Marilandica

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Celebrating the Fall Zone and the Apiaceae

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Cover: Calcareous rill at headwaters of the Erigenia Ravine at Chapman State Park. Photo by R.H. Simmons.

WHAT'S INSIDE

Erigenia Ravine near Glymont, Charles County, MD. Photo by R.H. Simmons.

Greetings fellow MNPS Members!

I'd like to start by welcoming **Kirsten Hoffman** to the MNPS Board of Directors. Kirsten has jumped in with both hands and feet to fill a much-needed role as Treasurer. We're thrilled to have her help and we look forward to working with her to advance MNPS's mission. Learn more about Kirsten in our Welcome (p. 22). And, please check out this month's "Members Spotlight" (p. 23) featuring two MNPS members—**Alba Tirado** and **Liz McDowell**. These two heroes have each contributed in exceptional and unique ways to educate people about native plants and their important role in ecological systems.

The board has chosen the Apiaceae (aka the Celery, Carrot, or Parsley Family—illustrating why Latin names are better!) as its Family of the Year for 2024 (see article on p. 5). I am looking forward to learning more about this diverse family of about 54 species in Maryland including 36 native and 18 non-native species (5 of which are well known invasives). Members of this family have diverse lifestyles: the native understory species Hairy Sweet-cicely (*Osmorhiza claytonii*) greens up in the winter to capture sunlight; the native and beautiful Golden Alexanders (*Zizia aurea*) blooms in the spring; and the non-native invasive Goutweed (*Aegopodium podagraria*) is very difficult to eradicate; and all of them grow on my property.

We've got a great lineup of speakers and events (see p. 24, Upcoming Events), including a few which will highlight citizen science projects and how you—our members and the public—are driving a new understanding of the natural world through the use of apps like iNaturalist and EDDMapS (see article on p. 16). In this vein, we are excited about our upcoming MNPS Plant Blitz in May—a series of field trips, talks, and trainings to increase plant observations in our state, in partnership with the Maryland Biodiversity Project (see article on page 14). During the field trips, and whenever you are out and about, we encourage you to use the iNaturalist app to record observations of native and non-native plants that may then be included in the MBP database or in other projects and studies. We especially call on the deep knowledge of our members to help with identifications of plants when they make or view an observation in iNaturalist. We are offering an iNaturalist training session via Zoom on April 23 (see mdflora.org/events).

I look forward to seeing you at upcoming events and hope that you will be inspired to start or continue to participate via iNaturalist or in other ways to add to our collective knowledge and stewardship of native plants here in Maryland. Every one of us has something to contribute and our knowledge grows exponentially when we learn from each other.

Lauren Hubbard, *MNPS President*

Spring wildflowers at Ferry Hill, Sharpsburg, MD. Photo by Jil Swearingen.

The Fall Zone

By JIL SWEARINGEN

In the Fall 2023 issue of Marilandica we began to explore the geography of Maryland with an overview of the state's **five physiographic provinces**—distinguished primarily by geology, and **six ecoregions**—characterized mostly by plant communities. The salt marshes of the Southeastern Plains and Middle Atlantic Coastal Plain ecoregions were featured. In this issue, we explore the dramatic transition between the Piedmont's hard metamorphic rocks and the unconsolidated sands and clays of the Coastal Plain, known as the Fall Zone (Means 2010), represented by the red line in Figure 1. Rod Simmons gives an overview of the highly diverse acidic forest communities that straddle the Fall Zone in a 100-mile stretch between Baltimore MD and Frederick VA (see p. 7). These rich forests are under threat from proposed high-speed rail and other projects and need to be protected.

"Erigenia Ravine" near Glymont at Chapman State Park. Photo by R.H. Simmons.

We'll continue to dig into Maryland's fascinating geography and botanically distinct ecoregions in upcoming issues of *Marilandica*. Digital issues of the newsletter are available from the MNPS website (mdFlora.org).

