

Seed College Deeply Rooted in Native Seed Propagation

Welcome!
We will begin shortly



January Garden Chat

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Seed College Deeply Rooted in Native Seed Propagation

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January 28, 2025





Wild Ones Chapters in MD

Chesapeake Bay (Southern Maryland)

Delmarva (Eastern Shore)

Greater Baltimore

Greater Baltimore

Frederick

Frederick

Nation's Capital Region

Served Control of States of Capital Region

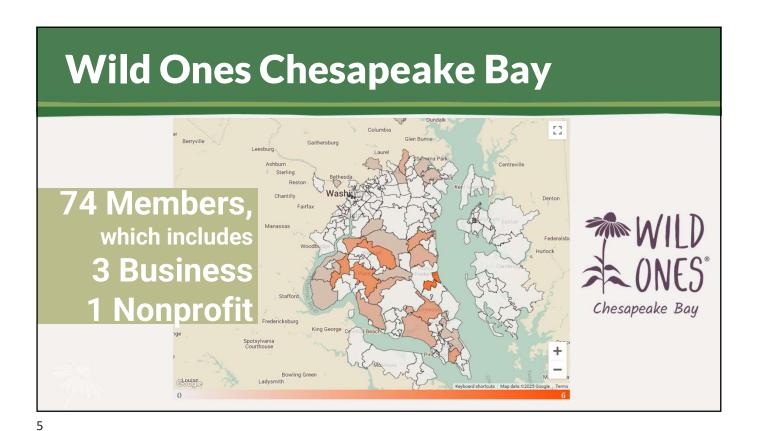
Nation's Capital Region

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Nation's Capital Region

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Agenda

- Why propagate native plants from seeds?
- > What's in a seed?
- > It All Starts with Viable Seeds
- What Seeds Need to Germinate
- > Breaking dormancy To stratify or not to stratify
- > Let's Get Started! General Supplies
- > General Procedure
- > Levels 100, 200, 300, 400
- > Additional information
- Resources

Photo: Lynne Wheeler

Why propagate native plants from seeds?

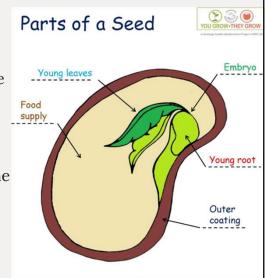
- > Native plants are adapted to our environment
- > Provide native habitat for insects/birds/other wildlife
- Provide food for caterpillars and other insects
- Connect us with history & local cultures
- Preserves local ecotype genetic diversity
- > Provide access to hard-to-find plant species
- > Educational (full life cycle from seed to seed)
- > Easy, anyone can do it
- > Economical, budget-friendly way to get new plants
- Fun hobby (therapeutic/potentially addicting)
- > Supports the Wild Ones vision of "Native plants and natural landscapes thriving in every community."

Photo: Lynne Wheeler

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What's in a seed?

- Seeds are living things! Inside every seed is an embryonic plant and a starchy food supply everything needed to make a new plant!
- ➤ However, they are living in a dormant (resting) state which means that they require very little resources to stay alive until the ideal conditions for their growth occur.
- ➤ The first leaves are called cotyledons and don't usually look anything like the "true leaves" that come later. Most plants are dicots and have 2 seed leaves.
- ➤ The true leaves allow the plant to breathe, taking in carbon dioxide and sending out oxygen.



It All Starts with Viable Seeds

Perennials, biennials, annuals, grasses, vines, trees, shrubs

- > Our focus today: dry seeds that bloom in summer/autumn
- > Dry before storing; can be stored with dry chaff
- > **Avoid** moisture, air, light, warmth
- ➤ **Avoid** rapid or frequent changes in temperature or humidity
- ➤ Best conditions for storage are a cool, dark, dry location
- ➤ Short term storage: use paper envelopes
- ➤ Long term storage: use airtight containers such as glass jars, plastic jars, zipper plastic bags, etc.
- ➤ Protect against bugs/rodents
- ➤ Seed viability decreases over time



Check out our "Deeply Rooted in Native Seed Collecting" presentation







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Breaking Dormancy – To Stratify or Not to Stratify

- Many, but not all, native plant seeds need to go through winter weather before they will germinate. This process is called 'cold, moist stratification' (CMS), or is sometimes referred to as 'pre-treatment'.
- ➤ You can simulate CMS (artificially stratify) native seeds by placing them in a slightly moistened medium in the fridge. The species and seed type dictates how long you will need to refrigerate.
- CMS may increase germination even of those that don't need CMS



Photo: Bill Smith

What Seeds Need to Germinate



➤ Water - Without water, seeds will remain dormant. The amount of water is critical; too much causes seeds to rot, and too little causes embryos to die.



