

# NATIVE PLANTS, NATURAL LANDSCAPES

# OZARK CHAPTER SUMMER 2021 ISSUE





32 COLUMN : Growing Together The Thousand Leaves of Yarrow By Jasmine Dorn

Cover: Yarrow (Achillea millefolia), in bloom. Photo ©2021 Jasmine Dorn.

<u>facebook.com/OzarkWildOnes</u> <u>WildOnesOzarkChapter@gmail.com</u>



"THE PLANTING OF A TREE, ESPECIALLY ONE OF THE LONG-LIVING HARDWOOD TREES, IS A GIFT WHICH YOU CAN MAKE TO POSTERITY AT ALMOST NO COST AND WITH ALMOST NO TROUBLE, AND IF THE TREE TAKES ROOT IT WILL FAR OUTLIVE THE VISIBLE EFFECT OF ANY OF YOUR OTHER ACTIONS, GOOD OR EVIL."

-GEORGE ORWELL



Wild Ones,

Things are starting to look better, but we are still dealing with Covid-19. Despite many obstacles, our chapter has managed to slowly move forward over the past year and a half. We have been able to continue offering informative monthly programs, and we plan to continue offering these virtually for the rest of the year. I hope that things will continue to improve, and that by 2022 we will be able to resume in-person monthly meetings.

Our outdoor gathering at the Thunder Chicken Trailhead in Springdale last month was a welcome reunion. It was great to see those who were able to attend. We are planning another outdoor reunion this fall and hope that you can make it.

We are also beginning to offer volunteer opportunities for our members. We have been meeting with organizations such as the Nature Conservancy, the Peel Compton Foundation, and of course the Arkansas Master Naturalists, who have all been receptive to having assistance from our chapter members with their native plant projects.

We are also continuing to be involved in community projects such as designing, planting, and maintaining the rain garden and bio swale at the Thunder Chicken Trailhead in Springdale, a project on which we are collaborating with the NWA Master Naturalists. Together we have planted 25 species, and over 800 plants have been placed in the ground to date. More volunteer opportunities at this location can be expected in the future.

Our Site Visit volunteers continue to offer free consulting services to homeowners on the native plant species appropriate to plant in their gardens given the site conditions. And our Plant Rescue Team is still at the ready to rescue any native plants at risk due to future development, with another potential rescue currently in the works.

Finally, we are continuing to compile the body of knowledge that is this quarterly publication, which we have decided to rename our Journal due to the depth and breadth of the content that we continue to receive from local experts and other knowledgeable folks. We hope you enjoy this latest issue; we hope to see your smiling faces this fall and on a more regular basis in 2022.

Dutifully Yours,

Eric Fuselier, President Wild Ones, Ozark Chapter



# program schedule

### **Programs Presented by our Chapter**

DATE	PROGRAM
Wednesday, July 14, 11am-12pm	Massard Prairie Restoration with Jay Randolph
Wednesday, August 25, 1-2pm	Monarch Conservation in Arkansas with Leslie Cooper
Tuesday, September 21, 11am-12pm	Putting your Native Plant Garden To Bed For Winter with Roslyn Imrie
Tuesday, October 12, 11am-12pm	Ecotype Seed Collection and Cleaning with Laurie Scott
Wednesday, November 10, 1-2pm	ARDOT's Monarch Habitat Initiative with Joe Ledvina
Wednesday, December 15, 11am-12pm	Ozark Plant Communities as Design Inspiration with Scott Biehle

### **Programs Presented or Sponsored by Membership**

MONTH	PROGRAM
	Phytoremediation with Native Plants (Virtual),
Saturday, July 10th, 2-3pm	Bentonville Public Library: To register: https://attend.bentonvillelibrary.org/event/5212652
	Plants of Osage: Wetland Plant Hike; Peel Compton
Saturday, July 17th, 9:00am	Foundation; To register:
	https://www.peelcompton.org/events/plants-of-osage
	Native Edible and Medicinal Plants of the Ozarks
Saturday, July 24th, 2-3pm	(Virtual), Fayetteville Public Library; To register:
	<u>https://www.faylib.org/events/event/5153702</u>
Wednesday, September 8th, 6-7pm	Phytoremediation with Native Plants (Fayetteville
	Public Library)
UPCOMING HIKE	
Saturday, July 10th, 10am	Native Plant Hike at Ozark Folkways, Winslow, AR

### **BOARD OF DIRECTORS**

president : Eric Fuselier: eric.fuselier@craftontull.com cell (501) 231-7455

vice president: Lissa Morrison: morrisonlissa3@gmail.com

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secretary and newsletter editor: Robin Mero Butler: robin.mero.butler@gmail.com cell (479) 957-4235

membership chair and webmaster: Scott Biehle: biehle@uark.edu

at-large member and journal designer: Jasmine Dorn: <u>naturalist@JazzysAvantGarden.com</u>



As people transition to using more native plants in their landscapes, they often need support and advice. The Ozark Chapter of Wild Ones is now offering the service of onsite visits in Northwest Arkansas.

The role of the Site Visits Committee is to offer guidance, encouragement, resources, and professional connections to homes and non-profits. Prior to the site visit, a short questionnaire will be sent to establish the priorities of the person asking for help. Our services will be offered in a manner that does not compete with professionals.

If you would like to sign up for a visit, send an email to <u>wildonesozarkchapter@gmail.com</u>. Please use Site Visit in the subject line.

If you are interested in being on the Site Visits Committee and making home visits, please contact <u>morrisonlissa3@gmail.com</u>.



The Site Visit Committee is gathering a list of sources for native plants. Below are some of sources identified. Please share with us contact information for your favorites at wildonesozarkchapter@gmail.com.

Missouri Wildflowers Nursery www.mowildflowers.net

Prairie Moon Nursery www.prairiemoon.com

Pine Ridge Gardens www.pineridgegardens.com

Ozark Soul www.ozarksoul.com

North Creek Nursery (wholesale only) www.northcreeknurseries.com

White River Nursery www.whiterivernursery.com

Holland Wildflower Farm www.hollandwildflowerfarm.com

For Wildflower Seeds email: <u>hwildflowerfarm@cox-internet.com</u>

### **KEEPING IN TOUCH**

Facebook – Our Chapter Facebook page is open to the public. https://www.facebook.com/OzarkWildOnes

**Board meetings** – Member meetings are temporarily on hold due to Covid-19, but the Board continues to meet monthly. We're developing online programming – so keep an eye on our Facebook postings. National Website – Members of Wild Ones have exclusive access to abundant resources on the national Wild Ones website. Registration gives you access to files, publications, and articles only available to members. On the upper right-hand corner of the main page is a "member login" button that will give you instructions for registering.

You'll be able to access archived Journal articles, vote on the annual photo contest, sign up for the discussion group, and much more! <u>https://ozark.wildones.org/</u>



by Cheryl Hall

If you're like me, you might have a birdbath or two sitting around that doesn't hold water. That got me to thinking — why not make a moss garden?

I put down a substrate of potting mix in the bottom of two bird baths and gathered some mosses, ferns, and lichen growing in my woodland yard. In no time, I had a miniature landscape. This is a fun project and I'm happy with the result. What do you think?

Moss gardens are easy to put together. It's best to use a container that drains. Keep the soil moist by spritzing. But you don't want to overwater your moss garden, so spritz with water only when your moss garden begins to look dry.

Some common mosses found in Arkansas include apple moss, American tree moss, common bladder moss, and common haircap moss. These are just a few.





Some facts about mosses:

 Mosses are nonvascular, sporebearing land plants in the Phylum Bryophyta and are important in preventing soil erosion.

- They date back 450 million years and are found all over the world from cold mountains to hot deserts. There are at least 12,000 species.
- They do not have true roots, but rhizoids, which help connect them to the rocks, bark, or soil where they are found.
- Mosses do not produce seeds for reproduction, but instead have spores. They depend on wind, water and insects to disperse their spores.