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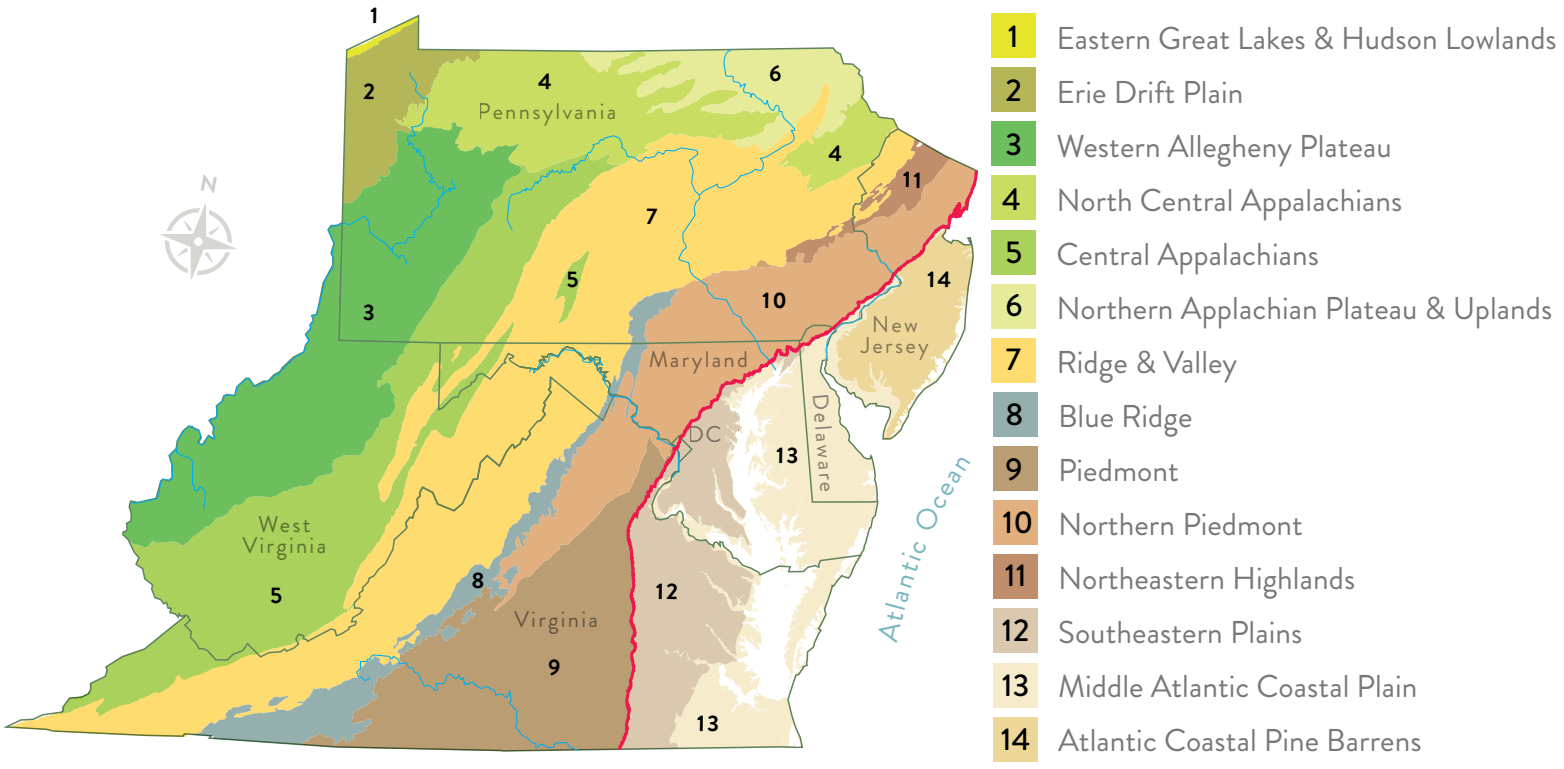

Fig. 1. Level III Ecoregions of the Mid-Atlantic.

Graphic by Amanda Wray, based on data from the April 2013 Continental United States Map; courtesy of the U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory. Red line denotes the Fall Zone; drawn by E.C. Fisher.

Beauty, Beast, Flavor, and Feast: the Celery Family in Maryland

By JIL SWEARINGEN

Rattlesnake Master, Snakeroot Coyote Thistle, Giant Hogweed, Poison Hemlock. These names suggest a group of plants worth paying attention to. Also known as the carrot or parsley family, most members are aromatic. There are desirable edible species like carrot, celery, fennel, and parsnip as well as culinary herbs like caraway, chervil, cilantro, dill, and parsley; and spices like coriander. But the family also has less welcome members including highly poisonous Poison Hemlock (*Conium maculatum*), Water Hemlock (*Cicuta maculata*) and Giant Hogweed (*Heracleum mantegazzianum*). MNPS chose to feature Apiaceae in 2024 for its diversity, beauty, and ecological importance.

An older Latin name for the group is Umbelliferae, which translates to 'bearing umbels'. Umbels are umbrella-like inflorescences composed of small flowers on stalks that radiate from a central point; they are a distinguishing feature of the family. According to the Maryland Biodiversity Project, there are about 54 species of Apiaceae in Maryland, including 36 native and 18 non-native (5 invasive) species (see list on page 6).

Fourteen species are designated as Species of Conservation Concern, with 5 listed as Endangered in Maryland. Two of the 5 State Endangered species are also Federally Endangered: Harperella (*Ptilimnium nodosum*)—an aquatic plant of riparian areas found in Allegheny and Washington counties, and Canby's Dropwort (*Tiedemannia canbyi*)—found in only one locality on the eastern shore.

Apiaceae includes many attractive and ecologically important species. The elusive and tiny Harbinger-of-Spring (*Erigenia bulbosa*) is one of the first spring wildflowers to emerge and is worth kneeling in wet soil to get a close look at. Hairy Angelica (*Angelica venenosa*), Cow Parsnip (*Heracleum maximum*), and Golden Alexanders (*Zizia aurea*) are just a few of the species that adorn Maryland's natural areas and provide ecological services for pollinators and wildlife. Consider incorporating members of the Celery Family in your home landscape.

Herbs are the leafy part of a plant (e.g., basil, cilantro, parsley, rosemary), either fresh or dried. Spices are from fruits, seeds, bark, stems, and roots (e.g., black pepper, coriander, cinnamon, ginger).

Learn how to recognize harmful invasives—Poison Hemlock and Giant Hogweed and be on the lookout for other invasive Umbelliferae such as Bishop's Goutweed (*Aegopodium podagraria*), Queen Anne's Lace or Wild Carrot (*Daucus carota*), and the aquatic plant Java Dropwort (*Oenanthe aquatica*). Report invasive species in the field using the EDDMapS app (see p. 17). While you're at it, take time to enjoy the anise-scented Smooth Sweet-cicely (*Osmorhiza longistylis*) and Wild Chervil (*Anthriscus sylvestris*) by crushing a bit of leaf between your fingers.

Because many species of the celery family resemble others, it's important to be certain of identification before consuming or even touching a plant, in the case of the poisonous species. For help identifying unknown plants, try the iNaturalist app (see p. 16) or the Virginia Flora app (floraofvirginia.org/flora-app/) which includes keys. We hope your studying goes well because there might be a quiz in the next issue of *Marilandica*!