➤ Oxygen - Seeds consume oxygen and release carbon dioxide. Seed-starting media needs to drain well enough to meet this need for oxygen.



➤ **Temperature** - Temperature affects the number of seeds that germinate as well as how fast the seeds germinate.



➤ **Light** - Some seeds require light to germinate, while others require darkness. Some seeds have no preference at all.

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Let's Get Started! Gather Supplies

- > Seeds
- Containers (method dependent)
- > **Growing medium** (soilless seed starting mix or potting mix)
- > Bucket or tray for mixing soil
- Water for mixing soil and misting/sprinkling seeds
- > Trowel
- ➤ **Plant labels**, popsicle, craft sticks
- ➤ **Marker** (waterproof, UV resistant)



Photo: Marlene Smith

Containers

- > Flats
- Plug trays (no root disturbance; no spread of damping off)
- Germination trays
- Quart pots
- > Milk jugs or other containers
- ➤ Homemade options like wooden flats, large 3-gallon pot cut in half (use bottom)



Photo: Marlene Smith

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Growing medium – Seed starting mix vs Potting mix

Seed Starting Mix

- > Soilless, sterile, lightweight and free from weed seeds, with a texture and porosity especially suited to germinating seeds
- > Typically contains peat, perlite, wetting agent, and starter fertilizer

Potting Mix/Potting Soil

- May contain organic material compost, sometimes soil
- > Typically has a coarser texture, often containing larger pieces of organic material like bark or sticks

Avoid

- × Mixes that say "weed free"; they may contain germination inhibitors.
- Mixes with moisture retention crystals. Proper moisture of growing mix is important. Too wet and seeds can rot; too dry and they won't germinate.
- X Garden soil, it's too dense, may contain weed seeds.





General Procedure

- > Prepare containers/labels
- Prepare growing mix
- > Fill containers
- Sow seeds
 - Plant only one type of seed per container
 - For most native seeds, sprinkle on top of mixture & press into mixture. Many need light to germinate. Do not cover with soil.
 - Tiny seeds- optional to mix with an inert material (grow mix, coarse builders' sand, vermiculite) to help with even distribution
 - Larger seeds—typically plant the depth of the seed
- Water seeds thoroughly into growing mix
- > Place in appropriate location and wait

Photo: Marlene Smith

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Level 100 - Direct sowing outside in winter

- > Provides natural stratification
- ➤ Sowing into snow makes it easier to see where you spread seeds, so you get a nice even distribution of your mix.
- ➤ Broadcast seeds right on top of the snow, but the key is to sow on the right kind of snowfluffy, damp, packable snow. This way the seed will slightly sink into the snow.
- ➤ Avoid sowing seed on top of icy, crusty snow or it will blow around easily in the wind.



Level 200 - "Seed Sitting" vs "Winter Sowing"

- > Sowing seeds outside provides cold moist stratification naturally
- > Protects seeds from being washed away or eaten by wildlife
- > Reduces competition from weeds
- > Produces strong healthy plants
- > No hardening off period
- > Reduces need for watering
- > Seeds will sprout when Mother Nature determines conditions are right
- > It's not an early germination method



"Seed sitting" - sowing in open containers Coined in 2020 by the Project Swallowtail Team in Toronto



Winter sowing - sowing in protective, vented containers Coined in 2000 by Trudi Davidoff)

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Beeply Rooted in Winter Gowing A method to grow hardy native plants from seed

Collect & wash jugs. Discard caps.

Punch 4-6 drainage holes in the bottom.







