

NATIVE NOTES

The Newsletter of the West Virginia Native Plant Society

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Our Facebook page continues to grow and grow! We now have over 38,000 followers. It's a great place to learn about native plants and see what is blooming in your region. Many thanks to our dedicated Admins for keeping things under control.

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Be sure to visit our webpage for much more information, photos and links to native plant resources. www.wvnps.org



Exploring the Many Ferns of West Virginia

Story by Lottie Westfield

The Atlas of the Flora of West Virginia lists 68 species plus 11 grape ferns which together make a total list of 79 fern species that occupy many natural habitats throughout the Mountain State. Ferns are vascular plants which do not produce flowers. Ferns reproduce sexually through the production of spores and most propagate vegetatively as well. Sexual reproduction in ferns and fern allies is a fascinating life cycle where ultimately water is necessary for fertilization. Ancient ferns appear in the fossil record from over 350 million years ago. Although their basic reproductive strategy has not altered much, our modern ferns appeared around 70 million years ago.

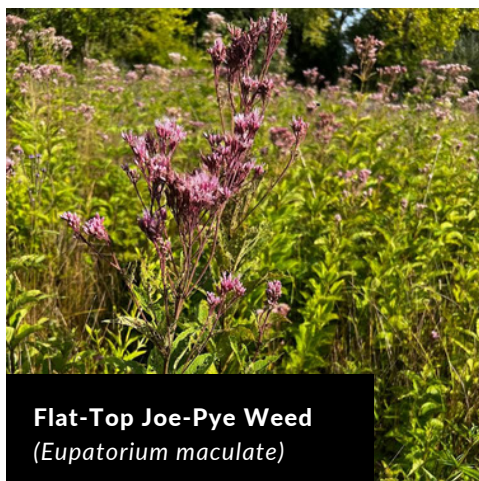
Over the eons, ferns became much smaller as flower producing herbaceous and woody plants emerged as the dominant vegetation. Ferns continued to evolve over millions of years within the und-

erstory of coniferous and deciduous forest habitats. Ferns provide some food and shelter for small mammals and invertebrates. Ferns have evolved to fill numerous niches in West Virginia from deep rich woods to faces of dry calcareous and sandstone cliffs, dry oak-pine forests, bogs and fens.

Fiddleheads Can Provide a Culinary Delight

Candace Nelson of the West Virginia Culinary team highlights a particularly interesting culinary aspect, featured in a 2021 article for the Charleston Gazette-Mail. The young unfurling plants of ferns of many species resembles a fiddlehead. The main species of ferns sought after in Appalachia are the ostrich fern, or (*Matteuccia struthiopteris*) - although it's noted that other edible fiddlehead-type ferns can be found in regions su-

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Flat-Top Joe-Pye Weed
(*Eupatorium maculatum*)

Exploring the Many Ferns of West Virginia

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Story by Lottie Westfield

ch as the bracken and lady ferns. It's imperative to note that the fiddlehead must be young, no more than 4 inches tall and must be cooked before being consumed (at least for 5-10 minutes) due to the fact that they contain a trace amount of toxins, according to the article. After removing the papery-brown skin via rinsing, the Charleston Gazette-Mail post notes that these young ferns can be steamed, sauteed, roasted, braised, or even pickled (after blanching). "After cooking, the bitter flavor will disappear, revealing a bright, slightly sweet essence. It's like a mix of asparagus with a grassy and snappy green bean."

Caring for Ferns (Indoors and Out)

The West Virginia Division of Natural Resources notes that it is important to plant native species when possible, as they are adapted to the area in addition to being more disease and drought resistant than non-native species. "Native plants also provide the greatest benefits to wildlife because our native wildlife

evolved with native plants." While more nurseries are specializing in native plants every year, taking the initiative to plant native ferns on your own property can be done in a variety of ways, whether you choose to grow West Virginia ferns indoors or out. Household ferns, for instance, thrive best in a humid environment and will need regular misting. In addition to keeping indoor ferns well hydrated, bright, filtered light and fertilizer can further ensure that ferns flourish inside.