About the Author

Cheryl Hall is a watercolor artist and photographer who became

a Certified Master Naturalist in 2017. Nature inspires her art. She serves on Bella Vista's Tree Advisory Board and volunteers for the



Arkansas Natural Heritage Commission.





### **BOOK REVIEW**

## Finding the Mother Tree Discovering the Wisdom of the Forest

Author: Suzanne Simard Published by: Knopf, May 2021, 348 pages



FINDING THE MOTHER TREE Discovering the Wisdom of the Forest

SUZANNE SIMARD

Book Review by Chris Fischer, Member, Wild Ones Ozark Chapter

Suzanne Simard delves deeply into her very personal relationship with the forests of her youth in her first book, *Finding the Mother Tree*. Simard, a professor of Forest Ecology at the University of British Columbia, shares her profound desire to discover the workings of connectedness between trees and the lands they inhabit - in particular, the unique ability of trees to communicate, the sharing of common resources, and the network of relationships they develop as a community.

In 1997, Simard's PhD thesis was published in the journal Nature, inspiring the colloquial phrase "wood-wide web" from her research that proved that trees communicated to each other using a process similar to the neural networks in human brains. She determined that trees not only create and share resource transfers but that they also provide defense signals and kin recognition. Simard created the <u>Mother Tree Project</u> in 2015 to investigate forest renewal practices that protect biodiversity. Based upon decades of research by forest ecologists to focus on below-ground connections between Douglas Fir Mother

Trees and seedlings, she advocates that this knowledge "...could influence forest recovery and resilience following various harvesting and regeneration treatments."

Simard's book is a touching, stimulating, and profound recollection of her many journeys towards the wisdom of the forests. She traces early events in her childhood amongst the family of old-growth forest dwellers that drew her to the science of natural resiliency. Stories flow from the pioneer days of her ancestors' activities in Western Canada, about their skills in timbering, fishing, camping, scratching out a living, and persisting for generations in a sylvan wilderness quickly transforming into a modern world.

Her quest began with wondering about tree roots and the network of creatures in the soil, the earthen threads of fungi, the lacey veils of their tiny fruits, and the intricate branching of brilliantly-colored mycelium feeding the billions of particles inhabiting and forming the ground. This is the



architecture, the mechanical system, the nutritional substance that enables the Mother Trees to develop their canopies over countless millennia and to generate the energy for the communities of life forms that build the forest. Her dreadful experience with the Canadian Forest Service - in which she examined clear cut logging of plantation lands and pathetic monocultures of struggling seedlings - drove her to challenge the improper methodology of Free to Grow, and to provoke a clear understanding of why this activity was directly imperiling the stability of life on earth.

In Richard Powers' *The Overstory*, the New York Times best seller from 2018, Dr. Simard is recreated in his fictional narrative as the character Dr. Patricia Westerford, a brilliant,

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"When Mother Trees-the majestic hubs at the center of forest communication, protection, and sentience--die, they pass their wisdom to their kin, generation after generation, sharing the knowledge of what heals and what harms, who is friend or foe, and how to adapt and survive in an ever-changing landscape. It's what all parents do."

> -Suzanne Simard, Finding the Mother Tree

passionate, hearing-impaired forest ecologist, who is seen by her peers as a debunked theorist when she proclaims, "The biochemical behavior of individual trees may make sense only when we see them as members of a community." And yet, the Simard-based character becomes the novel's scientist hero. Eventually, she gains ground in slowing the onslaught of poorly managed deforestation through her bold testimony of facts gleaned from her multiple experiments and her emergent voice in public hearings.

*Finding The Mother Tree* is an amazing account, a personal evocation of the power of knowledge. Through it, we realize that we might not learn how to save trees, but, instead, how trees might save us. Her epigraph uses an ongoing salvo from Rachel Carsen, "But man is part of nature, and his war against nature is inevitably a war against himself." Ironically, this quote came from a 1963 CBS television broadcast during an interview with a spokesman from the agricultural chemical industry who had just openly ridiculed Carson's teachings in Silent Spring.

It's time to discover and nourish our Mother Trees.



About the Author:

Chris Fischer is a founding member of the Native Plant Garden Project, a former landscape contractor and ISA Certified Arborist. He lives on Winona Creek, south of Eureka Springs.



### **BOOK REVIEW**

### The Nature of Oaks The Rich Ecology of Our Most Essential Trees

Author: Douglas Tallamy published by Timber Press, March 2021, 197 Pages

The Rich Ecology of Our Most Essential Native Trees

DOUGLAS W. TALLAMY

NEW YORK TIMES BEST-SELLING AUTHOR OF Nature's Best Hope

The

Book Review by Chris Fischer, Member, Wild Ones Ozark Chapter

Many of us know and treasure Tallamy's 2007 *Bringing Nature Home* and his recent best-selling *Nature's Best Hope*. Now, *The Nature of Oaks* from March of 2021 will likely join the nature section of our bookshelves. With this book, he has stepped up to the plate and hit an easy homerun.

Many look to Tallamy's lectures, interviews, and documentary footage to glean his conservation advocacy and to learn how his fruitful research goals reveal the essential relationship and community between insects, plants, and animals. He's simply an extraordinary communicator, reaching millions in his effort to inform us that "our only option is to find ways to coexist with other species."

Tallamy is one of the most appreciated and well-received advocates for restoring the ecology of the American landscape, as his messaging offers us an understanding of the impact of our harmful land-use practices. His approach

implores a broad acceptance and societal shift to change our destructive pattern and to acknowledge that insects, birds, and biodiversity are not only valuable, but that sustaining their livelihood is clearly in our best interest. With the launch of Homegrown National Park, a grassroots, bottom-up call to action, Tallamy has issued a provocative challenge: "What if each American landowner converted half of his or her yard to productive native plant communities?" He argues that, "even moderate success could collectively restore some semblance of ecosystem function to more than 20 million acres of what is now ecological wasteland."

The Nature of Oaks carefully demonstrates how Tallamy continues to leverage his teachings into a plan of action. We must acknowledge the enormous eco-value of oaks as a keystone species and advance our understanding of their critical role in the planet's future. The book tells the story of how planting trees on his property led Tallamy to understand the invaluable role that a single white oak acorn played, and how the growth of a particular specimen could





act as a guide to better understand the diverse forms of life it supports. He has effectively written a paean: a beautifully illustrated, 12month record of tribute to "common kingpinslike oaks" that heralds an intervention for the rapid diminishment of the planet's organisms by building and improving functional, interdependent ecosystems.

Tallamy started writing The Nature of Oaks as he began his oak-watching, and the narrative advances through the seasons by focusing on the interactions of the ecosystem unfolding in his own yard. He spins a lush yarn of observations as he crafts an oak-centric story of life and nature. His storytelling in this fourth publication is a great balance of his scientific knowledge melded with his career as an educator, researcher, and popular speaker. In less than 200 pages he delivers a thorough exposition of an array of subjects: habitat interactions with insects, bird migration, forest floor litter, mycorrhizae, soil, carbon sequestration, and his forte - the myriad of interactions between bugs, birds, and the genus of oaks.

He explains how to plant young oaks in straightforward gardening terms and lists the best options for species across the country. For the Ozarks, he indicates 17 species we might

find, including the rare maple leaf oak, Texas red oak, and swamp chestnut oak, to name just a few. So, do you happen to have an oak tree, or some space to plant one?



About the Author

Chris Fischer is a founding member of the Native Plant Garden Project, a former landscape contractor and ISA Certified Arborist. He lives on Winona Creek, south of Eureka Springs.



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Well tended and mulched Native Garden at the Botanical Garden of the Ozarks.

In the last few years there has been a tremendous increase of interest in using native plants in our urban landscapes. Almost twenty years ago, I first began experimenting with what I call "Well Behaved Natives." The concept was unheard of. Today it is clear that many of us realize how urgently we need to change our gardening habits to create healthy ecosystems.

