly how plant conservationists do this work varies widely according to the individual plant species. "The biological diversity in seeds is really an amazing evolutionary miracle," says Dr. Katie Heineman, CPC's Vice President for Science and Conservation. In about 80percent of the cases, she notes, seeds are dried down

Dr. Carlos de la Rosa has spent over 30 years in the field of conservation. Photo courtesy of CPC

CPC'S ROADMAP TO PREVENT PLANT EXTINCTIONS

Identify the species where the population(s) exist, and assess that species' conservation status. CPC cites the database from partner NatureServe as a hugely important tool.

1. *Collect and safely maintain plant materials ex situ (off site). Seed banks are vital, but more than just seeds need to be collected, including pollen, buds, and other tissue. The collection must be monitored carefully and frequently to ensure viability of the seeds.*
2. *Where possible, reintroduce species to the wild, allowing the plants to play the role nature intended, as part of a complex ecosystem. Ideally, plants should interact with other plants, fungi, animals, insects, and the soil.*
3. *Share the knowledge. Best practices for each species vary widely. The best shot at saving rare plants is if this data is shared freely, including with countries and populations that don't have the wealth or resources available in North America.*

The CPC is working with at-risk Torrey pines (*Pinus torreyana*) in Southern California, including studying best practices for successfully introducing new seedlings. Photo by Katie Heineman, courtesy of CPC

to a prescribed level of humidity then stored in what is, in essence, an ultra-cold version of your grandmother's chest freezer, set to -20˚C. Once safely in storage, seeds must be monitored regularly to ensure their viability.

"We recommend that our botanical garden partners do periodic viability testing of these seeds every five years or so," says Heineman. "The base viability treatment is really just allowing seeds to imbibe water to see if they grow. But different types of seeds need different types of treatments to break their dormancy. This can involve scratching the seed coat in order to allow the radicle to emerge or using smoke water treatments to simulate fire in nature, or even using hormones. It's a very interesting field inspired by the fact that seeds are so varied and different." Heineman shares that if testing reveals a decline in viability, seeds can be re-harvested from nature if available or "regenerated," meaning the stored seeds are grown at a botanical garden in order to produce new, fresh seeds to replenish the seed bank stock.

Why is this work so critical? "Everything that we are on this planet depends on plants. Our food, our medicines, our clothing, the materials we use for buildings, the very oxygen we breathe. We could not exist without plants. We need to catch up as a society to recognize the role of plants in our lives," de le Rosa says. "We can't just say 'let's save only potatoes' because we eat potatoes. Plants are so incredibly important to us and to the health of our planet. We just cannot afford to lose a single one of them."

To underscore the consequences of losing certain rare plants that could have a potential outsized impact on humankind, he cites the Florida yew (*Taxus floridana*) which is found on only one side of Florida's Apalachicola River and is considered at risk of extinction. Taxol, a compound in its bark, is classified by the World

WHAT YOU CAN DO TO SAVE RARE PLANTS

Katie Heineman shares how you can help save rarer plants.

Be a citizen scientist.

Join programs that allow lay people to enter observational data about plants and insects, such as Project Budburst, a community-focused approach to plant conservation, or iNaturalist, a worldwide social network that is creating a global, real-time map of biodiversity.

Be an advocate.

Contact elected officials to encourage support for vital conservation measures, including the Recovering America's Wildlife Act (RAWA) supported by the GCA since its introduction in 2017, and the Building Native Habitats at Federal Facilities Act on the GCA watchlist. To learn more about legislation important to the GCA, click ***here***

Help extend wildlife habitats areas.

Remember that wildlife isn't just birds, butterflies, or other forest creatures. It's also insects and the plants they rely upon. You can help "soften" the boundaries between conservation land and what abuts it, reminding homeowners lucky enough to live near conservation areas that their proximity to nature comes with a responsibility. Tolerate nuisances like smoke from prescribed burns or visits from snakes or other wildlife guests.

Support backyard wildlife.

Consider planting more native plants in your garden and decreasing the amount of your green lawn. Discontinue the use of the herbicides and pesticides that greatly harm biodiversity.

Dr. Katie Heineman has worked closely with the Torrey pines reintroduction project. Photo courtesy of CPC

Health Organization as a cytotoxic drug that kills cancer cells and is now used in medicines for breast cancer, ovarian cancer, non-small cell lung cancer, pancreatic cancer, and AIDs-related Kaposi sarcoma. How many more imperiled plants might provide vital future medicines? And can we save them in time?