To ensure that ferns thrive outdoors, there are several landscaping techniques that can work to improve and even prolong the lifespan of plants. Proper irrigation, pest management, fertilization, and pruning are just a few aspects essential to plant health and longevity. Irrigation setups, for instance, will ensure that your ferns are well watered throughout the day, while fertilization can further aid in keeping plants healthy. Pest management is another necessity, as pests have the potential to impact any plant (even native ferns). Pests n-

ed to be treated right away to preserve the plant's health — professional landscapers have plenty of experience and will know what action to take based on the pest and plant that is affected, highlighting a viable option should an issue arise. Regarding pruning, it's imperative to take into consideration that the needs of each plant vary — for example, while typically Christmas ferns don't need pruning, removing leaves that are dead or damaged throughout the year will suffice.

Ferns are an integral part of the West Virginian environment. We have an amazing diversity of species throughout the Mountain State. Ferns that thrive in moist shady conditions like maidenhair fern (*Adiantum pedatum*) and many species of wood ferns which prefer moist shade but are more adaptable than maidenhair fern. There are a multitude of spectacular native ferns to enliven your yard and gardens. Find certified native plant nurseries for ferns for your gardens.

Tribute to West Virginia's Lover of Big Trees — TURNER SHARP

Story by Judi White

West Virginia Native Plant Society member Turner Sharp from Parkersburg passed away on March 19, 2024, from complications of Covid. He earned Bachelor's and Master's degrees in Forestry from West Virginia University. Turner was an avid environmentalist, especially fond of rivers and trees. He was a board member of the West Virginia Rivers Coalition, a long-time member of the West Virginia Highlands Conservancy, chairman of the Parkersburg Tree Commission, and

had helped to have several areas of West Virginia added to the Old Growth Forest Network. Among them were the Giant Tree Trail at North Bend State Park, Pierson Hollow at Carnifax Ferry State Park and Burnwood Forest at New River Gorge. Turner started as a volunteer for the West Virginia Big Tree Program and became the coordinator. He and his little Prius traveled some nearly impassable county roads, checking out and verifying the nominated trees.



Turner Sharp (center) being recognized by the Old Growth Forest Network in 2018.

Thank you, Turner, for all your endeavors. You touched many lives.

Where's the Perennating Bud in Terrestrial Orchids?

Story by Kathy Gregg

But first, you ask, what is a perennating bud? It is the overwintering bud that sprouts in the spring to produce another year's vegetative growth. All perennials have them, whether they are up in the air at the ends of twigs of trees or shrubs, just above the ground, completely out of site, underwater, or underground. So, if they are subterranean, where are they exactly, and what do they look like? And how do they arise?

Since most of my experiences are with terrestrial orchids that overwinter underground in West Virginia, this article will describe a few species I've studied that have perennating buds that arise in different ways.

Let's start with a very familiar orchid group, the lady's slippers, such as the yellow lady's slipper shown here (Fig. 1a). The overwintering structures of lady's slippers are long, succulent, fibrous roots and the thick rhizomes from which they arise. Perennating buds are produced at the ends of the rhizomes and sprout in the spring (Fig. 1b,c,d). The rhizomes can branch in some species, with each branch producing a bud at its tip. This can result in multiple stems from a single plant, as in the showy lady's slipper.

Numerous species of *Platanthera*, formerly called *habenarias*, are found in North America. Their flowers come in several colors: green, greenish-white, white, orange to yellow, and pink to purple (Fig. 2a) and live in many different habitats. Orchids in this genus overwinter with underground thick, fleshy, clustered stem-root combinations that are often enlarged into a single tuberoid (Fig. 2b). New growths, i.e., the perennating buds, arise from the tuberoid (Fig. 2b) and emerge in the spring.