Recently there has been much written about leaving our gardens messier, about not cutting stems back or shredding and blowing leaves. The science behind these articles says that cleaning up too much destroys the places where our native wildlife can find food, or make nests, or overwinter. I agree with this research 100 percent.

My personal gardening style is what I would call natural and messy. However, as a professional I have encountered quite a bit of blowback to the messy look, especially in public spaces or even in subdivisions. Many who understand the science still aren't quite ready to yield to "leave it messy for the critters." Invariably, the front yard wildlife habitat will get complaints from the neighbors. Is it possible to have our native gardens look a little more intentional and manicured? Is it possible to "tame the wild" and support a healthy habitat?



I would like to offer 10 suggestions to help native landscapes appear more intentional and tidier... and still support a healthy environment:



Use whole leaves for mulch. If they tend to blow away, sprinkle a small amount of purchased shredded natural mulch on top to hold the leaves in place. Burning or shredding leaves kills beneficial insects.



Shape and prune native trees, shrubs, and vines – using the same techniques that apply to non-natives. This will enhance the well behaved intentional look.

When a native perennial flower is spent and unattractive, cut the old growth foliage back to between 10" and 18". Research has shown that insects use the stem below 18" for laying eggs or over wintering.

If the foliage on a perennial has powdery mildew, cut it back to the basal foliage near the ground as soon as it is finished blooming. Do not put diseased or fungal debris in your compost pile.

Use the dried seed heads that have been cut off to make dried arrangements in your garden for the birds. Place in a heavy planter or weigh the container down so that it stays upright. Or tie upright dried bundles along a fence. The birds will still eat the seeds.

Give the late summer and fall blooming perennials a spring haircut in May. Native perennials that bloom mid-summer to frost will be shorter, denser, sturdier, and not so floppy. They will still bloom.

In the fall cut back the old dead growth of perennials to 12" to 18". Insects that use pithy stems for over-wintering, need a point of entry. We are helping them by cutting back some of the messiness.

Make use of some of the sticks and debris as you clean up. Tie bundles of sticks on a post or fence to create a "bee hotel." Make debris piles around the base of trees or in a backyard corner. Debris is used by many critters for winter homes and nesting.

Leave some bare dirt free of mulch or weeds for the native ground-nesting solitary bees. If you see small holes in the dirt, you are supporting wildlife.

Basic maintenance is required to have attractive native gardens. The reward will be beautiful habitats that support the living creatures we love.

I am thrilled that so many of us are ready to support our natural flora and fauna. This is new territory and a steep learning curve for many of us. With a little patience and practice, it is possible to tame the wild and support a healthy habitat at the same time.



About the Author

Lissa Morrison, chapter vice president, has been in the horticulture industry for 35+ years. She has owned a wholesale plant nursery, a residential landscaping business, and a retail garden center. Lissa was on the horticulture staff at the Botanical Garden of the Ozarks for eight years. She created this as an educational tool for people unaware of the benefits of native gardening and shares it with various organizations.

Well tended and mulched Native Garden at the Botanical Garden of the Ozarks.





# Summer Reading



RICK DARKE &

ARDENING

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Andy Wasows

Recommended by Eric Fuselier – President, Ozark Chapter Lissa Morrison – Vice President, Ozark Chapter

Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard by Doug Tallamy

**The Living Landscape: Designing for Beauty & Biodiversity** by Rick Darke & Doug Tallamy

**Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes** by Thomas Rainer & Claudia West

**Trees, Shrubs, & Woody Vines of Arkansas** by Jennifer Ogle, Theo Witsell, & Johnnie Gentry

**Essential Native Trees & Shrubs for the Eastern United States: A Guide to Creating A Sustainable Landscape** by Tony Dove & Ginger Woolridge

Native Trees, Shrubs, & Vines: A Guide to Using, Growing, and Propagating North American Woody Plants by William Cullina

Gardening with Native Plants of the South by Sally Wasowski with Andy Wasowski

Bringing Nature Home: How You Can Sustain Wildlife with Native Plants by Doug Tallamy

PHYTO: Principles and Resources for Site Remediation and Landscape Design by Kate Kennen & Niall Kirkwood (contains both native and non-native species)















# Lake Springdale Trailhead

by Steve Alarid, Member, Wild Ones, Ozark Chapter



On Saturday, May 15, fifteen dauntless volunteers gathered on the bank of Spring Creek at the Lake Springdale Trailhead to continue installation of the rain garden and bioswale designed by our Chapter officers Eric Fusilier, Lissa Morrison, and Scott Biehle. The weather was poor, but morale was high, as the group planted 15 species and almost 350 individual plants in about two hours!



Monarch butterfly, *Danaus plexippus* larvae on Common milkweed, *Aesclepias syriaca* planted at Lake Springdale Project Oct. 2020.

This project, a collaboration between <u>City of</u> <u>Springdale Parks and Recreation</u>, <u>NWA Master</u> <u>Naturalists</u>, and <u>Wild Ones</u>, <u>Ozarks Chapter</u>, is intended to demonstrate the exclusive use of Arkansas native plants in a formal urban landscape design. This project is located in a high-traffic city park and will be installed in phases over the next two years.



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When completed, there will be 25 species and close to 1500 plants, including the following:

Shrubs

Aromatic sumac, *Rhus aromatica* Buttonbush, *Cephalanthus occidentalis* Ninebark, *Physocarpus opulifolius* Possumhaw, *Ilex decidua* Shrubby St. Johns wort, *Hypericum prolificum* Smooth hydrangea, *Hydrangea arborescens* Spice bush, *Lindera benzoin* 



Wild Ones Ozarks Chapter V.P. Lissa Morrison (blue raincoat) directing layout



Arkansas bluestar, Amsonia hubrichtii Aromatic aster, Symphyotrichum oblongifolius Black-eyed Susan, Rudbeckia hirta Blue lobelia, Lobelia siphilitica Bradbury's bee balm, Monarda bradburiana Cardinal flower, Lobelia cardinalis Common milkweed, Aesclepias syriaca Common rush, Juncus effusus Foxglove beardtongue, Penstemon digitalis Goldenrod, Solidago spp. Inland sea oats, Chasmanthium latifolium Orange coneflower, Rudbeckia fulgida Plains oval sedge, Carex brevior Purple coneflower, Echinacea purpurea Rose verbena, Glandularia canadensis Shining blue star, Amsonia illustris Swamp milkweed, Asclepias incarnata Switchgrass, Panicum virgatum

Wild Ones member Brian Powell with a newly-planted Ninebark, *Physocarpus opulifolius* 



All Wild Ones members are invited to participate in future events and the ongoing maintenance of this high-visibility effort. Contact Steve Alarid for more information: stevealarid55@gmail.com or 479-877-5123.

About the Author

Steve spent 33 years in natural resource management as a forester and wildland firefighter with the U.S. Forest Service. His home property in Springdale was recently approved by Arkansas Audubon as a Gold-Level Bird-Friendly Yard and by National Wildlife Federation as Certified Wildlife Habitat. Current affiliations include NWA Master Naturalists and Ozark Chinquapin Foundation. Visible in the background: Winged sumac, *Rhus copallinum*.





# **KIDS** and spider web wonders

by Delores Stamps, Member, Wild Ones, Ozark Chapter

Help children learn about spiders and spider webs.

Spiders are a very common form of wildlife and easily seen in Arkansas. There are more than 37,000 spider species on Earth; about 3,000 in North America.

They can be found in forests, deserts, grasslands, and gardens.

Spiders eat insects and other small prey. They are beneficial to humans because they help to control other pests in the yard and garden. Some spiders even eat cockroaches ... yuk! In North America, only black widow and brown recluse spiders are considered dangerous, and these spiders will only bite if threatened or if you grab one against your body.