Scatter seeds on top of grow mix and press in lightly. Carefully water to contact





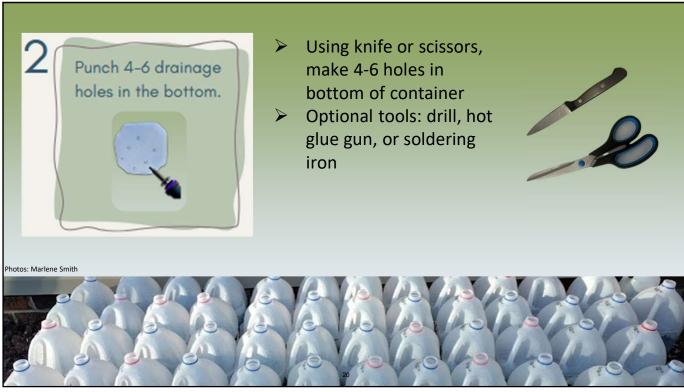
Open jug in spring after seeds sprout & danger of frost

10 Up-pot or plant when seedlings are at least 2" tall. Keep watered & enjoy your homegrown plants!

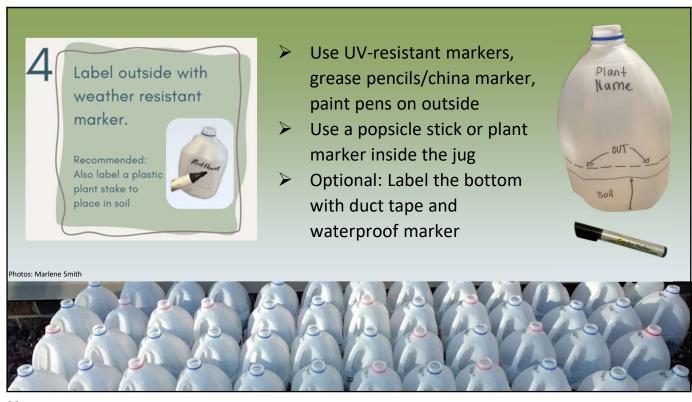
When: Beginning on the winter solstice

Additional supplies: Something to create drainage holes and cut the jug; tape











- Premoisten growing mix by adding warm water until thoroughly damp but not soaking wet (holds together like a snowball)
- Optional: Add a water-permeable barrier (coffee filter, landscape fabric, or newspaper) to bottom of jug before adding growing mix (keeps soil in and slugs out)
- Add approx 3-4 inches of mix to container
- Tap container and/or press lightly to settle the mix and remove large air pockets









Placement of containers matters!

Two containers of Joe Pye planted January 14, 2022 Note the difference in the photos taken on March 20, two months after winter sowing



Location:
Sunny, south
wall
Germination:
1 month
At time of
photo: 1month old
seedlings



Location:
Shady steps
Germination:
2 months
At time of
photo:
cotyledons

Photos: Marlene Smith

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Don't plant & forget: Check jugs weekly

Seeds put down roots first which we can't see. This is the critical time not to allow seeds to dry out.

Too dry

- > Jug feels light when lifted
- ➤ Mixture looks crumbly & dry
- Condensation may be lacking
- Solution: Bottom water, or spray or mist water into opening (don't pour)

Too wet

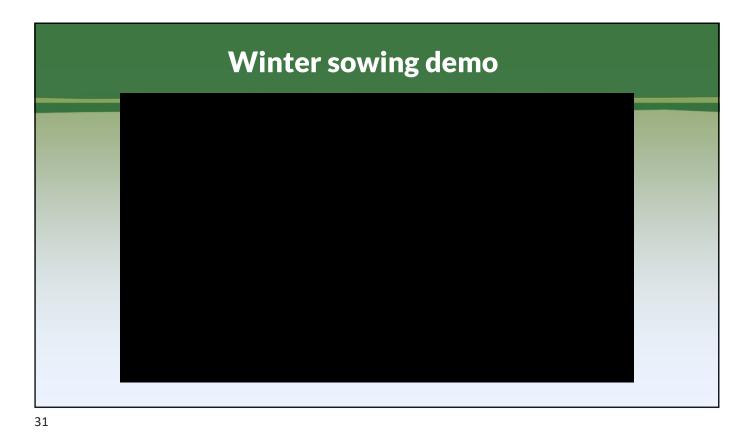
- Jug feels heavy when lifted
- Mixture looks waterlogged
- Green algae on surfaces
- Solution: Add more drainage holes along side, or if not below freezing, open jug for a day or two to dry out





- > After germination, keep seedlings moist!
- For unexpected warm spells, open containers and/or move to the shade.
- After opening, water well and close containers if expecting a freeze.
- ➤ Wait for at least 1-2 sets of true leaves to appear or until seedlings are 2 inches tall to transplant.