Besides being produced by rhizomes or tuberoids, perennating buds can be produced from the base of the stem. An example orchid with this habit is *Cleistis bifaria*, formerly *Cleistis bifaria*, with the co-

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Figure 1. *Cypripedium*. a, Yellow lady's slipper, *C. parviflorum* (photo taken in Manitoba). b, Showy lady's slipper, *C. reginae*, in late July, showing perennating bud at arrow and fleshy, fibrous roots that emanate from a rhizome (not visible). Rhizomes connect the three stems here and belong to the same individual. c, *C. reginae* in late July, showing perennating bud (arrow) arising from the rhizome below the soil, along with numerous succulent fibrous roots. d, European yellow lady's slipper, *C. calceolus*, showing rhizome, current flowering stem, and new perennating bud.



Figure 2. *Platanthera*. a, Large purple fringed orchid, *P. grandiflora*. b, Ragged fringed orchid, *P. lacera* in early July; the pearly white perennating bud for the next year (left-pointing arrow) is just to the right of this year's flowering stem. The down-pointing arrow indicates the new tuberoid being produced in the current year, while the right-pointing arrow indicates the previous year's tuberoid.

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Common name spreading pogonia. Flowers sport three erect or reflexed, green to maroon sepals (Fig. 3a). Two pink petals fold around a pale pink to white labellum with maroon veining and often a yellow, false pollen spot near the apex that fools pollinators in search of pollen. Starch-filled, succulent roots emerge at right angles to an underground vertical short rhizome (Fig. 3b). The next spring's shoot bud, i. e., the perennating bud, is often a stunning rose color (Fig. 3c) about 1 cm high; it is borne at the base of the current year's stem and sits just below the soil level. In addition to serving as overwintering structures, the roots of this genus, as well as closely related *Isotria* and *Pogonia*, can produce root shoots that can arise at some distance from the original plant. If the root in between the two shoots is damaged, you get two plants for the price of one.

Another group of orchids, the lady's tresses, also produce their perennating buds from the base of the stem. However, lady's tresses have thickened roots that serve as storage reserves as well as overwintering structures. *Spiranthes lacera* var. *gracilis*, common name, slender lady's tresses, is somewhat uncommon but broadly distributed in West Virginia. It can be found in open woods, mowed meadows, fields, and roadsides. Petals and sepals are white, and there is a distinctive green to greenish-yellow splotch in the center of the labellum (Fig. 4a). Some have sprawling roots, while others, like *S. lacera* var. *gracilis*, have fascicled, or clustered roots (Fig. 4b). This variety of *S. lacera* flowers in West Virginia in late summer to early fall. At that time, new perennating buds are already present but quite small (Fig. 4b).

Now we come to an orchid that produces perennating buds from compact, swollen, modified stems, called corms, as in gladioli and crocuses. Green adder's mouth (*Malaxis unifolia*) is a slender plant with inconspicuous inflorescences of tiny, green, tightly packed flowers (Fig. 5a).

The species is named for the single ovate leaf borne mid-way up flowering stems. Plants overwinter as pearly-white underground corms about 1.3 cm high (Fig. 5b), that develop from the base of the aerial stem as fall approaches, soon after which the previous year's corm senesces and disappears. A few fibrous roots emerge just below the corms (Fig. 5b). The perennating bud is located at the base of the current year's corm and is hidden underneath a papery sheath (Fig. 5c,d).

Last but not least, I will describe a species of one of the few temperate zone orchid genera that overwinters as pseudobulbs. Pseudobulbs are green, thickened, above-ground stems that are adapted for storage and photosynthesis, as well as for water and nutrient transport. *Liparis liliifolia*, called the large twayblade, is a species found scattered throughout the state in open forest or moist thickets. Plants tend to disappear when forest canopy closes. Mauve-colored flowers (Fig. 6a) are borne in an open arrangement along the stalk. Two pseudobulbs (Fig. 6b), are typically present, one from the previous year, with roots emanating from its base, and a newer one that produces the current year's plant from which, when reproductive, a flowering stalk arises. In Fig. 6c, you can see inside a sliced pseudobulb that there is already a new perennating bud, about 0.5 cm high, showing multiple baby leaves and tiny flower buds. The older pseudobulb and its roots die in autumn, leaving the new one to overwinter and produce new roots in spring. Occasionally pseudobulbs produce tiny offsets that may dislodge and establish a new plant (Fig. 6d).

