



OZARK CHAPTER

SUMMER 2020 ISSUE





Summer 2020 Newsletter

TABLE OF CONTENTS

President's Column: An Opportune Moment in History	1
BOARD CONTACT INFORMATION	2
Are We Doing Enough for our Butterflies and Birds?	3
Remediating Depleted Soil for a Residential Native Plant Garden	5
RAISED BEDS AND TERRACING	5
A HÜGELKULTUR MOUND.....	5
A MIYAWAKI MINI FOREST	6
A RAIN GARDEN.....	6
Covid or Not, Here They Come!	7
Let It Grow	9
Master Naturalists in Action: Growing Native Plants for Local Homeowners and Non-Profits	10
NATIVE PLANT PRODUCTION: A YEAR'S TIMELINE	10
The Death and Life of the Ozark Chinquapin.....	16
THE ONCE KING OF THE FOREST	16
A NEW GENERATION RISING.....	16
Ozark Wild Ones Column: Growing Together.....	17
Go Bananas for Plantain	18
FIRST, A LITTLE SOMETHING FOR THE BOTANY (OR LATIN!) NERDS	19
A BIT OF BOTANY.....	19
HOW AND WHERE TO GROW	20
HOW TO HARVEST	20
WILD WHOLE FOOD AND WILDCRAFTED MEDICINE.....	22

President's Column: An Opportune Moment in History

By Eric Fuselier • President, Wild Ones Ozark Chapter Board



Welcome to the inaugural issue of the Wild Ones, Ozark Chapter newsletter. We are excited to launch this new publication and hope that you find these articles both educational and enjoyable.

When we first formed the Ozark Chapter of Wild Ones at the beginning of this year, none of us could have possibly foreseen the profound disruption to our daily lives that was beginning to crest the horizon. Since then, we have

had to press pause on many daily activities and practice social distancing, in an effort to slow the spread of a novel coronavirus and protect those among us who are most vulnerable to succumbing to COVID-19. For many of us, this has meant an increase in time spent at home.

But there is good news. I encourage you not to think of this additional time at home as a hindrance, but rather as an opportunity. We can make wise use of this time. We can begin having a positive impact on the urban and suburban ecosystems in which we live, all while practicing social distancing from our own backyards.

What better time could there ever be than right now! What better time, than the unique situation in which we currently find ourselves, to begin reweaving the **Web of Life** back into the built environment. What better time than now to convert part (or even all?) of our outdoor living spaces into lush and vibrant living landscapes that support an array of native pollinating insects and provide food for songbirds, small mammals, and reptiles.

Maybe you would enjoy a butterfly garden beneath the window that's alongside your favorite rocking chair in the living room. Perhaps a raingarden would enhance the low area in your front yard that doesn't drain well and needs a touchup anyway. Trust me, whatever outdoor home improvement project you have planned over the next year, if you include native plants then you will discover the satisfaction that comes with attracting new bird and butterfly species to visit your home.

And we're here to help you.

Maybe you don't know which native species to grow, and that's okay. Wild Ones can provide suggestions based on the site conditions present. Maybe you don't know where to find native plants for your garden, and that's okay too. We can point you in the right direction and provide a list of local growers and other resources, so that you can find what you are looking for.

We also understand that everyone's living situation is different. Some own their home, while others rent. Some have yards, others just a patio or balcony. But no matter the size of your outdoor living space or the length of time you intend to live there, many native perennials can also be grown in containers, and we are happy to help you find the right species that will thrive under the unique conditions of *your* outdoor living space.

Despite the new challenges that we face, the momentum of our chapter's leadership remains just as strong as in the beginning.

Our board continues to meet regularly and strategize about how the Ozark Chapter of Wild Ones can continue to work towards our vision of becoming a regional influence for promoting the use of native plantings to create thriving, living landscapes in Northwest Arkansas.

While we are unable to gather in person for regular monthly programming, you should know that our chapter's leadership is shifting our energy into new and exciting programs and projects that we hope will continue to provide engaging and entertaining content for you to enjoy.

Remember, we are still here with you during this time. Please don't hesitate to reach out if there is anything that we can help you with. You can contact us by email at: WildOnesOzarkChapter@gmail.com.

Sincerely,



Eric Fuselier, President
Wild Ones Ozark Chapter

KEEPING IN TOUCH

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!

Facebook – Our [Chapter Facebook page](#) is open to the public.

Board meetings – Meetings are temporarily on hold due to Covid-19, but we're developing online programming – so keep an eye on our Facebook postings.

BOARD CONTACT INFORMATION

president

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

vice president

Lissa Morrison: morrisonlissa3@gmail.com

treasurer

Tom Allen: tallenro@gmail.com

secretary and newsletter editor

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

membership chair

Scott Biehle: biehle@uark.ed

at-large member

Jasmine Dorn:
jasmine@jazzyscreativekitchen.com

facebook.com/OzarkWildOnes
WildOnesOzarkChapter@gmail.com

Are We Doing Enough for our Butterflies and Birds?

By Lissa Morrison • Vice President, Wild Ones Ozark Chapter Board

Environmental issues are covered extensively in today's media. Many of us are interested in "doing our part" and getting involved, but it can be a daunting task to sort through all the information and decide where to begin. Fortunately, we can begin in our own backyards.

While we are all paying more attention to our planet, let us start with some basic science to get an understanding of the problem. In elementary or middle school, we were taught about the food web. If you recall, plants are at the bottom of the food web. Plants are the basis for all higher-level life forms. That means frogs, turtles, butterflies, birds, chipmunks, foxes, owls, insects, and humans are all dependent on plants.

When you look around, it appears that plants are in no short supply, especially in Arkansas where we seem to have an abundance of forests and lush green everywhere. However, when it comes to a healthy, thriving food web, not just any plant will do. Local ecosystems have evolved over thousands of years with very interdependent relationships. Nine out of ten insects rely on just one or two specific native plants to complete their life cycle, without which they cannot reproduce. If our insects are in decline, then the special critters that are higher on the food web will also decline. This includes butterflies and birds.

According to the National Wildlife Federation: "A plant is considered native if it has occurred naturally in a particular region, ecosystem or habitat without human intervention." Native plants were here long before the United States was a country and before Arkansas was a state.

When the European settlers came across the ocean, they had a hard time parting with their beloved plants. As they populated the continent, the newcomers chose to decorate their surroundings with lovely plants from their home countries. We have since been beautifying our landscapes and homes with exotic transplants, creating ecological wastelands (full of plants) in our own neighborhoods.

