



What's the Buzz?

October 2023

extension.psu.edu

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Has your property been certified for 5 or more years? If so, we'd love to see current pictures of your garden! We'd also like to hear your stories about pollinator gardening. What have you learned and what is your greatest success? Email us at PAPollinatorCert@psu.edu. We will share your stories in future issues of "What's the Buzz".

Outstanding Pollinator Habitats

By Linda and Rich Silverman, Penn State Master Gardeners

Welcome to the 16th Habitat of Merit Award.



This edition features the Conococheague Audubon –Norlo Park Native Plant Habitat in Fayetteville, Pennsylvania, 3050 Lincoln Way East, Fayetteville, PA 17222. Audubon has office space in the farmhouse and established and cares for a native plant garden near the farmhouse. It is open to the public.

With Josh Donaldson, his wife Susan and a group of volunteers, the garden is kept in beautiful shape.

(Outstanding Pollinator Garden, continued on page 2)



(Outstanding Pollinator Habitat, continued from page 1)



Describe your gardens

The garden is 1/3 of an acre within a large public park. Originally it started out full sun but trees and shrubs have created very shady areas in parts of it over the years. Being on a slight slope, its fairly dry but we use mulch to retain moisture in very sunny areas. We do have public water available for watering.

How old are your gardens and how long have you been at this site?

The garden was originally established in 2005 and is now tended by a completely different group of Audubon volunteers who have succeeded them.

By our most recent count including perennials, shrubs, and trees we have just over 90 species.



What kind of pollinators do you attract?

First, I will say our garden was originally established by 'birders' for birds. While pollinators have always benefitted, we only tried recently to attract monarchs, especially during the application process for this certification when we researched other butterflies which we also have host plants for. So, this spring I have seen continuous and large amounts of bees of all sizes on the earliest bloomers (sundrops and spiderwort) and then on all other flowers. In mid-July we just began to notice the butterflies moving in, including a spicebush swallowtail, a silver-spotted skipper, a variegated fritillary, sache m skippers, and of course the monarchs. Of the 72 butterfly species known to visit our

county, we have preferred host plants for at least 42 of them. We have limited awareness of moths at this time.

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(Outstanding Pollinator Garden, Continued from page 2)

How did you get into gardening? How did you get into natives?

We got into landscape gardening first at home to attract birds, especially with favorite berry shrubs and trees. We then began to realize how important pollinators are as a food source to birds and appreciate them for their importance as pollinators and have tried to support them. This particular public Audubon Garden was established by others, we don't know what motivated them to focus on natives back in 2005 but we're glad they did and we continue to keep it that way!

What are your future plans to increase pollinators in your garden?

In the past we've tended to scatter new species in several areas or plant just 2 together. We now know the importance of grouping plants of 5 or more for pollinators and we'll be doing that when we can.

What have you observed this year in regard to the number of bees and other pollinators?

Huge numbers of bees so far (mid-July), at all times of day, limited butterflies and moths but we are anxious to pay more attention this fall than we have other years and keep track of what we see. There are many native plants that attract pollinators.

Do you have a special plant that you would like to suggest?

A personal favorite of mine is blue false indigo. The foliage, flowers and seed pods are all interesting. In our county, it is known to be a preferred larval host plant for several butterflies: clouded sulphur, eastern tailed-blue, orange sulphur, silver-spotted skipper, and wild indigo duskywing.



After visiting Josh and Susan at the Conococheague Audubon Native Plants Garden, it's easy to see why the garden was selected. What amazed us is this garden was started way back in 2004-2005 before native plants and native plant gardens were popular. Thank you to Audubon and its members for encouraging wildlife habitat — food for birds, pollinators, and other animals. They were way ahead of their time.

Just a reminder that this garden is open to the public!