You may wonder whether plants of *Liparis* truly overwinter underground, since they have pseudobulbs, which by definition, are aerial structures. From my experience, I'd say that they overwinter just above-ground but covered by leaf litter (Fig. 7).

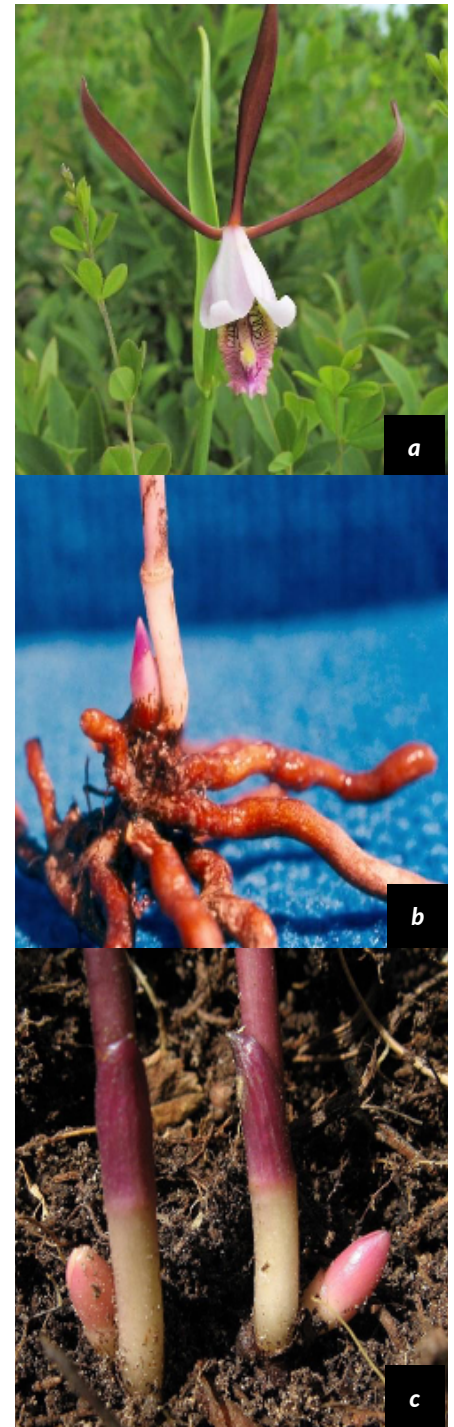


Figure 3. *Cleisteslopsis bifaria*. In b, the perennating bud sits to the left of the current year's flowering stem. The short vertical rhizome from which the roots arise is not visible. c, Perennating buds in mid-September, just beneath the soil, of two flowering stems connected by an underground, horizontal rhizome.

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Where's the Perennating Bud in Terrestrial Orchids?

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As you can see from these examples, temperate zone orchids vary quite a bit in the appearance of their perennating buds and in how and where they are produced. Why a particular species does what it does, and differently from others, is a question I haven't seen asked or answered in the orchid literature. It would certainly be worth investigating.