As we have populated North America with more cities, suburbs, and people, beautifying with non-native transplants has starved our local ecosystems. Our communities have become dense enough to break up what was once a continuous flow of thriving habitats across the continent. This is called fragmentation, and it is particularly harmful to any insect or animal that migrates, which many North American birds and butterflies do. Landscaping with non-native plants is ecologically counterproductive and has diminished the numbers of birds and butterflies in neighborhoods, towns, and cities.

Only in the last 40 or so years have we begun to pay attention to this tipping of the scales. Studies are now showing the alarming rate of decline, not only of birds and butterflies, but of many other beloved creatures ... frogs, turtles, salamanders, fireflies, and most notably the monarch butterfly. Native plants are the key to reversing this alarming trend and bringing ecosystems back into balance.

It is possible for us, collectively and as individuals, to make the changes necessary to co-exist with nature. If we design our urban settings, commercial buildings, and neighborhoods to incorporate native plants, then we can rebuild the fragile food web.

Imagine if across our country we decided to make landscaping for a healthy ecology as much of a priority as landscaping for aesthetics. If we want to rebuild healthy, productive, biodiverse habitats, that is exactly what we need to do. The benefits would be literally life-altering.

Recent research found Carolina Chickadees in decline within yards having less than 70 percent native plants. Young chicks need protein, which cannot be obtained from the seed mixes we put in our bird feeders. A large part of that protein comes from caterpillars, brought to the chicks by their doting parents. Native trees and shrubs are home to huge numbers of caterpillars, because native plants are where the butterfly or moth lays its eggs. A native oak tree supports more than 500 different kinds of butterflies and moths. In contrast, non-native trees support zero to very few caterpillars. The result of fewer caterpillars is fewer birds. Without native plants, butterflies and birds will continue to decline.

Native plants are as attractive as the beautiful exotics that we have been using for centuries. Granted, it is a whole new set of plants that we are becoming familiar with. Design principles are the same, regardless of which plant you choose. Just like any plant purchased from the garden center, knowing the soil, water, and light requirements will increase your success. Elegant landscapes with mostly native plants can be very appealing.

Hopefully, you are convinced by now that we need to change some of our landscaping and gardening practices. We can rebuild functioning ecosystems right in our yards, simply by choosing native trees, shrubs, and perennials. This is the key to having more birds and butterflies. Additionally, landscaping with native plants will reduce the need for chemical fertilizers, pesticides, and water. These plants have existed for centuries without human intervention. The result will be that our lakes, streams, and drinking water will be less polluted.

From environmental educators to garden groups and webinars, education about how to landscape with and incorporate native plants is being offered all over the country. The “how to” of this new gardening ethic will require a willingness to break out of the box and try some plants we are not yet familiar with. There are many excellent websites to help with this process. Some of my favorites are those from the Missouri Botanical Garden, National Wildlife Foundation, Missouri Prairie Foundation, and Xerces Society. These websites are full of educational material and information. Be sure to research according to the *region* in which you live.

The next time you have a gardening project, try researching native plant options that fit the spot you are working with. Pay attention to soil, water, and sun requirements of the plant. After you have found appropriate choices, shop with a list in hand. Over the last several years I have compiled a list called *Well Behaved Natives for Landscaping*. It is specific to Arkansas and it can be found on the Botanical Garden of the Ozarks website (bgozarks.org) under the Learn tab.

Are we doing enough for the birds and butterflies? Not quite yet. However, it is definitely possible for us to bring our surroundings back into balance. Changing our plant selections and increasing the percentage of native plants in our own yards is an easy way for us to “do our part.” It is one positive contribution we can all make, and in the process, we will enjoy more butterflies and more birds. Collectively we can make a difference ... one yard at a time.



About Lissa: *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.*



Remediating Depleted Soil for a Residential Native Plant Garden

By Scott A. Miskiel • City Gardener, Eureka Springs

Native plants help to improve soil health and, in the long term, even create new soil. But to experience vibrant growth they need to be planted within good soil.

If one tries to establish a native plant garden in soil that's depleted of nutrients, the resulting growth will be slow and ineffective. First, the soil must be actively remediated.

Aside from state and national parks and other lands dedicated to preservation, much of our lands have been stripped of their native vegetation, and the natural soil-building processes that created rich, healthy soil has been inhibited. Once-ecologically-pristine lands have been degraded, leaving us with 40 million acres of lawns and over 900 million acres of monocropped, chemical-drenched farmland. Robbed of their biodiversity, our once rich and verdant soils have been left depleted.

Transitioning to restoration agriculture to reverse soil degradation on our farms will require a drastic change in national policies, change which is beyond the ability of a single individual or family to effect.

Furthermore, any large-scale attempts at remediation of large parcels will be daunting and expensive.

However, the individual efforts of private landowners can improve soil health and create oases of native plant gardens and mini forests in their own yards. In short, **you** have the ability to remediate depleted soils on your own small plot, and to create a [vibrant, healthy native plant garden](#) or mini forest.

Several methods are available to deal with poor soils in your native plant garden or mini forest. This article will briefly describe a few of these methods, and future articles will explore each of them with greater specificity:

RAISED BEDS AND TERRACING

Where abundant, healthy soil is lacking, new soil can be hauled in to fill raised beds, and if the ground is sloped it can be terraced to provide a level bed to impede erosion. The benefit of these methods is that they quickly provide a suitable plot for your native plants; however, these methods do incur the cost and labor of creating the beds or terraces and filling them with suitable soil.

A HÜGELKULTUR MOUND

[Hügelkultur](#) is a method whereby mounds of compostable biomass such as decaying branches and leaf litter are covered with humus-rich soil upon which to plant, resulting in a planting bed that improves long-term soil fertility and moisture retention. The [Hügelkultur mound](#) can be whatever size and shape appropriate for its location and is often used on a sloped surface to create a swale to slow the flow of water and cause it to be absorbed by the high organic content in the mound. Depending on the size of the [Hügelkultur mound](#), you may or may not need excavation equipment, and depending on the availability of partially-decayed branches, logs, leaves and other organic matter, you may or may not need to acquire this from an outside source.

When a soil loses fertility we pour on fertilizer, or at best alter its tame flora and fauna, without considering the fact that its wild flora and fauna, which built the soil to begin with, may likewise be important to its maintenance.

Aldo Leopold

A MIYAWAKI MINI FOREST

The Miyawaki method, pioneered by Japanese botanist [Akira Miyawaki](#), is a system for accelerated restoration of forests, especially on degraded soils. This technique creates mini forests on areas as small as a few hundred square feet, by digging the planting area, mixing the removed materials with various forms of compost or humus, and returning it to the planting area. A biodiverse mix of native trees, shrubs, flowers and groundcovers is densely planted, and the ground thickly mulched.