OUTSTANDING POLLINATOR PLANTS

Helianthus angustifolius Narrow-leaved sunflower

By Master Gardener Eudora Roseman

As we work in our pollinator gardens we strive to offer a steady supply of pollen and nectar for our visiting bees, bugs and butterflies. For good reason the late season often concentrates on asters and goldenrods as the main choices. I am making a pitch for a plant you may not know at all to be added to your late season choices that could become one of your favorites. Picture a tall, back of the garden, daisy-like flower in a clean yellow color that actually glows in the sunshine. That is *Helianthus angustifolius* or commonly named narrow-leaved sunflower. This plant is attractive to bees and butterflies and is a great choice for pollinator gardens.

Narrow-leaved Sunflower is native to south-central and eastern United States. It is found in all coastal states from Long Island to Texas and west inside as far as Missouri. It is a large perennial and in wet growing years can grow as tall as 8 feet. In more average moisture years height is 5 to 6 feet tall.

The plant is slow to reach its final blooming height. Breaking dormancy between March and April, depending on our spring weather, it shoots up to about 7 inches and spends May, June and July at that initial height. Then in August, it begins its growth to final size and forming its flower buds. The flower buds will continue to mature with opening in late September and flowering continuing into October. It is one of our last bloomers at Bees, Buds, and Blooms* joining their glowing yellows to the purples and pinks of the last asters in the garden.

The plant's dark green leaves are about 6 inches long and narrow, a bit fleshy and lush looking. They are supported by multi branched stems. The plants form mounds via rhizomes that add new stems to the plant that can make an individual plant 2 to 6 feet high and wide. As the plants grow larger they can easily be divided into new plants to add to other empty spots at the back of the garden or share with gardening friends.

The major selling part of this plant is the flowers. The daisy-like flowers form at the top of each plant stalk in a panicle of flowers with 3 to 16 flowers in each panicle. Individual flowers range from 1.5 inches to 3.5 inches wide and contain 10 to 20 ray petals surrounding a center disc of up to 75 yellow florets.



(*Helianthus angustifolius*—narrow-leaved sunflower - Continued from page 5)



Narrow-leaved Sunflower prefers moist to occasionally wet acidic sandy to clay soil in full sun. It does not do as well in part shade locations. Our Bees, Bugs, and Blooms soil is a clay location formerly a corn field when we started the garden 11 years ago. We do not have an acid pH nor are we a particularly wet location except when the small stream to our east backs up and we get the remains of a hurricane. We have 4 plots of this plant, two are newer and two have been in the garden for a while. This summer has been a testimonial to this variety's resilience; we have suffered through two long periods of drought; most of June followed by a short relief of rain and then followed by a shorter drought in early August. We do not water our standing plots. In our plots we did observe some afternoon wilt followed by overnight recovery. By late August we were back to a more natural rain cycle that matched up beautifully to the plant's habit of a final growth spurt leading to bloom time. The final bloom heights within each of our plots are not as even as in past years; some plants are now blooming on 3 foot stems, some on 5 foot stems and some even higher. The flowers are as glorious as ever.

Issues common with *Helianthus angustifolius* are not very serious and include powdery mildew. This Fall only we have seen powdery mildew in all of our plots of *Helianthus angustifolius*. We think probably due to the weather stresses of this past summer's periods of drought followed by frequent evening rainstorms leaving the plants wet during the later evening hours.

Is staking needed? Our plants are located in 6 foot square plots and were originally planted with 16 nice sized plugs each. We frequently have a breeze going blowing from the west. The tight planting acts like a built-in prop for the whole plot. There is a bit of leaning after a rain when the plants are in full bloom, a little drying sunshine can cure that lean quickly.

Where might you be able to acquire these plants? I have not seen this plant available locally. You might try finding it online. Pinelands Direct Native Plants in Columbus, New Jersey has it available in plugs. Another source, Izelplants.com lists it available in quarts and plugs. Izel is a consortium of plant growers and offers free shipping when purchasing specific quantities. I hope I have aroused some interest in adding this plant to your garden. It is fun watching it grow and anticipating its wonderful flowers at the end of the season.