"What we are doing with seed banking and with all the diverse ways we conserve rare plants is building a safety net. But it's so important for people to realize that this is an *emergency* situation," de la Rosa explains. "We would like to say that for species that are protected, like in conservation areas set aside from development, that we could ensure that they would be safe for the future. But that is not the case. The number of threats that many of these ecosystems face right now are not all under our control. We cannot stop climate change, pollution, or catastrophic events like hurricanes. And we can't always stop land development."

What's needed, de la Rosa says, is a true shift in how we protect and safeguard our planet's future with an acknowledgement that we need plants, and therefore much more investment in the sorts of plant safety nets that CPC builds. "This is not a pipe dream," he says. "We have a good chance that we can get this done. We just need to invest as a society into saving what is irreplaceable." More about CPC can be found at their website.

Propagation Show Offs

Propagation is celebrated throughout the year at GCA flower shows. We thought you would enjoy seeing some recent award winners and their fabulous specimens.

The Louise Agee Wrinkle Horticulture Propagation Award is awarded for a single specimen, source plant and its offspring, or a collection owned and grown by the exhibitor for a minimum of six months, unless otherwise stated in the schedule, distinguished by prime condition, cultural perfection, attractive presentation, and flawless grooming at GCA Major Flower Shows. Here are two recent award winners.

The Clarissa Willemsen Horticulture Propagation Award is awarded for a single-rooted plant or a collection of rooted plants, propagated and grown by the exhibitor for at least six months, recognizing prime condition, flawless grooming, and difficulty of propagation at GCA Flower Shows. Here are two ribbon winners from last year.

PAULETTE STONE, THE GARDEN CLUB OF HONOLULU, ZONE XII

Oceans: Beyond the Reef

GCA Major Flower Show hosted by The Garden Club of Honolulu, Zone XII (June 2023)

Class: Par One+ Years
Name of Plant/Specimen(s): *Anthurium brownii*
Citation: Excellence in propagation and presentation!

MARIANNA BREWSTER, THE GARDEN CLUB OF HOUSTON, ZONE IX

Florescence Metamorphosis

GCA Major Flower Show hosted by The Garden Club of Houston and River Oaks Garden Club, Zone IX (April 2023)

Class: Trained Plants (Topiary), Standard
Name of Plant/Specimen(s): *Myrtus communis*, myrtle
Citation: An exhibit that beautifully embodies the propagation standards of this award. An inspiring accomplishment.

WENDY MAHONEY RUSSELL, THE GARDEN CLUB OF WILMINGTON, ZONE V

Where the Wild Things Are

GCA Annual Meeting Flower Show hosted by Zone X (May 2023)

Class: 35. PAR
Name of Plant/Specimen(s): *Hippeastrum* 'Christmas Red x *Hippeastrum* 'Emerald', Amaryllis cross
Citation: Tour de force of propagation.

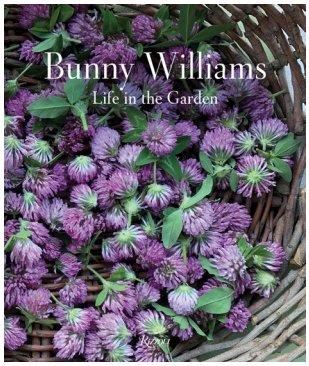
SUSAN MURRAY, ALLYN'S CREEK GARDEN CLUB, ZONE III

A Garden Wedding

GCA Flower Show hosted by Allyn's Creek Garden Club, Zone III (June 2023)

Class: Clarissa Willemsen Horticulture Propagation
Name of Plant/Specimen(s): *Begonia* 'Phoe's Cleo'
Citation: Wonderful propagation story. Well balanced and vibrant. Congratulations.