Many people think that spiders are insects, but actually they are arachnids. Unlike insects which have six legs and a pair of antennae, arachnids have 8 legs and no antennae. They also have two main body sections: the abdomen and the cephalothorax (seff-al-oh-THO-rax) which contains the brain, eyes, mouth, and leg attachments.

A spider's web is made of silk threads, which come from spinneret glands in its abdomen. A spider uses a web to catch its prey. Many of the threads in a spider's web are sticky. These sticky threads help trap and hold the prey. Not all spiders build webs, however; some spiders instead actively run after their prey.

Different spider species weave different kinds of webs. Orb webs are often the most noticeable because they are at kid's-eye level, suspended in mid-air between twigs, branches, or flower stalks. Other types of webs include sheet webs, tangle webs, and funnel webs. Each web type works in a different way to help feed the spider and her family.

Words to learn from this article: arachnid - spinneret - weave - thorax - web - abdomen.

Share the story and these words with a child near you!

About the Author

Dolores Stamps has been a Washington County Master Gardener since 2006 and is a member of the Northwest Arkansas Daylily Society. She has built and maintained many gardens, both floral and vegetable, including for St. Raphael Catholic Church and the Springdale School District's administrative office. She strives to be a "neighbor" in the very real sense of the term.





by Susan Pang, Member, Wild Ones, Ozark Chapter

This story begins with a Polaris ride to plant some conservation shrubs near Beaver Lake's shore. We then headed out to peek at two areas that we have been attempting to steward - one with a natural spring in a ditch and the other acreage near a creek that courses its way to Beaver Lake. We planted common milkweed there a few years ago and now there is a little colony. Last winter we fed the land some guts and scraps from a dead deer that we skinned and harvested meat from. The deer was roadkill and had appeared just for the taking just like the morel in this tale.

We have also been trimming the sycamore tree in this spot to provide the milkweed with more sun, and we cut down blackberry canes that are piercing and dominant. We have seen monarchs, and they are fruit from our labors.

Recently we went again to this place, to plant a few rose mallows and eastern wahoos, and right where I stepped out of my ATV was a large morel. The first one I ever encountered! We went back the next day and collected three morels (cutting the stems so we didn't pull them from the mycelium web that brought forth their glory). We cut the stems and let three mushrooms drop into a ziploc bag without making contact with them.

I have spent hours learning to cultivate these so that I won't harvest from the wild. I made a slurry with wood ash, flour, molasses, salt, and clean water. I blended one morel in the blender and poured the contents into six 5-gallon buckets (with more water added) and after 24 hours will pour the slurry in hopes of growing mycelium and morels.

The most intriguing part of the story is that right before we met Mrs. Morel we stopped to remove rotted wood from a tree that had fallen over onto the road. Just enough of it fell into the road to require us to scoop it up, but the bulk of the trunk

was on our land. My husband, Kei, retrieved it yesterday and that will be the foundation of our mushroom bed to grow more mycelium and morels. This all happened because we have a relationship with the land. This is a relationship where we steward it, and it provides. It is a story of reciprocity, and it is a story as ancient as time.

# THE MORAL OF THE MOREL:



Take care of the earth and it will take care of you, too.

# About the Author

Susan Pang (pictured with shadows Lulu and Sim), resides in Garfield and has deep roots in Missouri and South Dakota. A Master Gardener and Master Naturalist in Missouri, and a Saint Louis Audubon Habitat Adviser, are a few of her qualifications. Susan and her spouse Kei spend free time stewarding land, including invasive species control and glade restoration on their property.





# COLLINSIA VERNA

by Susan Pang, Member, Wild Ones, Ozark Chapter

Recently we took a hike in the Ozarks, off Arkansas 62 near the Arkansas/Missouri border. There's a bottomland creek nearby, and we found a vast population of this amazingly beautiful winter annual, Collinsia verna. It takes hundreds of years to have a population like this, apparently.

Invasive wintercreeper is encroaching from the highway. It's important to protect this population.

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### For More than Pollinators: Optimizing the Use of Native Plants in Urban and Suburban Landscapes

### Part I: Native Plants for Improving Stormwater Quality

By Eric Fuselier, Environmental Project Manager at Crafton Tull

Native plants have been getting a lot of well-deserved attention in recent years. As the public has becomes increasingly aware of the plight of many pollinator and wildlife species, and of the benefits that planting native species provide to these species which are struggling to live alongside us, we are starting to see native plants used more and more in gardening and landscaping practices.

This is, of course, great news and very encouraging to see. But for all the buzz around native plants (see what I did there?), there is another benefit many of these species can also provide that I believe has thus far been mostly overlooked.



### PHYTOTECHNOLOGY AND PHYTOREMEDIATION

Phytotechnology is an emerging field that makes use of the naturally existing properties of plants in order to accomplish defined outcomes in a designed environment. One such application of phytotechnology is contaminant removal, otherwise known as phytoremediation. The benefits of using this approach include providing habitat for wildlife, while also being more sustainable, less costly, and providing better aesthetics than traditional methods of environmental remediation.

Phytoremediation makes use of the natural ability of certain plant species to accumulate, sequester, or breakdown contaminants found in the environment. Much research has been devoted to testing the suitability of certain plant species for remediating specific contaminants, with many of the species looked at in these studies being native to



*Tripsacum dactyloides* (Eastern gamagrass) Photo by author.

one region or another. This approach to environmental remediation is more often applied on large scales (for instance, for the remediation of contaminated soil at brownfield sites). However, the concepts and body of knowledge regarding phytoremediation using native species can also be applied on much smaller scales, to the mutual benefit of both the ecosystem and society.

In this article, we will focus on how phytotechnology can be used to address an issue that most cities, municipalities, and land managers are typically already trying to address: improving their stormwater quality. Impervious surfaces such as roads, parking lots, and buildings occupy a significant portion of the urban and suburban landscape, preventing the soil from absorbing stormwater where it would normally help recharge groundwater and aquifers. Instead, most of this stormwater flows laterally across these impervious surfaces, transporting any contaminants it picks up along the way into the nearest storm drain where it is then directed to a local stream or waterbody. In the event that these contaminants are not transported to a storm drain or water body, they are instead deposited in the nearby soil.

Let's consider some common contaminants we are likely to find in stormwater runoff which may affect the health of soil and aquatic habitats, and how we can implement phytotechnology using native plant species to improve this stormwater before it enters these habitats.

### HOW IT WORKS

There are five main phytotechnological mechanisms that we can make use of when trying to improve stormwater quality:

**Phytodegradation** makes use of the ability of certain plant species to breakdown contaminants internally through the metabolic processes of those plants after taking up the contaminants through its roots. Through phytodegradation, contaminants are degraded, incorporated into the plant tissues, and used by the plants as nutrients. Fast-growing species may take up and store contaminants faster and in larger amounts than species with more average growth rates. Nitrogen-fixing "pioneer" species are also currently being studied due to their fast growth rate, high biomass, and hardiness.

**Phytostimulation** is the process by which contaminants are broken down in the soil by microbial activity that is enhanced by the compounds exuded from the roots of a plant. Many of the microorganisms in the soil, such as yeast, fungi, and bacteria, can utilize harmful organic substances as their nutrient sources, and in the process degrade them into harmless substances. Natural exudates from plant roots such as sugars, alcohols, and acids containing organic carbon, provide food for these soil microorganisms and enhance their metabolic

activity. In addition, the loosening of soil by plant roots and water availability in the root zone also aids the phytostimulation process. While this is a slower process than phytodegradation, it is still very effective.

3

5

**Phytoextraction** refers to the absorption and uptake by plants of large amounts of inorganic contaminants such as heavy metals and nutrients from the environment, and to the translocation of these contaminants into the aboveground parts of these plants. When applying this technique, consider using woody species that produce high biomass and that are classified as hyper-accumulators of these contaminants. If hyper-accumulator species are not available or not ideal to use at a site, then species known to accumulate a targeted contaminant in lesser quantities, but that still produce high biomass, can also be effective for phytoextraction.