**Bees, Bugs, and Blooms is a Pollinator Research Garden located at Penn State Research Farm in Lancaster County*



PennState Extension

PROTECTING POLLINATORS: Avoiding Invasives

Phragmites australis subspecies australis Common Reed

By Penn State Master Gardener Jen Mohler

All over the United States and on every continent except Antarctica, and everywhere in our Pennsylvania wetlands, we see tall, up to 20 feet, common reeds called *Phragmites australis subspecies australis*, a non-native species first brought over from Asia and Europe in the ballast from ships in the 1800's.



Phragmites australis subspecies australis - common reed

It is a flowering perennial plant whose flowers appear in late summer in dense purple panicles. A member of the grass family, it grows in dense clonal stands smothering native plants and pushing out marsh animals. Plant diversity, soil properties, sedimentation rates, bird and fish habitat use, and food webs may be altered.

It forms a monoculture and is a threat to agriculture production, altering marsh hydrology and can spread vegetatively up to 16 feet or more a growing season by horizontal rhizomes and stolons or sexually by seed. The tall reeds grow in damp alkaline habitats and are found in standing water up to 3 feet deep; roadside ditches and swales; tidal and non-tidal wetlands; freshwater and brackish marshes; river, lake and pond edges; and disturbed areas. It tolerates fresh and moderately saline water and prefers full sun.

Control of the invasive *Phragmites australis* is difficult and can be years in length because a tiny bit of stem can grow into a new plant. Repeated mowing can deter it or burning when dry can be a help. Pulling plants is too difficult because 80% of the plant is stolon or rhizome. A certified pesticide applicator can treat the infestation with a select herbicide.

Don't confuse *Phragmites australis* with the native species, *P. australis ssp. americanus*. This plant has been in North America for thousands of years. The native species is shorter, about 7 feet, does not form a mono-culture, is less robust, and the seeds are less viable. It has not been a threat to our waterways or the Chesapeake Bay. Because it is not as dense or invasive, other wet water plants and animals can share space within it.

One interesting fact is that the common reed was utilized as a food source and as a medicine by Native Americans. Shoots were eaten raw or cooked. Flour was made from dried shoots and rhizomes.

National Invasive Species Center
<https://www.invasivespeciesinfo.gov/>



Native *Phragmites australis ssp. americanus*

MOVING?



If you have a certified Pollinator friendly garden and are moving, please take your sign with you and send a note to PAPollinatorCert@psu.edu to let us know you have moved. The new owner of your property will need to recertify. When the gardens at your new address are ready, send us a new application and mention that you that you have moved. We can certify your new garden and waive the application fee.

FROM THE CENTER FOR POLLINATOR RESEARCH

A Summer in the Pollinator and Bird Garden with the Penn State Center for Pollinator Research by Heather Frantz

Adding an additional three acres to the footprint of The Arboretum at Penn State, the Pollinator and Bird Garden is a science-based garden created by experts from many fields, including horticulture, entomology, ornithology, and landscape architecture. The Pollinator and Bird Garden serves as a living classroom for students, researchers, educators, and the general public. In its third summer open to the public, The Center for Pollinator Research spent a lot of time learning and creating in the garden.

Research

InsectEye continues to be tested in the Pollinator and Bird Garden, now erected on the pathway near the circular meadow disk and the gravel service road. This AI-based, nonlethal insect trap and identification system won the [2021 Nittany AI Challenge](#).

Orion Pizzini spent his summer identifying solitary bees in the genus *Megachile* and collecting pollen samples. Orion hopes to learn the nutritional preferences of these bees, specifically the protein to lipid ratios found within the pollen.

Cody Feuerborn collected pollen from five bumble bee (*Bombus*) species from four different Pennsylvania sites, including the Arboretum. The pollen will be analyzed to determine whether bumble bee species differ in their nutritional preferences. The ultimate goal of the study is to provide information that can be used to enhance nutrient availability for the conservation of diverse wild *Bombus* species. By improving nutritional status, we can ensure that there are sufficient resources to support colony growth.