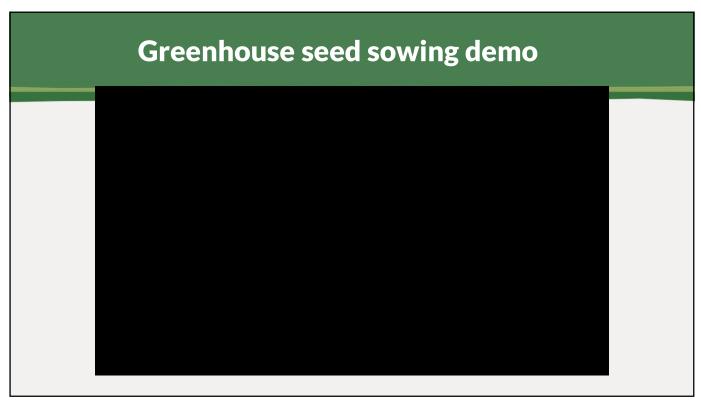
Level 300 - Sowing Inside

- ➤ In the house, a hoophouse, or greenhouse
- ➤ Requires artificial stratification (refrigerator)
- > Optional supplies: Artificial lights, heat mats, timer, oscillating fan





ioto: Mariene smitn



Indoor Seed Starting Light Requirements

- ➤ Providing the right intensity, duration and spectrum of light is essential for starting seeds indoors.
 - Interior windows will not grow strong seedlings. Not enough light hours (intensity or duration).
 - Modern window coatings can inhibit growth (spectrum). The results are weak and leggy seedlings.
- > Fluorescent or LED shop lights are perfect for seed starting. An expensive "grow light" isn't required.
- ➤ Intensity (or brightness) is measured in Lumens. Choose a shop light with a minimum 2000 Lumens.
- ➤ Light reduces quickly as distance increases. Keep lights 2-3" above seedlings.
- ➤ Seedlings need 14-16 hours of light to grow. They also need 8 hours of darkness to rest.



Seedling Care for Inside Sowing



- ➤ **Watering** Wait until the top of your growing medium is nearly dry before watering. Bottom water to prevent over saturation. The goal is to keep the root systems supplied with water and oxygen. If containers are too wet, damping-off fungi can quickly kill seedlings.
- ➤ **Ventilation** Use a small fan to toughen up your seedlings.



> Fertilizing - If your seed starting mix doesn't contain fertilizer, apply a half strength liquid fertilizer to seedlings once true leaves have formed. Fertilize weekly until hardening off your seedlings.

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Why didn't my seeds germinate?

- ➤ Some seeds may have been immature when collected.
- > Seeds may have dried out or rotted.
- > Seeds may not have gotten enough cold moist stratification.
- > Some native seeds require double dormancy.
- > If space permits, leave containers in shade during the upcoming seasons; they may germinate next year.



Jeffersonia diphylla Twinleaf



Lonicera sempervirens Coral honeysuckle



Sanguinaria canadensis Bloodroot

Double dormancy

Arisaema triphyllum, Jack-in-the-pulpit Claytonia virainica. Virginia spring beauty Dicentra cucullaria. Dutchman's breeches Erythronium albidum, White trout lily Hepatica acutiloba, Sharp-lobed hepatica Jeffersonia diphylla, Twinleaf Lonicera sempervirens, Coral honeysuckle Sanguinaria canadensis, Bloodroot

Photos: Marlene Smith and Sue Williams

Pot up seedlings for greater survival or long-term holding



Seeds were sown in flats in a hoophouse and transplanted to plug trays to grow





Seeds were sown in milk jugs and transplanted to 1-quart pots to grow for a year before planting in the ground

Photos: Marlene Smith

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Methods of transplanting

Seeds spaced evenly can be easily cut or pulled apart



Seeds sprinkled can be cut into browniestyle hunks and planted as hunks



Photo: Wild Seed Project

Provide shade when transplanting

- ➤ Transplanting disturbs roots, which in turn affects water absorption necessary for photosynthesis & cooling
- ➤ Work in a cool, shady place to prevent roots from getting hot or drying out
- ➤ Provide shade for the first 1-2 weeks after transplanting
- ➤ If seedlings start to wilt in the sun, keep in shade longer



Photo: Biol Smith

Advice was taken from the Bona Terra Seedling Division video:

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Level 400 - Commercial Growers

- > Sowing in a greenhouse, hoop house, or high tunnel using flats, plug trays, quarts, seedling trays, or other containers
- > Artificial stratification (refrigerator); allows flexibility on when to sow

Bona Terra

- ➤ Local ecotype native seeds (LENS)
- ➤ Custom-made soil (decomposed wood chips, biochar, and sand)
- > Artificial stratification in vermiculite
- ➤ Sown heavily in quart pots
- ➤ Transplanted to plug trays to grow/sell



Jeremy's Pot Filling Demo



Bona Terra Discussion with Jeremy Tidd



Photo: Marlene Smith

Level 400 - Commercial Growers



WoodThrush Nurseries

- ➤ Usually starts heating up of their greenhouse in February for germination & growth in March
- ➤ Division & potting in April
- ➤ Plants ready to sell in May

Presentation by Ian Canton where he demonstrates his processes for seed collecting and propagation at WoodThrush Nurseries https://youtu.be/FBhj_DTpEas?si=J7pnp7i2

MQlHCsaN



Photo: WoodThrush Nurseries

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Our vision:

"Native plants and natural landscapes thriving in every community."

Propagating plants is NOT enough! The goal of propagating should be sharing plants to get more native plants in the ground.

- ➤ Share with family and friends
- ➤ Swap with others
- ➤ Donate to your local native gardens at schools, community gardens, etc
- ➤ Sell plants for nonprofit fundraising



Resources

Sources for checking native status

Maryland Plant Atlas - www.MarylandPlantAtlas.org

Maryland Biodiversity Project - https://www.marylandbiodiversity.com/

Biota of North America Program (BONAP) - http://www.bonap.org/

Seed sources

Bona Terra (Maryland LENS)

Chesapeake Natives (Maryland LENS)

ArcheWild (Pennsylvania)

Brandywine Conservancy (Pennsylvania)

Ernst Seeds (Pennsylvania)

WoodThrush Natives (Virginia)

Toadshade Wildflower Farm (New Jersey)

Roundstone Native Seeds (Kentucky)

Greenhouse suppliers (to follow)

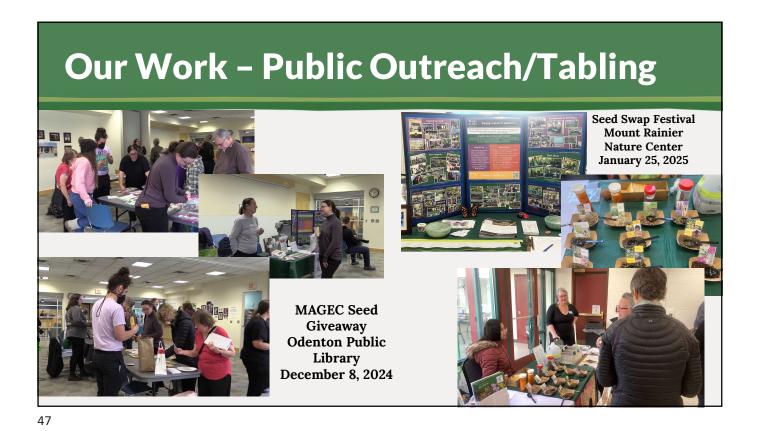
Soil mixes (to follow)

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Our Work – Public Outreach/Education

Native Seed Cleaning
Forrest Tech and Career Center
November 25, 2024
December 9, 2024

Deeply Rooted in Winter Sowing
Forrest Tech and Career Center
January 15, 2025

All the Dirt on Winter Sowing
Native Plants Workshop
Leonardtown Library
January 18, 2025

Our Work - Public Outreach/Education



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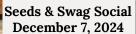
Our Work - Past Events













Our Work - Media and Awards

We want to celebrate you!

If you are recognized for activities in the community or receive an award, we'd like to know.

We'll keep a running blog on our website and share with Wild Ones National and on our social media!





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Our Work - Lobbying and Advocacy



Climate Action

Climate action projects aim to respond and reduce the impacts of climate change in communities across Charles County.