Phytostabilization is the use of certain plant species to immobilize contaminants found in soil and groundwater through various mechanisms, including absorption and accumulation of the contaminant by the roots of these plants, adsorption of the contaminant onto the surface of the plants' roots, or through the precipitation of the contaminant within the root zone of the plants. This mechanism makes use of certain chemicals exuded by the roots of these species which can immobilize or precipitate the targeted contaminant. Moreover, the transport proteins associated with the root zone of certain species can also irreversibly bind and stabilize some contaminants. Alternatively, these contaminants can be taken up by the roots and thus become sequestered by the root system. It should be noted



that this technique does not remove the contaminants from the site, but effectively immobilizes or stabilizes them, making them unavailable for entry into the food chain.

**Phytohydraulics** refers to the ability of certain plant species to capture, transport, and transpire water from the environment. With this technique, these species can be used to draw contaminated groundwater toward their roots in order to change the speed or direction of groundwater flow, or to modify groundwater levels at a site. Species with high evapotranspiration rates are best used for this purpose, however these species are often not drought tolerant, so irrigation may be needed depending on site conditions. It is important to note that this mechanism does not degrade the targeted contaminants, but can be combined with other mechanisms such as phytodegradation or phytostimulation to serve this purpose.

Phytoremediation is best suited for sites with low to moderate levels of contamination, where the level of toxicity is not high enough to inhibit plant growth. Potential applications of these phytotechnological mechanisms when trying to improve stormwater quality include their use in rain gardens, bioswales, detention ponds, and in other stormwater control structures strategically located to accept runoff from parking lots, roadways, dry cleaners, autobody shops, industrial and manufacturing sites, or other sites where contaminants are commonly found in the runoff originating from these locations. Specific contaminants are discussed below, along with the native plant species that can be used to remediate or control these contaminants using the phytotechnological mechanisms discussed above.

### SEDIMENT & TURBIDITY

Turbidity, which is the measure of the amount of suspended sediment in water, can negatively impact aquatic ecosystems by restricting the depth which sunlight is able to reach. Without sunlight, algae in the water are unable to perform photosynthesis, a process which aquatic organisms such as fish and macroinvertebrates depend upon to provide them with the dissolved oxygen in the water which they need to breathe. High turbidity levels can also lead to soil particles becoming lodged in fish gills, which can restrict their ability to breathe and cause them to suffocate.

A common source of sediment causing high turbidity levels in our waterways is erosion originating from construction sites, agricultural fields, logging activities, and eroding streambanks. Phytotechnology can offer an effective way to remove this sediment from stormwater before it enters the local waterways.

To effectively contain sediment on-site, we can select fast growing species that produce dense foliage and a high quantity of biomass. The density of the foliage and high biomass helps to slow down and filter stormwater, facilitating the deposition of any sediment it may contain. Below is a list of native plant species that meet these criteria which can be combined with other best management practices (BMPs) for erosion control to more effectively contain sediment on-site.

Including these species within the riparian buffers along the banks of streams and rivers, along the edges of lakes and ponds, and downslope or adjacent to construction sites and logging activities are additional measures companies can take to reduce turbidity levels in local waterways, and prevent the adverse impacts that turbid stormwater runoff can have on sensitive aquatic ecosystems.

FOR SEDIMENT CONTROL		
Scientific Name	Common Name	
Andropogon gerardii	Big bluestem	
Bouteloua curtipendula	Side oats grass	
Bouteloua gracilis	Blue grama	
Elymus canadensis	Canada wild rye	
Panicum virgatum	Switchgrass	
Schizachyrium scoparium	Little bluestem	
Sorghastrum nutans	Indiangrass	

**TABLE 1: NATIVE SPECIES** 

### NUTRIENT POLLUTION

While aquatic habitats require nutrients in order to support the organisms that live in them, when nutrient levels become excessive this leads to eutrophication, a process that creates harmful algal blooms that can result in fish kills and other damage to aquatic ecosystems.

Common sources of excess nutrients in our local waters include fertilizers applied to lawns, fields, and agricultural lands, dead or freshly cut vegetation entering streams and waterbodies, and even from sediment originating from sources listed above in the previous section of this article.

Woody species with high growth rates are excellent for reducing the amount of nutrient pollution from entering our waterways. Phreatophytes, which are deep-rooted trees and shrubs that obtain a significant portion of the water they need from the water table, meet these criteria and can be very useful for this purpose. Often found growing in arid locations or in areas with standing or running water, phreatophytes typically have fast growth rates, and can thus take up a lot of nutrients in a short amount of time as they incorporate these nutrients into their biomass. Utilizing these special qualities for both phytohydraulics and phytoextraction can help remove nutrients from stormwater before they enter local waterways. See below for a list of phreatophytes native to the Ozarks.



### TABLE 2: NATIVE PHREATOPHYTES FOR NUTRIENT POLLUTION

Scientific Name	Common Name
Acer negundo	Box elder
Acer rubrum	Red maple
Magnolia microcarpa	Sweetbay magnolia
Populus deltoides	Eastern cottonwood
Quercus alba	White oak
Salix caroliniana	Coastal plain willow
Salix eriocephala	Heart-leaved willow
Salix humilis	Prairie willow
Salix interior	Sandbar willow
Salix nigra	Black willow
Sambucus nigra	Black elderberry
Taxodium distichum	Bald cypress

### TABLE 3: NATIVE HERBACEOUS SPECIES FOR NUTRIENT POLLUTION

Scientific Name	Common Name	
Andropogon gerardii	Big Bluestem	
Panicum virgatum	Switchgrass	
Schizachyrium scoparium	Little bluestem	
Sorghastrum nutans	Indiangrass	
Spartina pectinata	Prairie cordgrass	
Vicia americana	American vetch	

### PETROLEUM

Additionally, herbaceous species that have both high growth rates and produce high biomass can also be effective for reducing the amount of nutrients entering our waterways. Below is a list of native herbaceous species that possess these qualities. Including these species and/or phreatophytes in stormwater detention structures such as rain gardens, bioswales, and detention basins, will give these species additional time to take up these nutrients and prevent them from entering local waterbodies.

Including the species listed in Tables 2 and 3 within the riparian buffers along the banks of streams and rivers, along the edges of lakes and ponds, and in vegetative filter strips, constructed wetlands and other stormwater control infrastructure receiving stormwater runoff from sources containing excess nutrients can help reduce the amount of these nutrients that are entering aquatic ecosystems, and prevent eutrophication of downstream waterbodies.

Most petroleum products have a density less than water, and thus tend to float and spread into a thin layer on the water surface (called a sheen). However, once in the water they can be harmful to wildlife and have adverse impacts to aquatic ecosystems.

Sources of petroleum in stormwater can include fuel spills from engine maintenance and repair activities, petroleum extraction activities, leaks from above- and underground storage tanks, and from engines dripping motor oil, grease, gasoline, and diesel onto the surfaces of parking lots, driveways and roadways, or in railyards.

Some categories of petroleum are easy to degrade. These include: gasoline and diesel fuel; methyl tert-butyl ether (MTBE); benzene, toluene, ethylbenzene, and xylene (BTEX); and other aliphatic



hydrocarbons. Phytotechnological mechanisms useful for remediating these categories of petroleum include phytostimulation and phytodegradation.

Other categories of petroleum, such as Polycyclic Aromatic Hydrocarbons (PAH), coal tar, crude oil, and heating oil are much more difficult to degrade. Because of this, phytostimulation is the only useful phytotechnological mechanism for remediating soil and water contaminated with these categories of petroleum.