The method purportedly *quickly* results in native forests, up to ten times faster than traditionally planted forests and thirty times denser. Various native species of plants are densely planted so that non-planted species are choked out, reducing maintenance. It typically requires watering and weeding for up to three years, then becomes maintenance free.

A key feature of the [Miyawaki method](#) is the extensive soil preparation that takes place prior to planting. The planting area is dug out to a depth of approximately two feet and the soil mixed with a variety of humus-rich mulches or composts. Fortified with corn, wheat or rice husks, cocoa coir and organic fertilizers such as manure, the growing medium is supercharged for accelerated growth. Rich in organic matter, the soil holds moisture better and encourages soil biodiversity.

A diverse assortment of native species is planted, with plants ranging from small shrubs to large trees. Planting is dense, with up to five plants per square yard, and the ground covered with a thick layer of mulch.

It is said that Miyawaki restored as many as 40 million trees in 1,300 forests using this method. There is perhaps no better exemplar for the Miyawaki method than [Shubhendu Sharma](#), who first implemented the system in his 800 square foot back yard in Kashipur, India ten years ago. After preparing the soil in accordance with the Miyawaki method, he planted over 200 trees and shrubs in this small space. In just a few years, he had a thriving mini forest habitat for a diversity of animal species. Impressed with the success of this system, Sharma established a company called “Afforestt” and has planted as many as 450,000 native trees in 144 mini forests.

The soil preparation feature of the Miyawaki Method is labor-intensive, requires excavation equipment and the acquisition of the organic matter, and is therefore very costly. However, for a small, backyard mini forest where such costs might otherwise be incurred for traditional landscaping, the Miyawaki Method is worth consideration.

A RAIN GARDEN

A [rain garden](#) is a method used to reduce the flow rate of runoff, creating an area of enhanced moisture and providing a place for flora and fauna that require a more-damp habitat than the immediately-surrounding area.

One should not be discouraged by the lack of abundant, healthy soil at the site for his or her proposed native plant garden. The methods outlined above can help to quickly remediate the problem and ensure success.



ABOUT SCOTT: *Scott Miskiel has nearly 20 years of experience in organic gardening and permaculture. He has completed a Master Gardener course, a Permaculture Design Course, is a Master Naturalist, and is currently the City Gardener for Eureka Springs.*

Covid or Not, Here They Come!

By Karen Seale • Member, Wild Ones Central Arkansas

Photos by Celia Harkey

Yes, our world has changed. Perhaps forever. But you can't keep native gardeners down forever! Spring fever ... spring rains ... spring blooms ... such was the backdrop that prompted three members of Wild Ones Central Arkansas to don their masks, drive in separate cars, and spritz with insect repellent to take a mini tour through my native garden in west Little Rock recently.

Some members of Wild Ones Central Arkansas might recall that I hosted a brunch and garden

tour in the spring of 2019, when I was President of Arkansas' first chapter of Wild Ones. My hope was that, by opening my home early after the formation of the chapter, the tone would be set for lots of members to host garden tours in the future. But fast forward to the spring of 2020, when in-person meetings, garden tours, and service jaunts are – for the moment – history.

But, like elephants, a couple of Wild Ones members have a very good memory and recalled that they had not been able to attend last year's tour and brunch. Did the absence of plans for a repeat tour this year due to the pandemic stop them? Heck no! They took it upon themselves to finagle an invitation for a private tour, this one with masks and without brunch! Never one to turn down an opportunity to host anyone genuinely interested in native gardening for a stroll through my garden, I was quick to say, "Yes, let's do it!"



On Friday, June 5, I welcomed Janet Tobias, Celia Harkey, and Chris Wilson to my garden, where the four of us wandered around my typical west Little Rock suburban property. Well, okay, maybe not so "typical." Sure, the basic strata is rock, rock, and more rock, with a relatively thin layer of topsoil that had originally been populated by the usual suspects: crepe myrtles, nandinas and a couple of native white oaks (yipee!!) and dogwoods. However, since I took an interest in gardening with natives about 20 years ago and have gradually eliminated all except one non-native plant from the property, I have what might be

considered a nice diversity of Arkansas native plants. (Full disclosure: The only non-native plant that remains, intentionally, is a geriatric Japanese maple that my husband insists remain standing until it dies of natural causes. Successful relationships require compromises, after all.)

I always have the best of intentions to provide metal name tags for all my plants, primarily so I can remember what I planted and learn their names if and when they survive. As a result, many of the plants could be identified promptly and accurately. For many of them, though, all four of us put our heads together and identified as many as possible.

A couple of the more visually impressive specimens were the big leaf magnolia trees (*Magnolia macrophylla*) that had just finished blooming (of course). In fact, I greeted my guests with the inevitable gardener's disclaimer, "Gee, if only you had been a week earlier, you could have seen ... (fill in the blank)." In this case it was the Indian Pinks (*Spigalia marilandica*). But there were enough other things in bloom that I needed not be embarrassed. The bushy St. John's wort (*Hypericum densiflorum*) was being systematically and voraciously visited by a vast array of pollinators, especially bees and wasps, as were the early-appearing blooms of Purple coneflower (*Echinacea purpurea*).



Even though the tour started early, it wasn't long before everyone was praising the attributes of the welcome shade provided by three varieties of native magnolias, numerous fruit-bearing Ohio buckeyes, and at least four leafy arbor-climbing Dutchman pipevines (*Aristolochia tomentosa*.) As I explained, my emphasis has long been on maintaining the pre-existing healthy stand of White Oak trees (*Quercus alba*) that were on the property when I purchased my house in 1986. There were four nice specimens of these, while I added lots of understory trees and bushes periodically over the last 20 years. I figured that once those were healthy and established, I could

expand the inventory to include spring ephemerals and sun-loving prairie plants in the few remaining sunny spots. The truth is, I am a sucker for just about any Arkansas native plant, especially if it becomes available at an Arkansas Native Plant Society auction or an Audubon Arkansas plant sale. Please don't embarrass me by asking how much money I have spent at Pine Ridge Gardens over the years!

At the conclusion of the tour, I called as I waved good-bye to my visitors, "Hey, if y'all come back in a couple of weeks, you'll get to see the blooms from ...!"