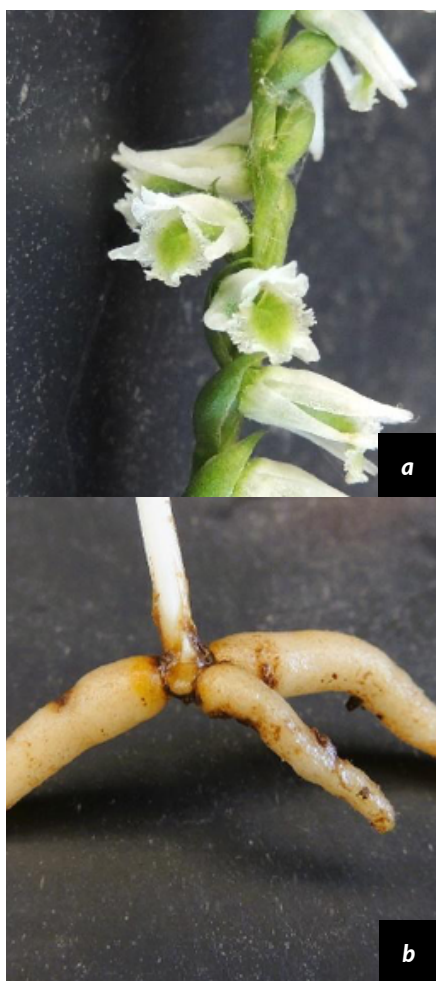


Figure 4. *Spiranthes lacera* var. *gracilis*. In b, in early September, a 1.5-mm tall pearly-white perennating bud for the next season's growth appears at the stem base, just above three thick, fascicled roots. There was a second tiny bud on the opposite side of this stem, indicating that if the larger bud is damaged, the smaller bud can sprout.