Below is a list of species shown through research to have the ability to remediate soil contaminated with the petroleum categories listed for each one. Including these species in rain gardens, bioswales, vegetative filter strips, riparian buffers, and constructed wetlands in locations receiving stormwater that may contain petroleum could help reduce the damage to aquatic ecosystems.

TABLE 4: NATIVE SPECIES FOR PETROLEUM CONTAMINANTS			
TREES & SHRUBS			
Scientific Name	Common Name	Contaminant Targeted*	
Celtis occidentalis	Common hackberry	BTEX, TPH, PAH	
Cercis canadensis	Eastern redbud	PAH	
Fraxinus pennsylvanica	Green ash	PAH	
Gleditsia triacanthos	Honey locust	BTEX	
Juniperus virginiana	Eastern red cedar	BTEX	
Morus rubra	Red mulberry	PAH	
Pinus echinata	Shortleaf pine	MTBE, TBA	
Populus deltoides	Eastern cottonwood	Aniline, Phenol, m-Xylen PAH, BTEX, MTBE, DRO, TPH	
Quercus macrocarpa	Bur oak	BTEX	
Quercus phellos	Willow oak	Dioxin	
Robinia pseudoacacia	Black locust	PAH, MOH	
Salix caroliniana	Coastal plain willow	DRO, TPH, BTEX, PAH	
Salix eriocephala	Heart-leaved willow	DRO, TPH, BTEX, PAH	
Salix humilis	Prairie willow	DRO, TPH, BTEX, PAH	
Salix interior	Sandbar willow	DRO, TPH, BTEX, PAH	
Salix nigra	Black willow	DRO, TPH, BTEX, PAH	
GR/	ASSES, RUSHES AND S	EDGES	
Scientific Name	Common Name	Contaminant Targeted*	
Andropogon gerardii	Big bluestem	PAH	
Bouteloua curtipendula	Side oats grass	TPH, PAH	
Bouteloua gracilis	Blue grama	PAH	
Carex cephalophora	Ovalhead sedge	PAH	
Carex stricta	Upright sedge	TPH	
Elymus canadensis	Canada wild rye	ТРН, РАН	
Elymus hystrix	Bottlebrush grass	PAH	
Juncus effusus	Common rush	PAH	
Panicum virgatum	Switchgrass	Anthracene, PAH (total priority), Pyrene, TPH,	
Schizachyrium scoparium	Little bluestem	PAH	
Scirpus atrovirens	Green bulrush	PAH, Phenol, BOD, COD, Oil and gasoline, TSS	



CONTRACTOR OF CARDING		
Scirnus cuperinus	Woolgrass	Phenol, BOD, COD,
sen pas cyper mas	Woorgrass	Oil and gasoline, TSS
Scirpus georgianus	Georgia bulrush	Phenol, BOD, COD,
compas georgianas	ecergia sanasni	Oil and gasoline, Phenol, TSS
Scirpus pendulus	Nodding bulrush	Phenol, BOD, COD,
	0	Oil and gasoline, TSS
Sorghastrum nutans	Indiangrass	ТРН, РАН
Spartina pectinata	Prairie cordgrass	PAH
Tripsacum dactyloides	Eastern gamagrass	ТРН, РАН
Typha dominaensis	Southern cattail	DRO, Oil and gasoline,
.,price deniningenere		Phenol, TSS, BOD, COD
Typha latifolia	Broadleaf cattail	DRO, Oil and gasoline,
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Phenol, TSS, BOD, COD
	FORBS & WILDFLOWE	RS
Scientific Name	Common Name	Contaminant Targeted*
Helianthus annuus	Common sunflower	PAH
Sagittaria latifolia	Arrowhead	TPH
Senna obtusifolia	Coffee weed	PAH
Solidago altissima	Tall goldenrod	ТРН, РАН
Solidago arguta	Forest goldenrod	ТРН, РАН
Solidago caesia	Blue-stemmed goldenrod	ТРН, РАН
Solidago flexicaulis	Zigzag goldenrod	ТРН, РАН
Solidago gigantea	Giant goldenrod	TPH, PAH
Solidago hispida	Hairy goldenrod	трн, ран
Solidago missouriensis	Missouri goldenrod TPH, PAH	
Solidago nemoralis	Gray goldenrod	ТРН, РАН
Solidago odora	Sweet goldenrod TPH, PAH	
Solidago petiolaris	Downy ragged goldenrod TPH, PAH	
Solidago radula	Western rough goldenrod TPH, PAH	
Solidago rigida	Stiff goldenrod TPH, PAH	
Solidago rugosa	Rough goldenrod TPH, PAH	
Solidago speciosa	Showy goldenrod TPH, PAH	
	•	
Solidago ulmifolia	Elm-leaved goldenrod	ТРН, РАН

### \*ACRONYMS

A COST IN SA

- BOD biological oxygen demand
- BTEX benzene, toluene, ethylbenzene, and xylene
- COD chemical oxygen demand
- DRO diesel range organics
- MOH mineral oil hydrocarbons
- MTBE methyl tert-butyl ether
- PAH polycyclic aromatic hydrocarbon
- TBA tery-butyl alcohol
- TPH total petroleum hydrocarbon
- TSS total suspended solids

*Solidago canadensis* (goldenrod). Photo by author.

### PESTICIDES

*Sorghastrum nutans* (Indiangrass). Photo by author. Pesticides can enter aquatic ecosystems through stormwater runoff from lawns, fields, agricultural lands, roadsides, rail corridors, and utility corridors. Once in the aquatic environment, pesticides can cause direct harm to fish and aquatic invertebrates, as well as reduce the availability of aquatic plants and insects that serve as habitat or as food for fish and other aquatic organisms.

Below is a list of species that have been shown through research to have the ability to remediate soil and water contaminated with specific pesticides through various phytotechnological mechanisms such as phytodegradation, phytoextraction, phytostimulation, and phytostabilization.

TABLE 5: NATIVE SPECIES FOR PESTICIDE CONTAMINANTS			
Scientific Name	Common Name	Vegetation Type	Pesticide Targeted
Andropogon gerardii	Big bluestem	Grass	Atrazine, Chlorpyrifos, Chlorothalonii, Pendimethalin, Propiconazole
Betula nigra	River Birch	Tree	Bentozon
Ceratophyllum demersum	Coontail	Aquatic	Metolachor
Elodeo canodensis	Pondweed	Aquatic	Atrazine, Copper sulfate, Dimethormorph, Flazasulfron
Juncus effusus	Common rush	Rush	Anthracene
Lemna minor	Common Duckweed	Aquatic	Demeton-8-methyl, Copper sulfate, Dimethomorph, Flazasulfron, Glyphosate, Isoproturon, Malathion, Metolachlor
Morus rubra	Red mulberry	Tree	Anthracene
Ponicum virgatum	Switchgrass	Grass	Atrazine, Pendimethalin
Populus deltoides	Eastern Cottonwood	Tree	Alachlor, Atrazine, Chlorpyrifos, Dinoseb, Dioxane, Metolachlor, Metribuzin
Salix nigra	Black Willow	Tree	Bentazone
Sorghastrum nutans	Indiangrass	Grass	Altrazine, Pendimethalin
Tripsacum dactyloides	Eastern Gamagrass	Grass	Anthracene, Chlorpyrifos, Chlorothalonil, Pendimethalin, Propiconazole
Typha domingensis	Southern Cattail	Grass	Atrazine
Typha latifolia	Broadleaf Cattail	Grass	Atrazine

Useful locations for these species include rain gardens, bioswales, vegetative filter strips, and constructed wetlands, along edges of streams, rivers, lakes and other waterbodies that receive stormwater runoff from parks, orchards, fields, transportation and utility corridors, and residential areas where these pesticides are being used.