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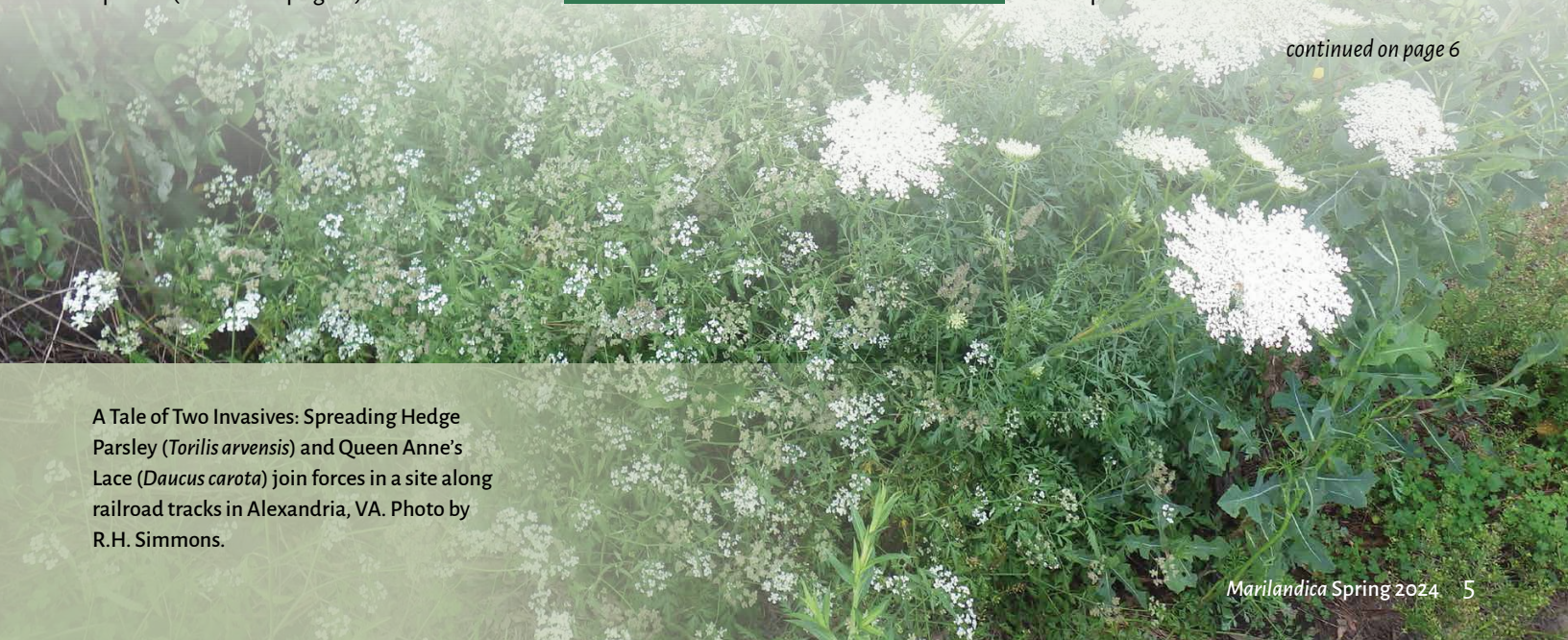

A Tale of Two Invasives: Spreading Hedge Parsley (*Torilis arvensis*) and Queen Anne's Lace (*Daucus carota*) join forces in a site along railroad tracks in Alexandria, VA. Photo by R.H. Simmons.

Harbinger-of-spring (*Erigenia bulbosa*), one of our earliest and tiniest spring wildflowers, Sharpsburg, Maryland, March 10, 2024. Photo by Jil Swearingen

Maryland Apiaceae (Celery Family)

The following list of species is from the Maryland Biodiversity Project and can be used as a checklist when you go in the field. Rare, Threatened, or Endangered species (Species of Conservation Concern), are given State (S) and Global (G) status rankings to indicate the level of threat to their continued existence. For an explanation of these rankings please refer to *List of Rare, Threatened, and Endangered Plants of Maryland* (March 2021).

NATIVE SPECIES (36)

SPECIES OF CONSERVATION CONCERN (14)

Great Angelica *Angelica atropurpurea* SH/G5
Filmy Angelica *Angelica triquinata* S1/G5
Hairy Angelica *Angelica venenosa*
A Hare's Ear *Bupleurum rotundifolium*
Spadeleaf *Centella asiatica* S3/G5
Spreading Chervil *Chaerophyllum procumbens* var. *procumbens*
Wild Chervil *Chaerophyllum procumbens* var. *shortii*
Hairy-fruit Chervil *Chaerophyllum tainturieri*
Bulb-bearing Water Hemlock *Cicuta bulbifera* S1/G5
Spotted Water Hemlock *Cicuta maculata* var. *maculata*
Canadian Honewort *Cryptotaenia canadensis*
Harbinger-of-spring *Erigenia bulbosa*
Marsh Rattlesnake-master *Eryngium aquaticum*
Rattlesnakemaster *Eryngium yuccifolium* var. *yuccifolium* SH/G5
Cow Parsnip *Heracleum maximum* S3/G5
Canadian Licorice-root *Ligusticum canadense* SH/G4
Eastern Grasswort *Lilaeopsis chinensis*
Hairy Sweet-cicely *Osmorhiza claytonii*
Smooth Sweet-cicely *Osmorhiza longistylis*
Stiff Cowbane *Oxypolis rigidior*
Burnet-saxifrage *Pimpinella saxifraga*
Mock Bishopweed *Ptilimnium capillaceum*
Harperella *Ptilimnium nodosum* S1/G2 LE
Canadian Black-snakeroot *Sanicula canadensis* var. *canadensis*
Maryland Black-snakeroot *Sanicula marilandica* S3/G5
Clustered Black-snakeroot *Sanicula odorata*
Large-fruited Sanicle *Sanicula trifoliata* S3/G4
Hemlock Water Parsnip *Sium suave*
Yellow Pimpernel *Taenidia integerrima*
Mountain Parsley *Taenidia montana* S2/G3
Hairy-joint Meadow Parsnip *Thaspium barbinode*
Purple Meadow Parsnip *Thaspium trifoliatum* var. *trifoliatum* S1/G5 T5
Canby's Dropwort *Tiedemannia canbyi* S1/G2 LE
Heartleaf Alexanders *Zizia aptera*
Golden Alexanders *Zizia aurea* S3/G5
Meadow Alexanders *Zizia trifoliata*