ABOUT KAREN: *Karen Seale is a retired orthopedic surgeon – actually the first female orthopedic surgeon in Arkansas, and she turned to gardening specifically to relieve stress. "I would come home from a long, hard, stressful week of work just wanting to kill something – not what you want to hear from your orthopedic surgeon," Karen said. "So I started deadheading and pruning and I was hooked on gardening. I joined ANPS to learn about natives. While ANPS was great for getting to see natives in their natural environment, I needed more information about how to garden with natives." So, Karen chartered Wild Ones Central Arkansas in 2019 (along with Master Gardener Margaret Cline of Conway). She served as its first President. She is also a member of Central Arkansas Master Naturalists.*

Let It Grow

Plant a bunch of native plants
and watch your garden grow.
Please the earth that will please
the flowers and set them all aglow.
Have a garden that really thrives
and vibrates with success,
and draws so many butterflies
that your garden is the best.
A lush life of native growth
that is naturally adapted.
Work a whole lot less for a whole lot more
in a landscape so well crafted.
Plant your land with native plants
and become so well rewarded,
so loved by friends and neighbors,
you'll be so well regarded.
Plant your place with native plants,
it's the right thing to do.
Return to home what once was there,
Arkansas loves you!

- Carter Carrigan



ABOUT CARTER: Carter Carrigan is a nature lover, a science enthusiast, and a close observer of the great outdoors in any form. He is a former member of the U.S. Special Forces Medical Program, a member of Wild Ones Ozark Chapter, and he used to own a professional pet sitting business.

Master Naturalists in Action: Growing Native Plants for Local Homeowners and Non-Profits

By Rose Gergerich • Member, Wild Ones Ozark Chapter

This is the first of three articles describing the Northwest Arkansas Master Naturalists Native Plant Project. These articles are not designed to convince folks to grow native plants.

If you need convincing, we recommend two books by Douglas Tallamy: “Bringing Nature Home: How You Can Sustain Wildlife with Native Plants,” and “Nature’s Best Hope: A New Approach to Conservation that Starts in Your Yard.”

The three articles in this series are:

- I. Native Plant Production: A Year’s Timeline
- II. Native Plant Production: Educating Ourselves and Others about Native Plants and Their Value
- III. Native Plant Production: What Works for Us

NATIVE PLANT PRODUCTION: A YEAR’S TIMELINE

Over the past eight years, the Northwest Arkansas Master Naturalists chapter (NWAMN) has developed a program for growing and disseminating native plants into both private and public environments of our region. The native plants that we grow have been purchased by or donated to homeowners, municipal parks, state parks, federal areas, school gardens, and numerous local non-profits.

The success of our native plant program is due entirely to the dedicated and energetic Master Naturalist volunteers who have performed the various tasks outlined here. These volunteers not only donated hundreds of hours of labor, they also applied their collective imaginations to solve problems as the project expanded over the years.

Most of our plants are grown from seed. Propagation of plants through seed mimics what happens in natural ecosystems, and it helps to maintain the natural diversity that is present in wild native plant populations. Such diversity helps plants survive various environmental stresses such as heat, drought, etc. Some plants are difficult to grow from seed; we use cuttings or layering if the seed method fails. We recognize that there are many methods and materials that have been successfully used to propagate native plants, but these have worked best for us.

Although it might seem logical to start with the beginning of the calendar year, this timeline starts with seed collection, which is our first interaction with the plants we intend to grow during the ensuing year. Our production calendar includes the following steps:

locating and identifying local native plants and marking them for later seed collection

As much as possible, we collect seed from local, naturally occurring plants for our native plant production project. Sources for seed include public local native plant gardens, private local native plant gardens, diverse local natural environments, and regional native plant seed suppliers. When collecting seeds, volunteers are cautioned to: get permission to collect, avoid collecting from rare species, leave some seed to grow next year, leave some seed for seed eaters, and wait until seed is ripe (will be dry, and many will be dark in color and firm).

collecting mature seed and storing for processing

The first step in seed collection is to correctly identify the plant, usually while it is flowering, because flowers help with identification. Since it is sometimes difficult to relocate the plant of interest after it has been identified and the flowers have faded, it is advisable to somehow label the plant to aid in locating it for future seed collection.



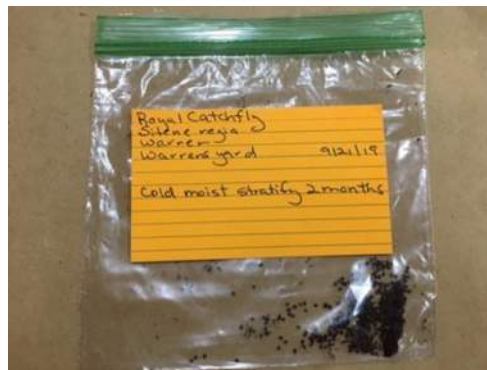
For plants with fleshy berries or fruit, one should wait until fruit is soft and detaches easily. For grasses, the seed can be easily stripped or shaken from the plant once the seeds are mature and dry. For some plants, such as wild petunia and touch-me-not, the seed pods split explosively. While this is a wonderful tactic for the plant to widely disperse seeds, it can be challenging to “catch” the seeds before the pods explode.

cleaning seeds, data entry, and storing seeds under appropriate conditions

One of the challenges of working with many different types of native plants is recognizing that each plant has unique requirements for seed storage and treatment. A wonderful resource that describes both storage and treatment requirements for many of the native plants we grow can be found at the Lake to Prairie Wild Ones website: laketoprairie.wildones.org.

There are many wonderful online resources that provide information on plant propagation, and two of our favorites are: Ladybird Johnson Wildflower Center wildflower.org/plants and USDA Plants Database plants.sc.egov.usda.gov.

For each of our seed samples, we require collectors to record the following information: (a) scientific and common name of plant, (b) collector's name, (c) date of collection, (d) location, and (e) information on seed cleaning and treatment, if available. Each seed sample is numbered, and this number is used throughout the growing process for identification purposes. This information is included on an index card that is kept with the seed collection, and the information is later entered into a database of seeds collected that year.



Most seeds are dried immediately after harvest by placing them in a paper bag and holding them at room temperature until they are thoroughly dry. However, it is important to note that some seeds should not be dried before storage. Again, it cannot be emphasized enough that each seed type is unique and has its own requirements for seed storage and treatment.