PR PRO

PROPOSED RULE

Endangered and Threatened Species: Species Status w Designation of Critical Habitat

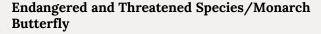
Agency Fish and Wildlife Service | Posted Dec 12, 2024 | ID FWS-R

Open for Comments

O Comment Period Ends: Mar 12, 2025 at 11:59 PM EDT

Charles County Climate Action Plan

You are invited to participate in the Climate Action Plan process! Two surveys are currently active on the Charles County Engage page related to public outreach scheduling and soliciting general input on climate action planning priorities. Both surveys should take no more than a few minutes of your time to complete.



The USFWS is accepting public comments on the December 12, 2024, proposed listing of the monarch butterfly as a threatened species under the Endangered Species Act (ESA). The 90-day comment period ends on March 12, 2025.





Our Work - Community Science

Naturalist



Phenology is the study of seasonal events in nature such as flowers, fruits, and leaf color change. Each photo of a plant contains critical information about the presence or absence of flowers, fruits, and leaves. We need you to help unlock those insights! Even when you aren't out making observations, you can make a big difference by adding annotations.



View the recording



plant distribution at the USGS Bee Lab

In this webinar, they covered:

- Why phenology is so important
- Examples of phenology research using iNaturalist data
- How you can help by adding flower and leaf annotations

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Our Work - Native Plants and Seeds



Member Insights

Wild Ones promotes native landscapes through 3 strategic pillars: education, advocacy and collaborative action

What would you like to see from the WO Chesapeake Bay Chapter in 2025?

What tools and resources would help further your native plant journey?

What other local organizations are you aware of to enhance collaborative efforts for native landscaping initiatives?

| Education | Advocacy | Collaboration |

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Save the Dates

Saturday, February 1, 10:00 - 2:00 pm MNPS Field Trip: Winter Tree ID Kings Landing Park 3255 Kings Landing Road, Huntingtown, MD 20639

Friday, February 14, 1:00 - 3:00 pm

Seed Saving Workshop

College of Southern Maryland, La Plata

Saturday, February 22, 2:00 - 4:00 pm All the Dirt on Winter Sowing St. Mary's Public Library - Lexington Park

Tuesday, February 27, 7:00 pm

Community Gardens presentation by Jimmy Rogers Co-sponsored with Wild Ones Greater Baltimore Virtual/Zoom

Saturday, March 1, 10:00 - 1:00 pm

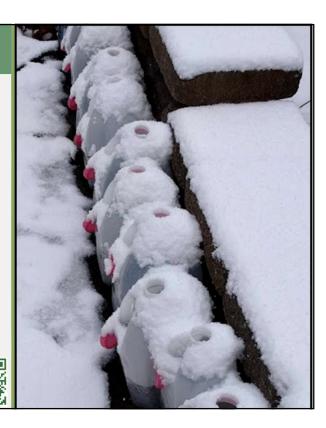
Satellite Seedling Giveaway Workshop



Bona Terra Nursery, Indian Head









Wild Ones and the PlantArte Native Plant Art Contest





Wild Ones is proud to be a native plant art exhibit partner for the PlantArte Native Plant Art Contest, an initiative that celebrates the beauty and importance of native plants through artistic expression.

By collaborating on this event, Wild Ones furthers its mission of promoting native landscapes through education, advocacy, and collaborative action.

The contest not only raises awareness about native plants but also fosters community engagement, inspiring participants to connect with the natural world in creative and meaningful ways.

Scan the QR code for more information

Wild Ones Free Webinar





Thursday, February 20, 2025 7pm EST (6pm CST)

"Bees Beyond Honey: Understanding the Roles of Native and Managed Bees in Pollination," featuring Sam Droege, Wildlife Biologist, U.S. Geological Survey (USGS); Dave Hunter, Founder & Owner, Crown Bees; and Lora Morandin, Associate Director, Pollinator Partnership.

Explore the diverse roles bees play in ecosystems, the challenges they face, and the delicate balance between managed and wild pollinators.





Scan to register

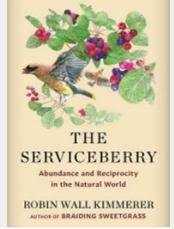
Bees Beyond Honey: Understanding Native and Managed Pollinators

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Wild Ones Journal and more









Check out the journal and recommended reading list!



Deeply rooted in natives.....

Wild Ones Chesapeake Bay is a nonprofit supported by membership dues and donations.

Connect with us by becoming a Wild Ones member today!

Help us make a difference!

Our work depends on you!





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Chesapeake Bay