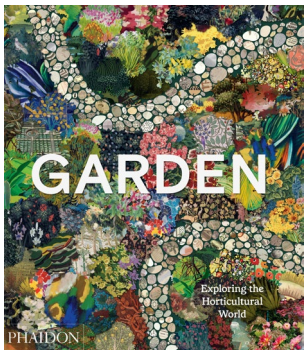
Good Reads



Bunny Williams: Life in the Garden
by Bunny Williams and Anne Schlechter (photographer)
Rizzoli New York, 408 pages

You're likely familiar with Bunny Williams' book *An Affair with a House*, published in 2005. In her latest work, she shares her garden and woodlands surrounding her 18th-century manor house—you know, the one that she had the affair with. Williams' property in northwestern Connecticut boasts a parterre garden, year-round conservatory, extensive vegetable garden, orchard, woodlands, an aviary with exotic fowl, and a rustic poolside Greek Revival–style folly. Some 400 stunning photographs illustrate each part of her 12-acre property. Among the chapters in the book are: Creating a Garden, The Working Garden, The Sunken Garden, The Parterre, The Woodland Garden, The Vegetable Gardens. The Garden in Winter, Flower Arranging, Container Planting, Entertaining, Christmas, and Life in the Garden. Williams offers advice on planting, flower arranging, decorating, and entertaining. She introduces each chapter with personal essays and, when applicable, includes plants lists. Schlechter's photos are stunning. And what Williams has designed is simply magnificent. If you were enchanted with her manor house in the earlier book, you'll be mesmerized with how the house and gardens have flourished under her able hand and exacting eye. Williams notes that much of her inspiration was from her travels. She undoubtedly has been to some of the most spectacular gardens on earth and returned home to make hers equally beautiful. And while her house and gardens are picture-perfect, it's clear she truly lives there with arms open wide.

Garden: Exploring the Horticultural World
by Phaidon Editors and Matthew Biggs
Phaidon, 352 pages



This luxurious book says it best in the introduction: "The United Nations recognizes 195 countries—but there is a strong argument that there is a 196th: the United Nation of Gardeners. This is a nation that welcomes all, regardless of age, race, colour, class or creed. At any time, somewhere in the world, many hundreds of thousands of people—perhaps even millions—are digging, hoeing, planting, tending, harvesting, or creating a garden." The book showcases garden-related images through the ages. From a simple, yet poignant pencil on paper sketch, *My Garden* (1945), created by a child and featured at the U.S. Holocaust Memorial Museum Collection to the only surviving Persian watercolor, *Prince Humay Meets Princess Humayun in a Dream* (1430-40), and hundreds in between, each page features a stunning work of art with informative narratives about each piece. At the conclusion of the book, there is a detailed timeline which includes The Garden Club of American's founding (page 339). This is a beautiful, informative book that is worthy of a place in your home. You'll surely enjoy "endless strolls" through gardens of every sort, in every conceivable medium.

Soil: The Story of a Black Mother's Garden
by Camille Dung
Simon & Schuster, 336 pages

Camilee Dung, a Distinguished Professor at Colorado State University, is an Academy of American Poets Fellow, a Guggenheim Fellow, and American Book Award winner, a wife, mother, and gardener. She describes her book, *Soil*, as her *Pilgrim at Tinker Creek*. It is that and more. This is not a "how to" gardening book, nor a reference book about plants or some such. Rather it is a thoughtful, honest memoir that captures ever so gently yet provocatively the realities of putting down roots—literally and figuratively—in northern Colorado. She finds inspiration from Anne Spencer who "built a life, wrote her poems, and built a garden" in Lynchburg Virginia, where Dung lived for seven years. Spencer was an American poet, teacher, civil rights activist, librarian, and gardener. Dung's beautifully crafted book observes a wide variety of gardening-related topics including bindweed, wildfires, droughts, rabbits, gardening zones, milkweed, and most of all, her beloved prairie garden. She writes, "It is more than hope my garden gives me. Examples of resilience keep me coming back to walk this path in gratitude and wonder." Dung is a gifted writer who generously shares her talent and her love of nature with us so that we may all find gratitude in our gardens.

Good Reads is written by Dawn Borgeest, Horticulture Committee Vice Chair, Editor, *The Real Dirt*, Rochester Garden Club, Zone III

Garden Gallery

Seeds galore and propagation abounds in GCA garden clubs!

Photos clockwise, from top left:
Milkweed (*Asclepias syriaca*) by Dawn Borgeest, Rochester Garden Club, Zone III

Seed Share by Cheryl Welch, The Garden Club of Jackson, Zone IX

Seed propagation workshop by Cheryl Welch, The Garden Club of Jackson, Zone IX

Wild Seed Project winter sowing workshop, by Anita Holmes, Garden Club of East Hampton, Zone III

Tea oil camellia (*Camellia oleifera*) by Suzette deTurenne, Seattle Garden Club, Zone VII

For more information on the GCA Seed Share, ***click here****. For more information on propagation, check out this* ***valuable resource*** *on the GCA website.*