### CONCLUSION

It is my belief that native plants are currently not being utilized to their fullest potential when selected for native gardens or landscapes. Keep in mind that the list of species and contaminants covered in this article is by no means exhaustive. Other potential contaminants that could be targeted using phytotechnology include chlorinated solvents originating from current or historical dry cleaning operations; air pollutants originating from roadways, interstates, and airports; or heavy metals originating from agricultural activities, industrial sites, and from mining and smelting operations. By utilizing the growing body of research available regarding phytotechnology using native plant species, these species can be strategically selected and placed on the landscape to either degrade or extract a variety of contaminants found in the soil, water, and air.

So when planning your next native plant garden or landscaping project, I encourage you to also consider the surrounding land uses, and the environmental impact these land uses may be having on your area. And I encourage you to include species that will help improve environment quality by removing or degrading these pollutants and contaminants, which we are often not even aware are there.

In time, my hope is that native plant gardeners and landscapers will become just as knowledgeable about the native plant species that are useful for remediating specific contaminants as they are about the species that are beneficial for specific pollinators. By applying these additional functions of native plant species to the landscape in a thoughtful manner, we can work not only to improve the plight of pollinators, but to improve the environment as a whole.



*Juniperous virginiana* (Eastern red cedar). Photo by author.

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Sorghastrum nutans. Photo by author.

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Celtis occidentalis (bark). Photo by author.

# About the Author

Eric Fuselier is an Environmental Project Manager at Crafton Tull where he works with civil engineers and landscape architects to incorporate phytotechnology using native plant species for the rain gardens, bioswales, detention ponds, and commercial development projects they design. Eric is currently serving as the President of Wild Ones - Ozark Chapter in northwest Arkansas.





# GROWING TOGETHER

### A WILD ONES - OZARK CHAPTER QUARTERLY COLUMN

When I first started this column last year, I thought it would be a great way to schedule the selection of a native plant to do a deep research dive on. What I didn't know then is how spending all of that time with the plant – learning about, touching, looking at, smelling, tasting, – even bathing with it! – and then mindfully observing how it makes me feel – would connect me so strongly with it. I'm starting to fully appreciate how each plant is less of a *thing* to possess than it is a life companion to be cherished and appreciated.

Like my column title promises, we are Growing Together. I definitely am, and I hope you are, too.

The plants I've focused on so far – Jerusalem artichoke (<u>Spring 2021</u>), plantain (<u>Summer 2020</u>), goldenrod (<u>Fall 2020</u>), and now yarrow – are now counted among my closest friends. My eyes are drawn expectantly to where they appeared last season, patiently anticipating their return. I greet them with a loud "Good morning!" in the spring when they peek through the leaf litter that I pile on top of my gardens when tucking them in for winter. And once they make their appearance, I check in on them regularly, making sure they have what they need and are not too crowded throughout their growing season.

Yes, I feel like a proud mama from the moment they make their first seasonal appearance, to their vibrant displays of fertility, to watching how they disperse the seeds of their next generation before dying back and returning to the soil. I even watch how they decay throughout winter as their dead, dry stems and leaves serve as winter housing for all sorts of critters.

These plants are my friends, and I am grateful for the beauty, food, medicine, and protective support they bring into my life, home, and gardens.

This season, I am happy to introduce you to yarrow, my newest rooted friend. Yarrow is a hardy herbaceous perennial plant that lends a touch of structural elegance to my gardens while filling my herbal medicine chest with an overflowing bounty of remedies. In the pages that follow, we'll explore yarrow's beneficial aspects in the garden, and how to plant, grow, and harvest it.

Let's grow together!

Jasmine "Chef Jazzy D" Dorn Wild Ones – Ozark Chapter Member-at-Large and Journal Designer



Monarch on a milkweed. Photo by author 2021.

"Ultimately, the only wealth that can sustain any community, economy or nation is derived from the photosynthetic process green plants growing on regenerating soil."

~ Allan Savory

# THE THOUSAND LEAVES OF



by Jasmine Dorn, an Ozark Wild One

Knowing I have a particular affinity for native plants, a friend offered me some cuttings of her yarrow after dividing it last year. She described the beauty of its abundant white blooms and its slow-spreading growth habit.

I'd read about yarrow briefly before, but a quick review of yarrow's entry in one of my favorite herbalism reference books, *Wild Remedies*, reminded me that I wanted this salubrious gem in my medicine garden.

Yarrow is considered an indispensable herb to herbal medicine practitioners. Each part of the plant can be used for different and specific medicinal outcomes. Yarrow protects permeable barriers (staunches bleeding, tightens tissues and skins, breaks up stagnation in the body), supports the digestive system (stimulates appetite, activates sluggish digestion), is a diaphoretic (cools fevers and helps body fight infection), is a potent inflammation modulator, is a helpful herb for women's health, and so much more.

The beneficial aspects of this plant on human health are so abundant that it could easily be the subject of its own book. Not only is it healthful, but it's absolutely stunning in my garden, with its lovely white flowers atop stately stems and feathery leaves.



Yarrow's botanical genus, Achillea, comes to us from two stories of Greek mythology, both related to Achilles, mythical hero of the Trojan War. When Achilles was born, his mother Thetis held him by the heel to dip him in yarrow tea as one of her many efforts to protect her baby boy from harm. One time, she held him by his heel and dipped him in yarrow tea. Where her hand tightly held her son's heel and remained dry from yarrow's touch became his only vulnerable spot ... his "Achilles heel."

Later, in young adulthood, Chiron - centaur and credited mythical creator of botany and herbal medicine - gave Achilles the gift of yarrow and the knowledge of its use. During the Trojan War, Achilles used yarrow to staunch and disinfect his soldier's wounds, popularizing its use in his time and spurring its genus name Achillea.

The species name *millefolia* simply means "a thousand leaves," referring to yarrow's abundant feathery leaflets.

### A BIT OF BOTANY

Yarrow grows in most temperate-climate terrains, making it perhaps one of the most widely used herbs in the world. Archaeological records from Spain show that yarrow has been used throughout human history, even to the earliest centuries of our species over 50,000 years ago, when dental analysis of our Neanderthal ancestors showed the earliest attested use of yarrow.

Flash forward 49,000 years and we find that Native American tribes used yarrow as a digestive aid and to treat swelling. Externally, they rubbed yarrow flowers directly onto skin or clothing to repel mosquitos. Internally, they also used it to induce sweating during flu-like symptoms, purify the blood, ease bloody diarrhea, treat earaches and toothaches, and as a pain reliever and head cold remedy. They smoked yarrow to relieve lung congestion and in ceremonies.



# Habitat

Yarrow grows everywhere, open fields, mountaintops, seashores, meadows or pastures, and by the roadside.

# Leaves

Each silvery-green, lance-shaped leaf is divided into many leaflets, which are further divided into smaller leaflets, giving it a feathery, fern-like look. The leaves are 3-4" long and 1" wide, and grow in a basal rosette from a spreading rhizome, alternating up an erect stem that grows up to 3' tall.

Flowers

Flat-topped inflorescences (flower clusters) bloom from April or May through June or July, depending on variety. They have numerous 5petaled flowers with yellow stamens. Colors range from white to pale yellows, or pale pinks or purples.



# Stems

The stem is angular and grows erect. Its height varies from just a few inches to over 3', depending on soil fertility, sun exposure, and water.





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### IN THE GARDEN

The benefits yarrow brings are wide and varied. Aside from its beauty, nutrition, and potent medicinal qualities, yarrow has valuable functional uses in the garden while also being easy to grow and manage.

Yarrow repels many garden pests yet is an important food source for native insects. It attracts butterflies and is host plant for butterfly painted lady (*Vanessa cardui*). Its flowers provide nectar and pollen to moths, butterflies, skippers, bees, wasps, hover flies, and beetles.

Yarrow is a fantastic companion plant in fruit and vegetable gardens, attracting predatory wasps, ladybugs, and spiders. Ladybug larvae in particular are aphid-eating machines, while parasitic wasps lay eggs in the caterpillars of several garden villains, such as the tomato hornworm, which eventually kill them. Bug zombies, anyone?