NON-NATIVE SPECIES (18)

INVASIVE SPECIES(5)*

Bishop's Goutweed *Aegopodium podagrarium**
Dill *Anethum graveolens*
Bur Chervil *Anthriscus caucalis*
Wild Chervil *Anthriscus sylvestris*
Wild Celery *Apium graveolens*
Common Caraway *Carum carvi*
Poison Hemlock *Conium maculatum**
Marsh Parsley *Cyclospermum leptophyllum*
Wild Carrot/Queen Anne's Lace *Daucus carota**
Snakeroot Coyote Thistle *Eryngium campestre*
Sweet Fennel *Foeniculum vulgare*
Giant Hogweed *Heracleum mantegazzianum**
Masterwort *Imperatoria ostruthium*
Java Water dropwort *Oenanthe javanica**
Wild Parsnip *Pastinaca sativa*
Moon-carrot *Sesili lebanotis*
Spreading Hedge-parsley *Torilis arvensis*
Erect Hedge-parsley *Torilis japonica*

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Forgotten Flora

of Fall Zone Acidic Oak-Hickory Forest Communities

Fig. 1. Large "ice-rafted" quartzite cobble in unconsolidated gravels in Fall Zone variant of Acidic-Oak-Hickory Forest. Photo by R.H. Simmons.

BY R.H. SIMMONS

Photos by R.H. Simmons

The Fall Line, or Fall Zone, is a first order physiographic boundary between the Piedmont Plateau on the west and the Atlantic Coastal Plain to the east. This zone of transition, where the hard, crystalline bedrock of the Piedmont descends under the soft sediments of the Coastal Plain, is defined by deeply entrenched stream valleys that commonly form gorges, waterfalls, and rapids. It was also the farthest navigable limit upstream for oceangoing vessels, thus most of the old, large cities along the Atlantic seaboard are situated along this line.

The flora and gravelly uplands of the Fall Zone and inner Coastal Plain of Montgomery and Prince George's counties, Maryland; District of Columbia; and City of Alexandria and Arlington, Fairfax, Prince William, and Stafford counties, Virginia are virtually identical. Throughout this region, Acidic Oak-Hickory Forest is especially well developed on ancient colluvial slopes and benches, with soils derived from thick, underlying lenses of weathered montmorillonite clay of the Potomac Formation (Fig. 1).

Hairy Angelica *Angelica venenosa*

Over long periods of time, these gravel terraces and the underlying Potomac Formation have become deeply dissected, especially near large streams and rivers, creating an extensive, dendritic drainage system and a landscape of steep slopes, numerous seeps and streams, and large, deep valleys. Consequently, most of the mid to upper ravine slopes in the Fall Zone of our area are characterized by a gravelly surface layer of colluvium of varying depths. Gentle, fan-like slopes and benches represent areas of ancient slope failure and soil slumping and are typically more mesic and less acidic than the gravel terraces and steep, upper slopes. These areas are often small in size, but support a remarkable diversity of plant species, including many that are otherwise rare or absent on the Coastal Plain. The small degree of base cation saturation provided by the clayey soils likely contributes to greater species richness than otherwise occurs in leached, acidic environments.

At the Fall Zone and inner Coastal Plain of our area, Acidic Oak-Hickory Forest generally occurs as a gradient between Oak-Heath Forest and Mesic Mixed Hardwood Forest, often on dry to submesic, acidic, west-facing and southwest-facing slopes with high solar exposure (Simmons 2015). Typical examples of Acidic Oak-Hickory Forest are often much more species rich than Oak-Heath Forest and include a diversity of upland oaks (*Quercus* spp.) and hickories (*Carya* spp.)

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in the canopy, a fairly diverse understory, with Flowering Dogwood (now *Benthamidia florida)* characteristic, and a host of woodland sedges, grasses, and wildflowers in the herb layer (Fig. 2).

These interesting communities have long attracted botanists who were drawn to the exceptional diversity of wildflowers and graminoids (grass-like plants) more characteristic of the Piedmont to the west (see map on pg. 4). Sites throughout the region were undoubtedly more common and nearly continuous in the past, attested by numerous collections in the DC Herbarium of the U.S. National Herbarium (US) at the Smithsonian Institution by late 19th and early 20th century botanists.