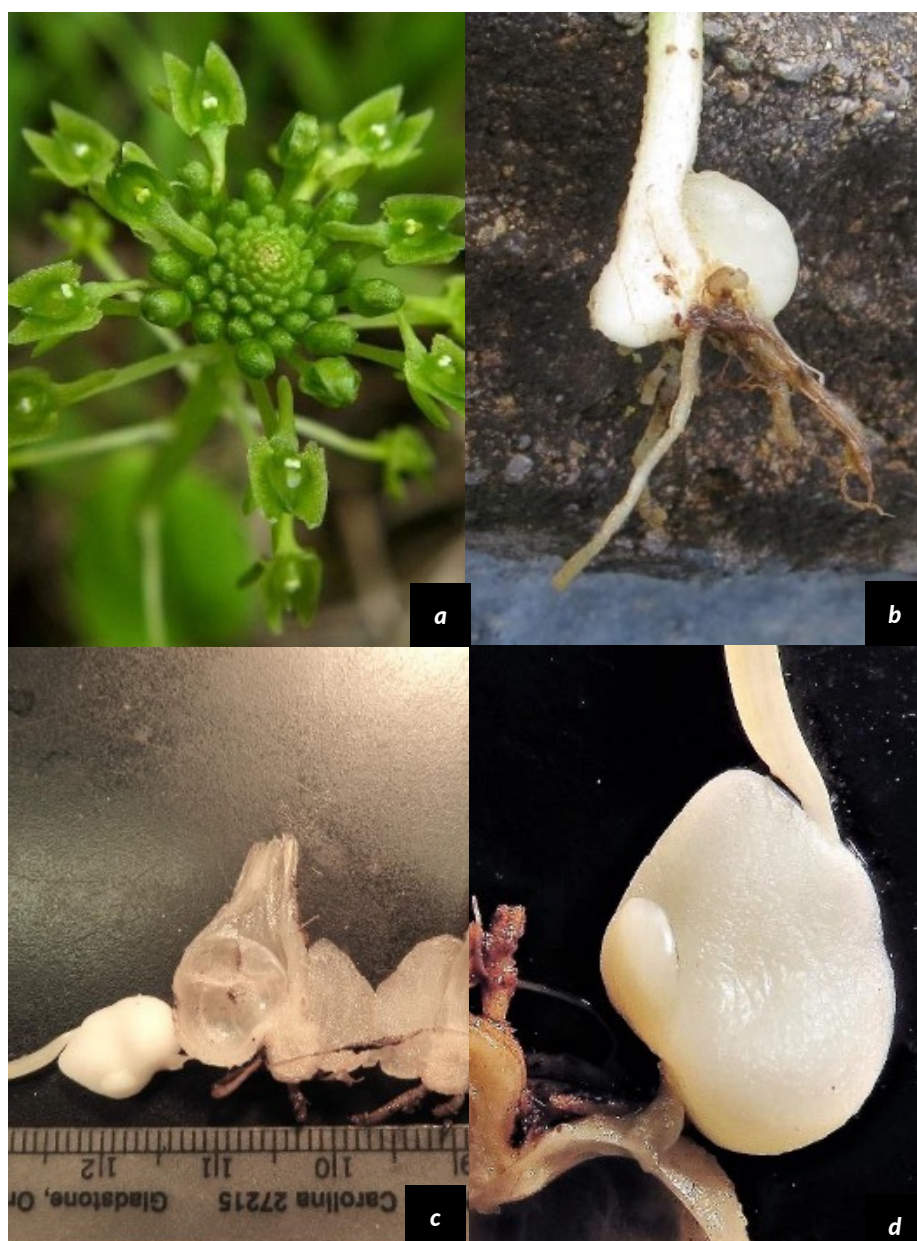


Figure 5. *Malaxis unifolia*. In b is shown the underground portion of the plant in late June. The current year's developing corm is on the left, and the previous year's corm, on the right. Eight fibrous roots emanate from the base of this older corm. In a living plant, the older corm would senesce and disappear over the winter. In c, in mid-August, the current year's corm is on the far-left, with lower portion of the cut-off flowering stem pointing left. Its papery sheath is visible to its right. Farther right are the two halves of the sectioned previous year's corm. In your mind, roll the young corm up and to the right into its sheath, put the two halves of the older corm together, and roll everything together to see how the perennating bud becomes tucked between the two corms in the intact plant. In d, the tiny perennating bud is about 3 mm high by mid-August in West Virginia.

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Figure 6. *Liparis liliifolia*. In b, in early September, the green pseudobulb from the previous year is to the right of the current year's leaves on the left. The current year's pseudobulb is hidden within the leaf sheaths of the fruiting stem (not visible) which arose at the base of the right-hand leaf. In c, are both halves of the current year's growing pseudobulb, showing the perennating bud with tiny leaf and flower buds already present by early September in West Virginia. d, Offset bud produced by older pseudobulb.



Figure 7. *Liparis liliifolia*. a, Two plants growing on forest floor, pseudobulbs covered with leaf litter. b, Pseudobulbs visible after leaf litter has been brushed away.



Maximilian Sunflower
(*Helianthus maximiliani*)

Jefferson and Berkeley County Outings — Aug '23

List submitted by Judy White and Kevin Campbell
Photos by Kevin Campbell

Claymont Society Wetland, Jefferson County

This wetland is a circumneutral marl marsh that has been impacted by over 200 years of human activity. This remnant wetland still has a number of unique plants. Our visit, however, was cut short by a painful encounter with yellow jackets.

- **Whorled Mint** (*Mentha xverticillata*)
- **Flat-Top/Spotted Joe-Pye-Weed** (*Eutrochium maculaum*)
- **Swamp Thistle** (*Cirsium muticum*)
- **Torrey's Rush** (*Juncus torreyi*)
- **Virginia Mountain-Mint** (*Pycnanthemum virginianum*)
- **Showy Bur-Marigold** (*Bidens laevis*)
- **Water Horehound** (*Lycopus americanus*)
- **Floating Water Pennywort** (*Hydrocotyle ranunculoides*)

On the grounds around the Claymont Mansion were a number of interesting plants including a huge Sassafras tree:

- **Kentucky Coffee Tree** (*Gymnocladus dioica*)
- **Yellow-Flowered Leafcup** (*Smallanthus uvedalius*)
- **Spanish Needles** (*Bidens bipinnata*)

Cool Spring Nature Preserve

The preserve contains another marl marsh or Shenandoah wet prairie marsh habitat type and is managed by the Potomac Valley Audubon Society.

- **Lopseed** (*Phryma lepostachya*)
- **Cut-Leaf Goldenrod** (*Solidago arguta* var. *arguta*)
- **Showy Orchis** (*Orchis spectabilis* (leaf only))
- **Ditch Stonecrop** (*Penthorum sedoides*)
- **American Burreed** (*Sparganium americanum*)
- **Flat-Top Joe-Pye-Weed** (*Eutrochium maculatum*)
- **Common Monkey Flower** (*Mimulus ringens*)
- **Swamp White Oak** (*Quercus bicolor*)
- **Maximilian's Sunflower** (*Helianthus maximiliani*)
- **Blue Vervain** (*Verbena hastata*)
- **Three-Square** (*Schoenoplectus pungens*)
- **Least Duckweed** (*Lemna minor*)

Riverbank downstream of Dam Four:

A very nice, species diverse rocky shore (riparian zone) on the Potomac River near Shepherdstown.