Before long-term storage, the dried seeds are processed to remove extraneous plant material. This reduces the bulk of the seed sample, and it separates the seed from extraneous plant organic matter such as awns, pods, stems, dried floral parts, flesh of succulent fruit, seed-eating insects, etc. For those seeds that require a cold moist treatment (more on this later), seed cleaning removes organic matter that may lead to mold growth under the conditions of seed treatment. After seed cleaning, the thoroughly dry, clean seed (including the data card) is stored in a small ziplock plastic bag in a refrigerator until seed treatment and planting.

treating seed as needed to ensure germination

The seeds of many native plants have a built-in dormancy that keeps them from germinating until conditions are ideal for plant growth. For instance, if a plant such as mist flower (*Eupatorium coelestinum*) germinated under the moist conditions of late fall, when the seeds mature, the seedlings would not survive during the following winter season. The use of seed treatments under defined conditions helps us to achieve timely and consistent seed germination. Details of the methods we use for seed treatment will be described in part three of this article.

Again, please note that each native plant has unique requirements for seed treatment. Some seeds need no treatment. Others need treatment that ranges from ten days to five months. So, if our target date for planting is late February, we begin treating some of our seeds in October, and continue treating seeds over the course of the next five months to have all of them ready for planting at the same time at the end of February.

ordering and planting tree and shrub seedlings

For many of the trees and shrubs that we grow and distribute, we purchase bare-root seedlings in bulk from the amazing inventory of plants that is available at the [Missouri Department of Conservation \(MDC\) State Forest Nursery](#) near Licking, Missouri. Our tree/shrub order is placed in early September. The dormant trees and shrubs are collected from the MDC nursery in late February and immediately planted in pots and placed outside at the Master Naturalist Nursery. Details for tree and shrub planting are given in part three of this paper.

cleaning and disinfecting recycled pots and trays

One of the goals of our project is to acquire and use recycled pots and trays for our plant production system. We encourage our customers to return their used pots, and we collect used pots for recycling from local nurseries and organizations. During the late fall and early winter months, we have several “pot cleaning” workshops. The pots are brushed to remove debris, and then they are soaked for 30 minutes in a 10 percent bleach solution followed by thorough rinsing to remove the bleach. We currently use three 100-gallon water stock tanks for this effort.

This procedure for cleaning and disinfecting recycled pots follows the requirements that commercial nurseries must use to remove any contaminating organisms such as root infecting fungi that might reside in the used pots. Perhaps because our volunteers are working with inanimate pots and not plants, this is definitely not one of the favorite activities of our native plant team, but it does result in reclamation of thousands of pots that would probably end up in a landfill. Mission accomplished!



seed planting

At the end of February and early March, we are finally ready to switch on the greenhouse and begin planting the seeds that we have so carefully collected and processed. Seeds are planted in a commercial soil mix called PRO-MIX which contains a specialized mycorrhizal fungus that colonizes seedling root systems and increases water absorption from the soil. The general rule of thumb for planting seeds is that the seed should be planted at a depth of two times the width of the seed. However, some seeds require light for germination, and these seeds are sprinkled evenly over the top of the soil without covering.



For seeds that are very small but do not require light for germination, we apply a thin dusting of the soil mix or fine sand over the seed, and the pots are watered from the bottom to avoid disturbing the seeds. Each seeded pot is carefully labeled with the plant name and the seed accession number. Our plant labels are made from recycled venetian blind slats that have been cut into different sizes depending on the size of the pot being labeled. Labels are affixed, listing the seed accession number, the common name and the scientific name.

Careful attention to watering seeded pots is needed to provide adequate moisture for germination, and to avoid overwatering – which can cause the seeds to rot and may attract fungal gnats. These gnats feed mostly on fungi in the soil, but the larvae will feed on plant rootlets and affect plant growth. We also hang yellow sticky cards over the greenhouse benches to capture the gnats and other flying pests. See: ces.ncsu.edu.

Seeds of various native plants germinate at different rates. For example, most of our native plant seeds germinate and begin growing within two weeks of planting. However, the seeds of plants such as spicebush and beautyberry require patience since they may take up to a month to germinate. Probably the all-time record for slow germination in our program was for pawpaw seeds, which took four months to germinate and produce green leaves. We plant most of our seeds in pots that are short but wide (6 x 5 inches) to maximize surface area for seeding while minimizing the amount of soil mix used. For grasses, we plant seed in plastic trays (10 x 20 x 2.5 inches), and then simply cut the resulting “turf” into small pieces for transplanting into gallon pots. Very popular plants, such as purple coneflower and the milkweeds, are also planted in flats to produce more seedlings for transplanting. We generally plant two to three pots of each seed accession. This allows for poor germination, and it also gives us the flexibility to share a pot of seedlings with other folks who want to grow native plants, but who do not have seedling resources.



transplanting for sales and donations

We hold two or three plant sales each year, in order to offset the expenses incurred by the native plant project and to fulfill our objective of disseminating native plants into the environments of northwest Arkansas. We also donate



plants throughout the year to federal, state, and city parks, schools, and other local non-profit organizations. To meet the demands for these sales and donations, we transplant seedlings into pots of various sizes during the months of April and May. For early plant sales in late April and early May, we transplant

individual seedlings into small pots (4-

inch square quart-size pots). Additional seedlings are transplanted into smaller pots (2.5-inch square or smaller) for later transplanting into gallon-size pots. All transplants are held in the greenhouse since there is still a danger of frost at this time of year. Following this early transplanting, the greenhouse (18 x 24 feet) is filled to overflowing with seeded pots and flats, as well as the plants potted for early sales, donations, and later transplanting.



In late May, we transplant seedlings into gallon-size pots, and these plants are grown outdoors under a 30 percent shade cloth for sales and donations in late spring and early fall. The soil mixes and fertilizers used for transplanting are detailed in part three of this article.

plant sales

In preparation for a plant sale, an inventory of plants (common and scientific names) that are available for purchase is prepared. This list includes trees, shrubs, grasses, and perennial flowers. We do offer a pre-order option, which helps us know exactly which plants and how many to bring to the sale site. On the other hand, if customers are selecting their plants during the sale, we can answer their questions and help them select plants appropriate for their location. A lot of education about native plants occurs during our sales, as our Master Naturalist enthusiasts wax eloquent about the beauty and benefits of their favorite native plants. As with the other parts of our native plant program, plant sales require a lot of volunteer time to organize pre-orders, transport plants to the sale site, and manage the plant sale.





In the past, we have held three plant sales per year, two in the spring and one in early fall. However, because of limitations placed on us by the COVID-19 pandemic, we modified our approach this past year and restricted sales to pre-orders only. While this was frustrating because we didn't have the opportunity to directly interact with our customers, the pre-order sales were very successful and

allowed us to meet our goals for the year.