The official U.S. National Vegetation Classification (USNVC) for this vegetation type is Piedmont Acidic Oak-Hickory Forest: *Quercus alba - Quercus rubra - Carya tomentosa / Cornus florida / Vaccinium stamineum / Hylodesmum nudiflorum* Forest (USNVC: CEGL008475). In the Fall Zone of our region, however, Northern Red Oak (*Quercus rubra*) is virtually absent from the Fall Zone variant, with Black Oak (*Quercus velutina*) and Southern Red Oak (*Quercus falcata*) dominant, along with White Oak (*Quercus alba*) and other upland oaks to a lesser extent. Also, Deerberry (*Vaccinium stamineum*) and other heaths are rare in the Fall Zone variant, likely owing to the compressed, accordion-like topography of the Fall Zone vs. the flatwoods and rolling uplands of the Piedmont.

Fig. 2. Alonso Abugattas (aka Capital Naturalist) and arborist Scott Graham examining a relic population of Pennsylvania Sedge (*Carex pensylvanica*) and the flora of a colluvial slope in Fall Zone variant of Acidic Oak-Hickory Forest.

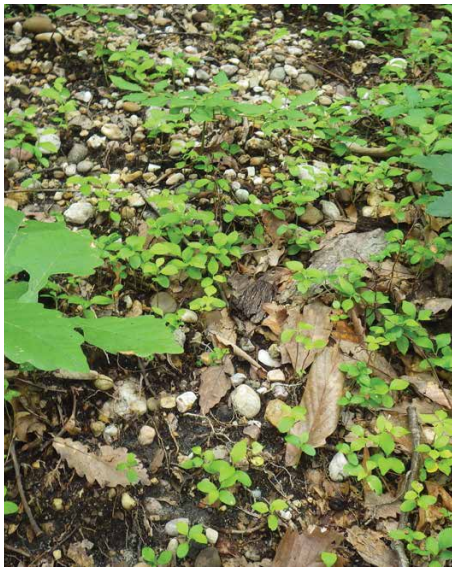

Fig. 3. Countless thousands of non-native invasive Oriental Bittersweet (*Celastrus orbiculatus*) seedlings spread into otherwise pristine interior forest by birds, typically Starlings and American Robin, gorging on berries from uncontrolled mast vines outside the forest.

Four members of the Celery Family (Apiaceae) are associated with Fall Zone Acidic Oak-Hickory Forest: Hairy Angelica (*Angelica venenosa*), Sanicle (*Sanicula marilandica*), Yellow Pimpernel (*Taenidia integerrima*), and Hairy-jointed Meadow Parsnip (*Thaspium barbinode*). Except for Hairy Angelica, all are rare in the Coastal Plain, according to the Digital Atlas of the Virginia Flora (VBA 2024) and Hairy Angelica is no longer common or frequently seen in the D.C. region.

The main threats to the future sustainability of these special places include high speed rail, herbivory by over-populous White-tailed Deer, and encroachment into these forest habitats by non-native invasive plants—particularly bird-dropped fruits of Porcelain-berry (*Ampelopsis glandulosa*), Oriental Bittersweet (*Celastrus orbiculatus*), and English Ivy (Hedera helix) (Fig. 3).

Acidic Oak-Hickory Forest habitats of the Fall Zone comprise a diverse assemblage of flora including, but not limited to, species in the following list (pg. 9). While Bosc's Panic Grass and Pasture Rose are near constants, others (e.g., Devil's Bit, Lily-leaved Twayblade, Striped Gentian, Small White Snakeroot, and Sanicle), are highly rare or sole occurrences.

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Some Plants of Acidic Oak-Hickory Forest Habitats

Legend: Species of Conservation Concern in Maryland: (E) Endangered, (S1) Highly State Rare, (S2) State Rare, (S3) Watchlist

GRAMINOIDS

Grass Family (Poaceae)

Bosc's Panic Grass *Dichanthelium boscii*

Variable Panic Grass *Dichanthelium commutatum* var. *commutatum*

Two-flower Melic *Melica mutica* (S3)

Sedge Family (Cyperaceae)

Lined Sedge *Carex striatula* (S3)

Bashful Bulrush *Trichophorum planifolium* (S2)

FORBS

Bunchflower Family (Melanthiaceae)

Devil's Bit *Chamaelirium luteum* (S2)

Orchid Family (Orchidaceae)

Lily-leaved Twayblade *Liparis liliifolia* (S3)

Birthwort Family (Aristolochiaceae)

Virginia Snakeroot *Aristolochia serpentaria*

Caryophyllaceae (Pink Family)

Smooth Forked Nailwort *Paronychia canadensis*

Starry Campion *Silene stellata*

Buttercup Family (Ranunculaceae)

Round-lobed Hepatica *Anemone americana*

Rose Family (Rosaceae)

Cream Avens *Geum virginianum*

Bowman's-root *Gillenia trifoliata*

Pea Family (Fabaceae)

Butterfly Pea *Clitoria mariana* var. *mariana*

Smooth Tick-trefoil *Desmodium laevigatum* (S3)

Round-leaf Tick-trefoil *Desmodium rotundifolium*

Violet Bush-clover *Lespedeza frutescens* (S3)

Hairy Bush-clover *Lespedeza hirta* var. *hirta*

Wild Bean *Phaseolus polystachios* (S3)

Buckthorn Family (Rhamnaceae)

New Jersey Tea *Ceanothus americanus*

Celery Family (Apiaceae)

Hairy Angelica *Angelica venenosa*

Sanicle *Sanicula marilandica* (S3)

Yellow Pimpernel *Taenidia integerrima*

Hairy-jointed Meadow Parsnip *Thaspium barbinode*

Gentian Family (Gentianaceae)

Striped Gentian *Gentiana villosa* (S1; E)

Mint Family (Lamiaceae)