- **Yellow Flat Sedge** (*Cyperus flavescent*)
- **Fog-Fruit** (*Phyla lanceolata*)
- **Awned Flat Sedge** (*Cyperus squarrosus*)
- **Sandbar Willow** (*Salix interior*)
- **Ward's Willow** (*Salix caroliniana*)
- **Toothed Spurge** (*Euphorbia dentata*)
- **False Pimpernel** (*Lindernia dubia* var. *dubia*)
- **Redtop Panic Grass** (*Panicum rigidulum* var. *rigidulum*)
- **Mud Plantain** (*Heteranthera dubia*)
- **Cardinal-Flower** (*Lobelia cardinalis*)
- **Lizard's Tail** (*Saururus cernuus*)
- **American Brooklime** (*Veronica americana*)
- **Water-Willow** (*Justicia americana*)
- **Sand Dropseed** (*Sporobolus cryptandrus*)

Stauffer's Marsh Preserve in Berkeley County:

A restored wetland also managed by the Potomac Valley Audubon Society.

- **Hoary Tick-Trefoil** (*Desmodium canescens*)
- **Gaura** (*Gaura biennis*)
- **Buttonbush** (*Cephalanthus occidentalis*)
- **Gronovius' Dodder** (*Cuscuta gronovii*)
- **Common Water Plantain** (*Alisma subcordatum*)
- **Seedbox** (*Ludwigia alternifolia*)
- **Marsh St. Johnswort** (*Triadenum virginicum*)
- **Florida Blue Lettuce** (*Lactuca floridana*)
- **Fall Phlox** (*Phlox paniculata*)
- **Bladdernut** (*Staphylea trifoliata*)
- **Ninebark** (*Physocarpus opulifolius*)
- **Tall Coneflower** (*Rudbeckia laciniata*)
- **Whorled Rosinweed** (*Silphium trifoliatum*)
- **Indian Grass** (*Sorghastrum nutans*)
- **Halberdleaf Tearthumb** (*Polygonum arifloium*)
- **Late Goldenrod** (*Solidago gigantea*)
- **Water Meal** (*Wolffia brasiliensis*)
- **Ox-Eye Daisy** (*Heliopsis helianthoides* var. *helianthoides*)
- **Wirestem Muhly** (*Muhlenbergia frondosa*)
- **Great Blue Lobelia** (*Lobelia siphilitica*)
- **Woodland Muhly** (*Muhlenbergia sylvatica*)
- **Pale-Leaved Sunflower** (*Helianthus strumosus*)
- **Brilliant Coneflower** (*Rdbeckia fulgida* var. *fulgida*)

ROSTER OF OFFICERS

President

Judie White

judiwhite@suddenlink.net

Vice President

Kevin Campbell

hazwaste99@hotmail.com

Past President

Luanne McGovern

lmmcg32@yahoo.com

Corresponding Secretary

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Elaine Matheny

ecmatheny@gmail.com

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decodon89@gmail.com

WVNPS Trustees at Large

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Donna Ford-Werntz

dford2@wvu.edu

Judy Bennedee

jon.beneddetti@gmail.com

Other Key Contributors

Eastern Panhandle Representative

Rodney Dever

rodneydever@comcast.net

Kanawha Valley Representative

Steve Mace

sdmace@frontiernet.net

Tri-State Representative

Romie Hughart

romie5006@yahoo.com

Newsletter Editor

Emily Grafton

emily.grafton@gmail.com

Managing Editor

Olivia Miller

oliviahmiller@gmail.com

Woodland Sunflowers (*Helianthus divaricatus*)

Brush Creek Preserve Outing, June 2024



WVPNS Brush Creek Preserve Outing, June 2024