In conclusion, Master Naturalist volunteers on our native plant team work year-round to accomplish the goals of our project. Working with a very diverse group of native plants, each with their unique requirements for growth, has been challenging and rewarding for all of us. In the second segment of this article, we will discuss some of the fascinating things we have discovered about the native plants we are growing, as well as our efforts to educate ourselves and others about the utility and beauty of native plants. Stay tuned!



ABOUT ROSE: Rose Gergerich grew up on a dairy farm in northern Wisconsin where she learned to grow and appreciate plants from her parents and grandparents. She is retired from the University of Arkansas in Fayetteville after a 30-year career as a professor in the Department of Plant Pathology with a specialization in virology. She lives out in the boondocks in southern Washington County, Arkansas with her husband. She is an active member of the Northwest Arkansas Master Naturalists and helped to form the Native Plant Team in that chapter. She enjoys working with fellow Master Naturalists in the greenhouse and nursery on her piece (peace) of land in the Arkansas Ozarks.

The Death and Life of the Ozark Chinquapin

By Steve Alarid • Member, Wild Ones Ozark Chapter

THE ONCE KING OF THE FOREST

Old-timers around the Ozark Plateau region still remember the days when the Ozark chinquapin tree (*Castanea ozarkensis*) was a dominant component of the upland hardwoods landscape. Mature chinquapins could reach dimensions of 2-3 feet in diameter and 65 feet in height. They were a consistent and copious producer of nut crops that fed both human and wildlife foragers. The lumber was known for durability and rot resistance, making it popular for furniture, building construction, and many other uses. Ozark chinquapin was indeed one of the defining trees of the Ozarks region.



Ozark chinquapin leaves. Photo courtesy of Ozark Chinquapin Foundation

However, beginning in 1904 with the import of Japanese chestnuts for landscaping, the Asian fungus *Cryphonectria parasitica* was introduced into North America. Commonly called Chestnut blight fungus due to its effect on the Eastern U.S. American chestnut (*Castanea dentata*), the pathogen spread quickly through the majestic chestnuts of the Appalachians, and eventually reached their Ozark cousins, the chinquapins.

The impact was devastating to both species. The blight works by infecting the inner bark and cambium layers of the tree, girdling it and blocking the flow of water and nutrients. The stem of the tree dies, but the root system may survive to send up sprouts, which also become infected and die back in a repeating cycle. The root sprouts do not generally reach sufficient size to produce seed. Because the North American *Castanea* species had little defense against this exotic fungus, mortality rates were very high. By the 1960s in Arkansas, surviving mature chinquapins were very rare.

A NEW GENERATION RISING

Although Ozark chinquapins, along with American chestnuts, were considered functionally extinct for decades – they had all but disappeared from the landscape – there were still isolated individuals “out there” with varying degrees of natural resistance to the blight. These few genetic outliers, along with a dedicated core of researchers and foresters, are currently forming a new wave of genetically blight-resistant trees. Both formal breeding programs and informal field practices are contributing to the development and distribution of resistant seed in our area.

For example, the Ozark Chinquapin Foundation (OCF), founded in 2008, currently conducts research to identify the genetic components of blight resistance, a tree improvement breeding program to produce resistant seed, and a field program to re-introduce resistant trees within their historic range. OCF has established several test plots in Missouri and Arkansas which are now growing resistant trees. In Northwest Arkansas, test plots have been installed at Hobbs State Park and at the Wedington Unit of the Ozark-St. Francis National Forest. They also distribute seeds to Foundation members to plant at informal locations. By these means, OCF has established hundreds of new seedlings with a high probability of reproducing on their own.

Another example is a Forester with the U.S. Forest Service at Paris, AR, John Thias. Through his extensive field experience in the Mt. Magazine area, John has identified a number of mature chinquapins that have survived the blight and still produce nut crops every year. By gathering seeds from these rare sources, and by planting some and sharing some with whoever wants to grow their own, he is quietly going about his own low-tech restoration program.

These are just samples of the increasing interest and effort in Ozark chinquapin restoration in our area. To learn more about the history and the renaissance of this icon of the Ozark Highlands, visit the OCF web site at ozarkchinquapinmembership.org.

For a deeper look at the State Parks' role in the restoration effort, read arkansasstateparks.com/articles/saving-ozark-chinquapin-plotting-course-future.



ABOUT STEVE: Steve Alarid served 33 years as a forester and firefighter with the U.S. Forest Service. He and his wife, Sherrie, have five children and seven grandchildren. His conservation affiliations include the Arkansas Master Naturalists and Ozark Chinquapin Foundation.



Ozark Wild Ones Column: Growing Together

By Jasmine Dorn • Member, Wild Ones Ozark Chapter Board



Welcome to Growing Together, a quarterly column dedicated to the medicinal and culinary plants of the Ozarks.

Nature's variety is vast. Her ability to provide everything to support human and environmental health is inestimable. Why, then, do we often see the same types of produce at local grocery stores and farmer's markets? Stores import food from around the country and world, and local farmers grow predominantly the same range of non-native foods. Where are the native foods or medicines from our local terroir?

Food and medicine have become commercially centralized at the expense of local independence and security. As a people, we've let the empowering knowledge of the land fade away, and with it, our ability to nourish and heal ourselves without paying someone – likely a wealthy corporation – for the privilege. As further insult to indigenous flora, our broader society equates native plants with noxious weeds. Weeds that mar perfectly manicured grass lawns and as such, are targeted for removal, most often with chemicals that damage our local ecosystem.

It's time to change that. Every quarter, I will introduce you to a native plant: a bit of the botany, growing and harvesting, and my favorite part – the ways the plant can be used to support and enhance health. It is my hope that this column will help build awareness of the incredible usefulness of native plants and inspire you to nurture their presence in your garden, yard, and community.

Let's grow together!

Go Bananas for Plantain

While the plantain we're featuring this issue (genus: *Plantago*) is unrelated to plantain the banana (genus: *Musa*), after reading about plantain's many garden and health benefits, I hope you'll be bananas for plantain!

The leaves and seeds of plantain have been used for centuries as food and medicine¹. From chewing a few fresh leaves into a poultice for cuts, abrasions, bug bites, or splinters, to skin-loving oil infusions, to salad greens and stir-frys, to using seeds and husks as a bulk laxative, plantain is as versatile as it is salubrious.

We know that fresh is best when it comes to food. But for medicine, our society turns to a pharmacy for pills filled with powder or tubes of gunk. Drug manufacturers, however, harness compounds found in nature to formulate into convenient forms and doses. With the right knowledge and patience, we can make some remedies and treatments ourselves.