Wild Dittany *Cunila origanoides*

Wild Bergamot *Monarda fistulosa*

Narrow-leaf Mountain-mint *Pycnanthemum tenuifolium*

Hairy Skullcap *Scutellaria elliptica* var. *elliptica*

Potato Family (Solanaceae)

Virginia Ground-cherry *Physalis virginiana* (S3)

Broom-rape Family (Orobanchaceae)

Fern-leaf Yellow False Foxglove *Aureolaria pedicularia*

Aster Family (Asteraceae)

Small White Snakeroot *Ageratina aromatica*

Cornel-leaved Aster *Doellingeria infirma* (S3)

Godfrey's Thoroughwort *Eupatorium godfreyanum*

Hairy Thoroughwort *Eupatorium pubescens*

Upland Boneset *Eupatorium sessilifolium*

Woodland Sunflower *Helianthus divaricatus*

Pale-leaved Sunflower *Helianthus strumosus*

Whorled Rosinweed *Silphium asteriscus* var. *trifoliatum* (S3)

Elm-leaf Goldenrod *Solidago ulmifolia* var. *ulmifolia*

Wavy-leaved Aster *Symphyotrichum undulatum*

Upland Ironweed *Vernonia glauca*

SHRUBS

Olive Family (Oleaceae)

Fringetree *Chionanthus virginicus*

Rose Family (Rosaceae)

Hawthorns *Crataegus* spp.

Pasture Rose *Rosa carolina* ssp. *carolina*

TREES

Moscatel Family (Adoxaceae)

Black Haw *Viburnum prunifolium*

For more information on State (S) rankings, please refer to *List of Rare, Threatened, and Endangered Plants of Maryland* (March 2021).

Right: Colluvial slope at Arlington Ridge Acidic Oak-Hickory Forest, Arlington, VA.

Platanthera x *canbyi*: A naturally-occurring hybrid between *Platanthera blephariglottis* and *P. cristata*, in which we documented shared pollinators.

The Hunt for Orchid Pollinators

By MELISSA MCCORMICK & MONICA MARCELLI

Photos by Melissa McCormick

Importance of Pollinators

Pollinators are critically important for plant reproduction and evolution. Orchids are pollinated by bees, wasps, flies, moths, beetles, butterflies, and sometimes birds. Many insect pollinators are specific to particular plant species, visiting only one or a small number of plant species. Decline of these species-specific pollinators is thought to be an important driver of orchid decline worldwide. In order to understand the threats to orchids, the North American Orchid Conservation Center (NAOCC) is focused on documenting the pollinators of all North American orchids and understanding how pollinator species vary among locations.

Orchid Distribution and Conservation Status

About 233 native orchid species have been documented in the U.S. and Canada, with 52 species native to Maryland. More than half of North American native orchids are threatened or endangered somewhere in their range, and many species have been declining precipitously in recent years. For example, botanists Wes Knapp and Richard Wiegand studied 21 species of orchids at 167 sites in Frederick County, Maryland, over 41 years. Starting in 1973, they monitored orchids annually at all of their sites and found that populations of 19 of the 21 species monitored had dropped significantly during that time (Knapp & Wiegand 2014).

Digital Documentation of Orchid Pollinators in Maryland

Pollinators for Maryland's native orchids are largely unknown. With funding from the American Orchid Society and Maryland Native Plant Society, we constructed day and night (infrared) motion-triggered video cameras to document and identify pollinators of orchid species. We set up 10 cameras to monitor pollinators at sites in Maryland, Pennsylvania, Virginia, North Carolina, and South Carolina. An additional goal was to document pollinators of three orchid species for which no pollinator information was available.

A Spicebush Swallowtail (*Papilio troilus*) with orchid pollinia on its head, pollinating White Fringed Bog Orchid (*Platanthera blephariglottis*).

During the three years of this study (2021-2023), thanks to help from volunteers (including some MNPS members—thank you!), interns, and technicians, the cameras recorded over 8,000 hours of observations (5,500 in Maryland) of floral visitors to 22 orchid species and two natural hybrids. In order to expedite the process of reviewing videos, we employed a customized machine-learning algorithm to eliminate images not activated by pollinators. The cameras recorded 855 visits to 18 orchid species by 41 pollinator species.

Our study included three species and two naturally occurring hybrids of Fringed Orchids: White Fringed Bog Orchid (*Platanthera blephariglottis*), Crested Orange Bog Orchid (*P. cristata*), Orange Fringed Bog Orchid (*P. ciliaris*), and two hybrids (*P. x canbyi and P.* x *bicolor*). We found that the species and hybrids shared some pollinators at sites where they co-occurred, supporting our earlier findings that they hybridized at those sites (Evans et al. 2023). However, there was significant variation in pollinator visitation rates among sites for the *Platanthera* species. While there were some pollinators that visited more than one kind of Fringed Orchid, there were also differences in pollinator visits both among co-occurring orchid species and between the sites where the species grew. For example, flowers of the Orange Fringed Orchid

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(*Platanthera ciliaris*) were pollinated mostly by Spicebush Swallowtail (*Papilio troilus*)) in Maryland and Pennsylvania, and Palamedes Swallowtail (*Papilio palamedes*) in North and South Carolina.