Education

The Center for Pollinator Research led numerous educational workshops this summer. In May we hosted a Solitary Bee Hotel public program. 14 participants learned about the cavity-nesting solitary bees in Pennsylvania such as mason (*Osmia* spp.), leafcutter and resin (*Megachile* spp.), and wool carder (*Anthidium* spp.) bees. Then, participants built a bee hotel to install in their home garden using pre-cut wood pieces and hollow phragmites stems. If you are interested in constructing your own bee hotel, the blueprints and building instructions are free on our [website](#).



(A summer in the Pollinator and Bird Garden continued from page 8)



In June we partnered with the Xerces Society, offering the Pollinator Conservation Short Course. This full-day workshop featured presentations and research from Xerces' Pollinator Conservation specialists and Penn State scientists on creating and protecting pollinators and their habitat in urban, agricultural, and natural landscapes. This short course was attended by over 90 people, including many Master Gardeners.

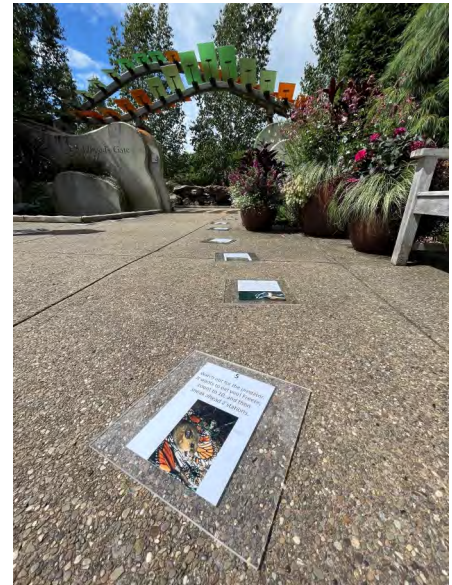
After developing an interdisciplinary science curriculum with the Center for Science and the Schools (CSATS), the Center for Pollinator Research hosted a group of 14 elementary teachers on Penn State campus for three days. Time was spent at the Frost Museum, the Arboretum at Penn State, and the Student Farm. The group also took a trip to the Penn State Berkey Creamery, of course! Teachers learned valuable skills and knowledge to bring back to their classroom, including insect identification, using microscopes, pollinator and human nutrition, and gardening.



The development of the AG SEEDLINGS (Agricultural Science in Elementary Education Learning In Gardens at School) curriculum was funded by a grant from the United States Department of Agriculture (USDA). Lessons are available for grades 1st through 5th that integrate science, math, and English language arts. Lesson plans are free and available on the Center for Pollinator Research website in the [resource library](#). Full unit modules for each grade can be found [here](#).

In late July and early August we offered activities for families in the Childhood Gate Children's Garden, just steps away from the Pollinator and Bird Garden. Penn State research labs and organizations including Shaver's Creek, The PA Honey Queen, and U.S. Fish and Wildlife enjoyed sharing bees and other pollinators with young children.

(A summer in the Pollinator and Bird Garden continued from page 9)



Various art mediums including graphic design, watercolor, and videography have contributed to creating educational materials for the Center for Pollinator Research. Sara Usnick, a film production major in the college of The Donald P. Bellisario College of Communications spent her summer in the garden taking footage of pollinators and flowers for educational videos. Subscribe to our [YouTube Channel!](#)

Recent graduate Victoria Millsap created beautiful watercolor illustrations of the plants in our Pennsylvania Pocket Field Guides, inspired by the flowers in the Pollinator and Bird Garden. Both the field guides and her illustrations are available on our website in the [resource library](#) and the [image library](#), respectively. We continue to work with Victoria as she begins her master's program in France. The pocket field guide Plants for Butterflies will be available this October.



Our Work Continues

As greenery fades into fall foliage, the Center for Pollinator Research continues its mission of conducting and communicating research that advances pollinator health and conservation. Next time you are in the Pollinator and Bird Garden at The Arboretum at Penn State, be sure to say hello!