Portions of my land suffer badly from soil runoff during periods of heavy rain. I'm doing everything I can to slow rainwater flow over our land to help recharge the aquifer that our well taps into and waters our gardens from. "Think local" has come to include water sourcing here at <u>Dorn Park & Gardens</u> ... this lovely place I call home. What water falls here, I strive to hold here as long as I can.

At the beginning and end of every growing season, I divide my native plants that have dense root structures to interplant in strategic locations to stabilize slopes, prevent erosion, and slow the flow of water over the land. Yarrow is now part of that stabilizing group. At the end of this first full growing season with yarrow, I will divide its roots and plant them along the edges of my vernal pool (a pond that holds water only after heavy rains) with yarrow and other native plants to keep the shore edge intact and to prevent unwanted plants like poison hemlock or multiflora rose from taking root.

![](_page_37_Picture_8.jpeg)

*Vanessa cardui* on yarrow. Photo: de la Forêt 211

Butterflies also love yarrow, it's a sturdy ornamental for your garden, that just so happens to also be medicine.

> Rachel West, <u>Eating the Ozarks</u>

![](_page_37_Picture_12.jpeg)

Brachonid on hornworm

 $\rightarrow$ 

![](_page_38_Picture_2.jpeg)

Yarrow (fore) and grape hyacinths (back) in early spring. Photo by author. 2021. In permaculture circles, yarrow is considered a "dynamic accumulator" because its deep roots pull up nutrients from the depths to the surface and build soil fertility. Yarrow roots mine nutrients such as potassium, phosphorus, copper, and calcium, and for this reason it is a great plant to use in compost or as a "chop and drop" mulch and fertilizer.

You can also soak fresh yarrow leaves in water for a few days to make a compost tea activator.

### GROWING

If you intend to plant yarrow to harvest for medicinal purposes, select plants with native white or pink flowers. Other colors are cultivated for aesthetics, and nutrient profiles vary across cultivars.

Although yarrow prefers full sun and minimal water, it tolerates variable conditions including dappled shade and regular watering. Plant seeds or starts 1/4" under the soil, about 2' apart. Seeds will germinate in 2-4 weeks.

Once established, yarrow is frost hardy and extremely drought-tolerant, though regular irrigation will produce a more lush appearance.

This plant thrives on neglect. As with most plants I seem to be covering in this Journal, garden work is mostly limited to managing spread. Yarrow spreads via underground rhizomes that form dense colonies. The looser the soil, the faster the

![](_page_38_Picture_11.jpeg)

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spread. If you want yarrow to span large areas for erosion control like I do, you can encourage faster spreading by loosening the top 2-4" of soil of your desired yarrow footprint. Spread will slow – but not completely stop – once the rhizomes hit denser soil. Yarrow grows easily in container gardens if you're concerned about aggressive spread.

# HARVESTING & STORING

The whole plant is usable, and when to harvest depends on what you want to make.

If you want salad greens, pick young leaves whenever they appear. In my little corner of the Ozarks, I was picking small leaves all winter, which means I can enjoy it almost year-round. Flowers are most medicinal when they are entirely open and not discolored. You can stretch the flowering season by clipping spent blooms, or cut them to the ground to encourage a full late summer harvest.

![](_page_39_Picture_6.jpeg)

Drying yarrow on upcycled screen doors. Photo by author. 2021.

### SOIL DENSITY MATTERS

A friend gave me several yarrow plant starts when she divided them last summer. I planted them in several locations: in *Tiberina*, my wood chip medicine garden in full sun, in *Parea*, my friendship wood chip garden in partial sun, and in *Rad Row*, a hard clay soil garden in full sun with lots of competition from other plants.

In *Tiberina*, the tiny yarrow starts became giants. Their 1-year spread went from a few inches to over 5 feet, and they grew to 3-4' tall. Though that may sound intimidating, it is effortless to pull up rhizome runners from wood chip beds in early spring. Those runners can then be given away, made into medicine, or planted elsewhere.

In Parea, I planted yarrow a little too close to wild bergamot, and both grew leggy as they competed with each other for the partial sunlight. Either from space competition or less light (or both!), the spread was significantly less than in *Tiberina*.

In *Rad Row*, the yarrow grew as tall as it did in the other gardens but barely spread at all. The compact soil and competition obviously slowed the runners to a slow creep. After harvesting, strip leaves from the bottom couple of inches of the stalk, bundle and hang the stalks upside down for about a week to dry at room temperature, away from direct sunlight. Once dry, save whole leaves and flowers in an airtight container for up to a year. Do not crush the leaves or flowers for maximum potency. The medicine is in the volatile oils, and the more you crush the leaves, the more you lose those aromatic compounds.

### CONCLUSION

I hope that this introduction to yarrow has you itching to plant some in your home garden. Between its beauty in the landscape, its many useful functions in the gardens, and its medicinal potency, it is an invaluable plant in our lives.

Head on over to <u>Chef Jazzy D</u> to read about yarrow's medicinal properties or if you want to see how I use it in medicinal and culinary preparations.

![](_page_40_Picture_5.jpeg)

Want to read about yarrow's health benefits and see how I use yarrow as food and medicine?

Check out my companion health & nutrition article at <u>https://chefjazzyd.</u> <u>com/?p=1317</u>

Yarrow and roasted Jerusalem artichoke salad. by Jasmine "Chef Jazzy D" Dorn. 2021.

### **REFERENCES & FURTHER READING**

<u>https://www.herbrally.com/monographs/yarrow</u> <u>https://www.smokableherbs.com/yarrow-flower/</u> <u>https://emeryherbals.com/ode-to-yarrow-a-tale-of-achilles/</u>

Apelian, Nicole, PhD, Claude Davis. <u>The Lost Book of Herbal Remedies</u>. 2019. de la Forêt, Emily Han. <u>Wild Remedies</u>. Hay House Inc. 2020. Rose, Lisa M. <u>Midwest Foraging</u>. Timber Press, Portland, Oregon. 2015.

![](_page_40_Picture_12.jpeg)

![](_page_41_Picture_1.jpeg)

My little corner of paradise. Photo by author. 2021

# About the Author

Jasmine "Chef Jazzy D" Dorn is all about human and environmental health. After achieving significant progress on her own health journey through adopting a plant-based dietary lifestyle, and intensive studies in functional nutrition, she is now dedicated to helping others improve their health outcomes through nutrition and lifestyle modifications. An adventurous plant-based chef, gardener, and herbalist, she is energized by learning and sharing knowledge.

Find her at https://ChefJazzyD.com or https://facebook.com/ChefJazzyD

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![](_page_41_Picture_6.jpeg)

![](_page_42_Picture_2.jpeg)

# Seed Collecting for Monarchs!

![](_page_42_Figure_4.jpeg)

The Pollinator Partnership has joined forces with the Arkansas Monarch Conservation Partnership and Arkansas Native Seed Program, as well as several other organizations and agencies to expand Project Wingspan into Arkansas, and we need your help!

We are looking for enthusiastic seed collecting volunteers in three regions of Arkansas (see map) to help identify and collect seed from milkweed and other valuable native nectar plants.

As a seed collecting volunteer you will be provided with training and be making valuable contributions to support migrating monarchs and other imperiled pollinators.

### No seed collecting experience is required but basic plant knowledge is preferred.

Project Wingspan is also looking for landowners and public land managers with robust native plant populations who are interested in supporting local habitat restoration efforts by providing native seed collection sites.

### To learn more about this project visit: https://www.pollinator.org/wingspan

Pote: Heath Hamilton

To sign-up as a *volunteer seed collector* please fill out the online form here: https://tinyurl.com/Wingspan-volunteer To see our list of target plants and sign-up as a *seed collection location* please fill out the online form here: <u>https://tinyurl.com/PWseedsite</u>

![](_page_42_Picture_14.jpeg)