Plantain's broad range of beneficial uses comes from its impressive array of active compounds. "The tannins (astringent), allantoin (promotes wound healing, speeds up cell regrowth/healing and softens skin), apigenin (anti-inflammatory flavonoid), aucubin (a glycoside, a powerful anti-toxin, increases uric acid excretion by the kidneys), baicalein, linoleic acid, oleanolic acid, sorbitol and iridoid



glycosides in plantain are considered the major factors in making it a mild anti-inflammatory, as well as an antimicrobial, antihemorrhagic and an expectorant”ⁱⁱ.

Some verified clinical uses of plantain include the alleviation of constipation, glycemic control in Type 2 Diabetic patients, and as an aid in treating respiratory infectionsⁱⁱⁱ. German Commission E (Germany’s equivalent of the FDA) verified plantain’s efficacy as an astringent, antibacterial, and anti-inflammatory agent for wound healing and as a treatment for respiratory conditions^{iv}.

In this article, I share a few ways that I use plantain as food and herbal medicine. For the inspired, additional resources and references are included at the end for your continued exploration of this extremely beneficial plant.

FIRST, A LITTLE SOMETHING FOR THE BOTANY (OR LATIN!) NERDS 🧐

Family:	Plantaginaceae		
Genus:	<i>Plantago</i>		
Species:	Native:	<i>P. rugelli</i>	(American, blackseed, Rugel’s)
		<i>P. virginica</i>	(dwarf, Virginia, southern)
	Introduced:	<i>P. lanceolata</i>	(buckhorn, English, narrowleaf)
		<i>P. major</i>	(broadleaf, common, ribwort)

A BIT OF BOTANY

No doubt you’ve seen several species of *Plantago* without knowing its name. These herbaceous perennial plants grow freely at the edges of anthropogenic (manmade) or disturbed habitats, fields, meadows, and grasslands. Their simple, unlobed leaves have prominent parallel fibrous veins. They grow in low-basal rosettes that live to dodge lawnmower blades and frustrate the efforts of those who diligently work to maintain perfectly manicured grass lawns. When growing season nears its end, plantain shoots up one or more leafless spike inflorescences (flower heads) – up to 2 feet tall – to offer its seeds to pollinators and the wind.



There are over 40 known varieties of native and naturalized plantain in Arkansas^v. The four *Plantago* species in my NWA yard are listed at the head of this section. The most common one is *P. lanceolata*, a naturalized variety with narrow, lance-shaped leaves that was introduced by European settlers. Indigenous peoples of America and New Zealand called this variety “white man’s footprint” because it was typically found in the damaged ecosystems surrounding pilgrim settlements. The other three varieties in my yard have round- or ovate-shaped leaves and shorter inflorescences. Despite the varying leaf shapes, inflorescence heights, and seed head shapes between the species, one defining characteristic of the *Plantago* genus is the prominently-ribbed parallel veins, easily visible on the underside of the leaf.

Research yields similar culinary and medicinal applications across species, suggesting that they share similar properties that lend themselves to being used in similar ways. For example, seeds from varieties of *Plantago* are used in the commercial bulk-fiber laxative Metamucil. I have used all species on my property interchangeably

with no recognizable difference, but as always, exercise caution when introducing new plants into your diet and lifestyle.

HOW AND WHERE TO GROW

Plantain is so easy to grow, you don't have to try. They'll pop right up at the edge of your driveway, disturbed land, field, meadow, or even smack dab in the middle of a Bermuda lawn. They begin growing in early spring and will bloom through September. I find that *P. lanceolata* (narrowleaf) roots its way in through dense grasses while *P. rugelli*, *P. virginica*, and *P. major* prefer those bare, scraggly rocky driveway edges where little else seems willing or able to grow. They're particularly fond of compacted soil and can be used to help the observant gardener identify areas of soil compaction.

I learned quickly that plantain doesn't transplant well, so I edge around them – and other clusters of beneficial “weeds” – for random spots of landscaped interest and pollinator snacking. This practice shifts the boundaries of my gardens throughout the season as different plants successively run through their lifecycles. And truth be told – it becomes *easy* to keep an eye on their growth state so you can harvest its leaves, flowers, or seeds at the right time.



To grow plantain in a new location, be sure to select a site with full sun to part-shade and compact, poor soil. Do not give these guys richly amended soil, compost, or mulch. Do not feed them nutrients or compost teas. Just say no to chemical pesticides, fertilizers, herbicides, or fungicides on or around them (or any green

space under your protection!). Plants are food for pollinators, and garden chemicals cause harm all the way up the food chain. Direct sow in some lightly tilled, compacted topsoil at the edge of your driveway or along a fence line. Keep plants moist until they're established, but there's no need to baby them. Once they're established, they'll keep growing and self-seeding and growing ... well, you know ... like weeds 😊.

HOW TO HARVEST

Harvest only from locations that are at least 50 feet away from any known or suspected use of garden chemicals. Do not take the whole plant or seeds; leave at least 25 percent of the leaves and seeds from any single plant to encourage continued strong growth.

Harvest leaves to use fresh or to dehydrate in the morning after the dew has evaporated, but before the day's heat to concentrate the oils^{vi}. Pinch or snip leaves at the base of each leaf with clean fingers or pruners. Continuously harvest the leaves throughout the growing season to stimulate leaf growth because leaf production will dwindle once the plant flowers. Clip inflorescence spikes to encourage continued leaf growth during the early summer, but let enough spikes grow from mid to late summer to allow it to reseed.



Harvest seeds after the flower blooms completely fade and the seeds heads are brown. The seeds are ready when they fall off the stalk with minimal pressure with your fingers. Though I've yet to experiment with winnowing seeds for psyllium husk, I regularly harvest seed to scatter into new garden areas that have been cleared during invasive removal. Why? Because if you don't plant something you want where you want something to grow, something you don't want to grow will grow in that spot! And because *Plantago* loves poor soil, you can intentionally sow it to help improve the quality of areas with compact, nutrient-poor soil over the years. The interactions between the soil microbes and this amazing plant's roots even shows promise in cleaning up soil that has been contaminated with used engine oil^{vii}. It is little surprise then that plantain leaves are classified as a bitter green, which are valued for their organ detoxifying properties.



WILD WHOLE FOOD AND WILDCRAFTED MEDICINE

Plantain has an impressive amount of healthful uses and ways to consume it. Here, I summarize a few of them. See “additional resources” for more.

wild whole food

Young fresh leaves are rich in vitamin A, C, and calcium, and are delicious in salads or sautéed.