The Ecological Impact Native Plants Provide to Native Bees

Lorri Schmick, Penn State Master Gardener

Bees comprise a group of insects that pollinate much of our fruit and vegetable crops. Pennsylvania is home 437 species of native bees. Some of the more common native bees in our area include bumblebees, leafcutter bees, squash bees, mason bees, sweat bees, and mining bees. Nearly all (90%) of native Pennsylvania bees are SOLITARY; that is the female native bee is responsible for constructing nests and collecting food for the young on her own. On the other hand, the European honey bees, also pollinators, are SOCIAL bees that live in colonies composed of thousands of individuals.

Native plants provide the nectar and pollen needed by the native bees to support their young. In doing so, as the bees collect the sticky pollen, they help transfer it from flower to flower, providing pollination.

How to Create Habitat for Stem-Nesting Bees

WINTER
Leave dead flower stalks intact over the winter

SPRING
Cut back dead flower stalks leaving stem stubble of varying height, 8 to 24 inches, to provide nest cavities. Female bees find cut or naturally occurring open stems, start a nest, then lay an egg on the pollen balls. Larvae eat the pollen.

SUMMER
New growth of the perennial hides the stem stubble. Bee larvae develop in cut dead stems during the growing season.

FALL **WINTER**
Bees hibernate in stems during the winter

SPRING
Cut back dead flower stalks. Old stem stubble will naturally decompose. Adult bees emerge and start nests in newly cut dead stems or in naturally occurring open stems.

Since native bees do not have managed hives, many will make their nests in the ground (usually in well-drained soil), old logs, snags or in hollow or pithy stems of native plants and flowers. Stem nesters may hibernate in the stems over winter. This is why it is very important not to cut your flower stems down in the fall. Instead trim pithy or hollow plants to 8”to 24” height in spring. Adult bees will emerge and bees may use the newly cut stems to start new nests. Although a popular alternative, the constructed, man-made nest boxes for tube nesting bees are often not deep enough to protect the next generation of bees from predators.



Photo by David Biddinger

Osmia lignaria—blue orchard bee nest inside a stem tube

The female mason or leafcutter bee uses tunnels to make brood cells. One egg per cell. She mixes pollen and nectar to make a protein bee bread that will feed the larvae after it hatches. After sealing off the first egg, she continues to lay eggs on a bee bread cake, sealing each egg all the way to the end of the tunnel and then seals the entrance. The mason bee will seal the entrance with mud, whereas the leafcutter bee will seal the entrance with chewed up leaves. She then flies away. Her job is done. The eggs will hatch next Spring after overwintering. (See Above)!!!!

(Continued on page 11)

Strategies to support Native Bees in your Garden

1. Provide a variety of plants, particularly native plants that bloom from early spring thru late Fall. A few examples of spring blooming plants are dogwood, columbine, golden ragwort, spiderwort, and phlox. Some mid-season plants include milkweed, mountain mint, coneflower, ironweed, Joe-pye, and blazing star. In Fall, goldenrod, asters, and blue mistflower are in bloom. Review the Pollinator Certification Application for a list of other seasonal native plants, flowers, and shrubs.
2. Provide a fresh water source, bare ground, and deadwood like old logs in your garden for the native bees to nest in. Provide a puddling area for water. It can be a birdbath, either standing or on the ground, with marbles, stones, or wet sand for the bees to land on.
3. Do not use pesticides, which kill the good and bad bugs. Even organic insecticides can cause a possible risk to our native bees. Also avoid buying plants treated with pesticides. Look for nurseries that practice IPM (Integrated Pest Management).



Example of tight spacing of native plants for 3 seasons

No fear of Stinging!!!! Most stings come from hornets, wasps, and yellowjackets that are social and must defend their colonies.

Native bees are generally non-aggressive because they are solitary bees and do not have a large colony to defend.