The cameras also recorded different dominant pollinators for three species of Lady's Tresses: Nodding Lady's Tresses (*Spiranthes cernua*), Slender Lady Tresses (*S. lacera*), and Atlantic Lady's Tresses (*S. bightensis*). In addition, we found that sites where Showy Orchis (*Galearis spectabilis*) produced seed, the orchids were pollinated by bumblebees, whereas at sites where the orchids rarely set seed, the orchids were visited by the day-flying Nessus Sphinx Moth (*Amphion floridensis*). The Nessus Sphinx Moth proboscis is too long to effectively pollinate the flower. Our efforts to capture evidence of possible pollinators of Little Club Spur Orchid (*Platanthera clavellata*), Autumn Coralroot (*Corallorhiza odontorhiza*), and Puttyroot Orchid (*Aplectrum hyemale*) were unfruitful. Over hundreds of hours of recording, we identified many floral visitors but were unable to demonstrate that any of these insects were effective pollinators for these species. It's possible that these three orchid species set seed by self-pollination. We plan to continue our recording efforts for these species.

Intern Gabrielle Brewer setting up a camera to record pollinators on Downy Rattlesnake Plantain (*Goodyera pubescens*).

Surprises

The cameras also recorded some unexpected visitors, including a Ruby-throated Hummingbird that visited and collected nectar from, but did not appear to pollinate, two species of *Platanthera*. A praying mantis was recorded capturing and eating multiple pollinators, a frog jumped up and ate a potential pollinator, and a green anole jumped on and broke an inflorescence.

Going Forward

We are currently upgrading our camera and infrared light systems and will continue these efforts in the future. We will also continue working to expand the number of sites and orchid species, hopefully, with more volunteers (like MNPS members!) to help place and operate the cameras.

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ACKNOWLEDGMENTS

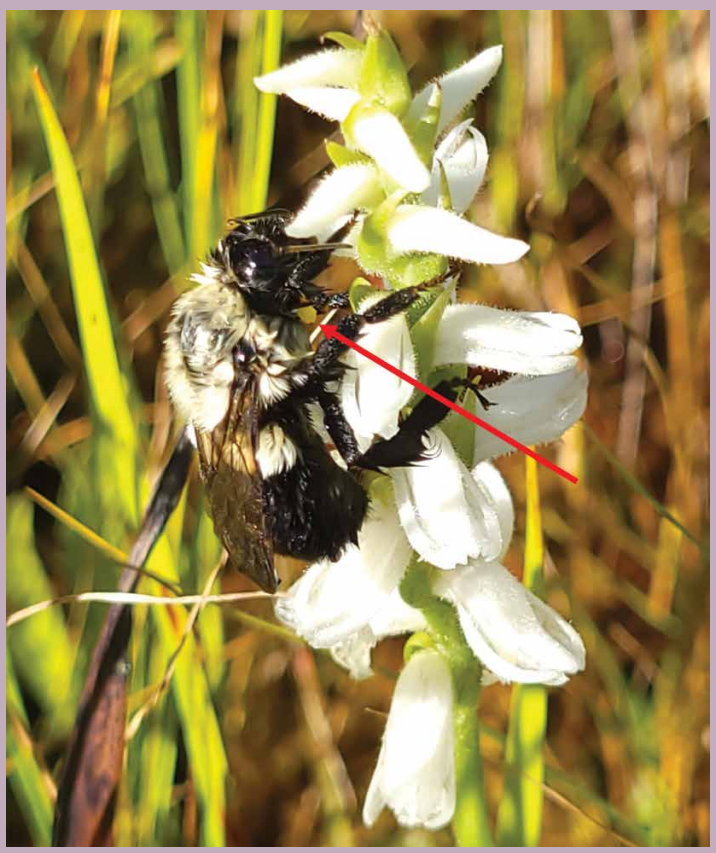
We are grateful to the American Orchid Society and MNPS for funding camera construction, Collot Guerard for internship funding, Lydia Morley for development of Raspberry Pi programming, Mark McCormick for developing the machine learning algorithm, Sam Droege for identification of the bees we recorded, Maryland and North Carolina Chapters of The Nature Conservancy, the Maryland Department of Natural Resources for permits to record videos on their sites, and Julianne McGuinness for helping coordinate permits.

To learn more about NAOCC and this project, see northamericanorchidcenter.org/ and serc.si.edu/research/projects/orchid-pollinator-diversity.

Scan this image with your phone's camera and click the link that pops up to watch a butterfly pollinating an orchid

A clump of Yellow Lady's Slipper (*Cypripedium parviflorum*), a species that has been declining rapidly in Maryland.

Showy Orchis (*Galearis spectabilis*), a relatively common Maryland orchid.



Atlantic Lady Tresses (*Spiranthes bightensis*) being visited by Common Eastern Bumble Bee (*Bombus impatiens*). Orchid pollinia shown by red arrow.

The Maryland Biodiversity Project:
A Maryland Based Community Science Non-Profit

By JIM BRIGHTON

Photos by Jim Brighton

On June 6, 2012, Bill Hubick and I were walking around a small wetland in Severn Run Natural Environmental Area in Anne Arundel County. We came upon a beautiful plant with bright yellow flowers. The leaves of the plant were arranged in whorls of four. Neither Bill nor I knew this species, and we both took photos hoping to identify the plant when we got home. What transpired that evening, while trying to identify our photos, is how the Maryland Biodiversity Project was created.

We quickly deduced that we had photographed a plant in the genus *Lysimachia*. We were both using *Wildflowers in the Field and Forest* by Clemants and Carol as our field guide of choice as the internet was not yet up to the task. There were five options of yellow flowered loosestrifes pictured, but I knew that the field guide wasn't complete. After a deep dive on the internet to search for Maryland *Lysimachia* species, I realized that Maryland was one of the few states that did not have an online comprehensive plant checklist. This realization was unsettling to us, but also triggered a quick discussion about how awesome it would be to have a website that showed complete as possible checklists of all the living things in Maryland. To have these lists in one centralized location would be a useful tool. That evening, after spending WAY too much time trying to identify Whorled Loosestrife (*Lysimachia quadrifolia*), the Maryland Biodiversity Project was born.