Chickweed-plantain pesto is one of my favorite ways to preserve the raw flavors of spring throughout the year. To make my simple vegan pesto, process 2 cups chickweed, 1 cup plantain leaves, ½ cup walnuts, 3 cloves garlic, ¼ cup water, 1 TB lemon juice, 2 TB olive oil, and salt and pepper (to taste) in a food processor, adding a few drops of water as needed to thin. From there, spoon into 1 TB ice cube trays and freeze. When you need a quick and easy meal, defrost 2-3 cubes to season a pound of cooked pasta, to toss with roasted or steamed vegetables, or even to thin into a salad dressing. Your possibilities are limitless!



Older leaves are more bitter and stringy, but can be used in teas, broths, soups, or stews, or preserved by dehydration or freezing for use during the winter months.

wildcrafted first aid and medicine

Poultices. Plantain poultices provide fast relief of bug bites/stings. It staunches blood flow and encourages the repair of damaged tissue^{viii}, so it is an effective first aid remedy for small cuts and abrasions. It will “ward off infection, help stop bleeding, and reduce inflammation.”^{ix} It’s also a wonderful extractive that helps splinters remove themselves. Make a poultice by lightly chewing a few clean leaves (again, not sprayed with garden chemicals) and holding it on the wound with clean fingers or bandages.

Teas. Use a few fresh or dried leaves to make a tea. Taken internally, this tea can soothe gastrointestinal issues such as indigestion, heartburn, or IBS or respiratory conditions like a cough, bronchitis, lung infections, or even hay fever. Externally, tea soothes bug bites, stings, sunburn or windburn, poison ivy and other environmental irritants.

Anecdote of the splinter: Last year, I got a deep and painful splinter during a motorcycle road trip with friends. I initially had no idea how to remove it, being hundreds of miles away from home, many miles away from any store, and of course, with no tweezers or first aid kit among any of our group. Then I remembered that plantain is an extractive, so I found a plant in an area I was confident wasn’t sprayed with chemicals, harvested a few leaves, and rinsed them off with water from my water bottle. After chewing the leaves lightly to break the cellular membranes, I held the poultice in place with my thumb as we hit the road again. I looked at the splinter at our next rest stop 45 minutes later, and it was sufficiently extracted from my skin that I was able to grip it and pull it out with short fingernails.

Infusions. Having had autoimmune skin issues my whole life, researching plants for skin and immune system support has been my driving factor to learn about wildcrafting my own medicinals. Not only has plantain oil given me more relief to topical itching and rashes than all of the pharmaceuticals I’ve been prescribed over my lifetime, it is a fraction of the cost of commercial prescriptions with none of the



side effects. To make your own infused oil, fill a jar halfway with dried leaves and cover with your preferred carrier oil. I use sweet almond oil because it is light and quickly absorbed. Cover and let sit for up to 2 months, giving the jar a shake every day or so. A seedling mat can speed up infusions. Once the infusion is complete, strain out the plant matter and store the oil in a dark bottle for up to a year. The infused oil can be used either by itself or made into a salve.



ADDITIONAL RESOURCES

We've just scratched the surface of the benefits of this amazing plant. And plantain is just one of countless plants around us waiting to be discovered, loved, and used. I invite you to continue your journey into plantain with these resources:

- American Botanical Council. Herbal Medicine: Expanded Commission E
<http://cms.herbalgram.org/expandedE/Plantain.html>
- Herbal Legacy. The Benefits of the Use of Plantain in Herbal Preparations
https://www.herballegacy.com/Plantain_Ahlborn.html
- Flora, Inc. Plantain.
<https://www.florahealth.com/us/articles/plantain/>
- White Rabbit Institute of Healing. Plantain.
<https://www.whiterabbitinstituteofhealing.com/herbs/plantain/>
- The Herb Foundation of New Zealand. Plantain Fact Sheet.
<https://herbs.org.nz/plantain-fact-sheet/>
- Herbstead. Plantain.
<https://www.herbstead.com/plantain/>

FOR EDUCATIONAL PURPOSES ONLY

This information has not been evaluated by the Food and Drug Administration. This information is not intended to diagnose, treat, cure, or prevent any disease. Consult your healthcare professional if you are pregnant, nursing, or are taking prescriptions before taking natural products.



ABOUT JASMINE: *Jasmine Dorn is the owner/operator of Jazzy's Creative Kitchen. Jazzy's Avant' Garde'n is her product line of nutraceuticals seeking to disrupt conventional medicine through the power of plants. Her passion for helping things grow is surpassed only by her passion for acquiring and sharing knowledge. She can be reached at jasmine@JazzysAvantGarden.com.*



ⁱ As with any plant or substance, allergic reactions are possible.

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- ⁱⁱ New Zealand Herb Federation. "Plantain Fact Sheet". <https://herbs.org.nz/plantain-fact-sheet/> Accessed 2020/07/09.
- ⁱⁱⁱ Drugs.com. Plantago. <https://www.drugs.com/npp/plantain.html>. Accessed 2020/07/04.
- ^{iv} Heilpflanzen-Welt Bibliothek. Plantain (Plantaginis lanceolatae herba). <https://buecher.heilpflanzen-welt.de/BGA-Commission-E-Monographs/0300.htm>. Accessed 2020/07/06.
- ^v For the complete list, search for *Plantago* within Arkansas at <https://plants.usda.gov/checklist.html>
- ^{vi} NC State Extension. Harvesting and Preserving Herbs for the Home Gardener. <https://content.ces.ncsu.edu/harvesting-and-preserving-herbs-for-the-home-gardener>. Accessed 2020/07/01.
- ^{vii} Malachowska-Jutz, Anna, Joanna Rudek, Weronica Janosz. The Effect of Ribwort (*Plantago Lanceolata*) and its Myrorrhizas on the Growth of Microflora in Soil Contaminated with Used Engine Oil. The Silesian University of Technology. Poland. <https://journals.pan.pl/Content/85450/mainfile.pdf> Accessed. 2020/07/02.
- ^{viii} Chevallier, Andrew Encyclopedia of Herbal Medicine. Penguin Random House. 2016. p251.
- ^{ix} Apelian PhD, Nicole, Claude Davis. The Lost Book of Herbal Remedies. pp119-120.

Wild Ones promotes environmentally-sound landscaping practices to preserve biodiversity through the preservation, restoration, and establishment of native plant communities. Wild Ones is a national, not-for-profit environmental education and advocacy organization. The Ozark Chapter serves Washington, Benton, Madison, and Carroll counties in Arkansas.

Healing the Earth – One Yard at a Time