MBP Goes Live

On July 2, 2012, the Maryland Biodiversity Project, or MBP, went live. Here is what I wrote in my blog Mid-Atlantic Nature when we announced that the MBP was now live: "The main goal of the project is to have a repository of species checklists where each organism will have photos and information on range, habitat, and identification. We already have over 3,000 species listed including all the mammals, birds, reptiles, amphibians, and freshwater fishes. Invertebrates listed include all of the butterflies, dragonflies, damselflies, and crayfish. Other groups represented include the Silk, Sphinx, and Tiger Moths, all the ladybug species, the robber flies, and all the Tiger Beetles. Also included are all of Maryland's freshwater bivalves. We have roughly over 50% of all of Maryland's wild plants already listed with groups like orchids, violets, and the 246 species of sedges in checklist form.

Partnerships

In the years that followed the launch of MBP, many new partnerships were created. Wesley Knapp soon reached out to ask how we were assembling our plant list. Our discussions with Wes led us to adopt the *Vascular Plants of Maryland* (Knapp and Naczi 2021). MBP was also one of the founding members of the Maryland Plant Atlas, along with the Natural Heritage Program, and the Norton-Brown Herbarium at the University of Maryland. Many people may not realize that the Maryland Plant Atlas shares the same database as the Maryland Biodiversity Project. MBP also works closely with the MD Natural Heritage Program—the arm of Maryland DNR tasked with protecting the state's rare, threatened, and endangered plants and animals. MBP supplies data to the Natural Heritage Program that helps determine more precise methods of conservation. We also do targeted data collection. Last year we had paid interns collecting data on various species of rare butterflies, lightning bugs, odonata, and plants.

Southern Blue Monkshood (*Aconitum uncinatum*).

How You Can Contribute to MBP

One of the questions Bill and I often get asked is how can people submit data to MBP? The easiest way is through iNaturalist which, along with eBird, is one of the most successful community science databases on the internet. iNaturalist allows users to upload photos of plants, animals, fungi, and other organisms, and connect with nature enthusiasts across the globe. Bill Hubick and the MBP development team have created a tool that allows ingestion of data from iNaturalist directly into the MBP database. Hopefully, this last sentence triggers red flags and alarms. We all know that the data on iNaturalist is not infallible and that serious errors can occur with identifications, especially when relying on the iNaturalist AI tool.

Quality Control

First, iNaturalist's "Research Grade" designation has zero bearing on a record getting accepted by MBP. We rely on experts.

A Sampler of Maryland Native Plants from the MBP

Miami Mist (*Phacelia purshii*)

Large Cranberry (*Vaccinium macrocarpon*)

Ipecac Spurge *(Euphorbia ipecacuanhae*)

Slender Bunchflower (Veratrum hybridum)

MBP maintains a list of people who are experts in their fields. If one of our designated experts makes a determination on a record you posted, it most likely will go into a queue for acceptance into the MBP database. If the record is marked as cultivated, or if the locality data is too large, it will be rejected. Bill developed an ingestor tool that allows us to set certain parameters for all records, plus it allows us to ingest iNaturalist tags. For example, if you have a record of a Painted Trillium and used the "In bloom" tag, that data will be used in the phylogeny tables on the Painted Trillium species page on MBP. But there is one final step in quality control. Once a record is accepted by the iNaturalist ingestor, it goes into a final review queue at MBP, which is manned by Bill, myself, and Dr. John Hall. We do our very best to make sure the integrity of the MBP data is top notch and conduct a final review on all records before they are accepted into the MBP database.

MBP Today

The Maryland Biodiversity Project has evolved significantly since its inception in 2012. We now have over 21,000 species in checklists, over 950,000 photos, and over a million records in the MBP database. We run two annual morning flight counts during fall bird migration at Turkey Point and Dans Rock. We have an active volunteer base, and Bill oversees a group of dedicated web developers who keep the website updated, together they create new and exciting ways to present MBP data. We lead frequent field trips that are always free and inclusive to whoever wants to join in exploring our state's rich biodiversity. Twelve years on, it is delightful to pause and recognize that the Maryland Biodiversity Project is thriving and increasing the realization of its mission statement of "*building a vibrant nature study community throughout Maryland*."

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Maryland Biodiversity Project, www.marylandbiodiversity.com

Two Apps for Putting Invasives and Natives on the Map

We all know that we are losing species and ecosystems around the globe at an alarming rate. And it can feel like there is very little we can each do to slow this destruction. But online databases, contributed to by armies of amateur naturalists, are making a massive difference to conservation efforts. With millions of users around the world documenting and uploading the plants they see, land stewards can map plant distributions and improve management plans, scientists can track the impacts of climate change on organisms and suggest mitigation plans, and community groups can target newly arrived invasives for removal. EDDMapS and iNaturalist apps are great for the individual user and they also are linked to many conservation and science projects. Here we take a look at how these two apps work to enhance our plant quests.

Play, Learn, and Contribute with iNaturalist

By PRU FOSTER

Sometimes the universe aligns and doing what we love coincides with doing important work. Using iNaturalist to learn about plants does just that. When you take a photo of a plant (or animal or fungi) in iNaturalist (aka iNat), the app quickly returns an automated identification based on visual characteristics. Snap. We plantaholics get our fix. But iNaturalist goes much further. So long as you don't turn off sharing, your observations will be posted and other users can agree or disagree with an identification or open a discussion about an observation. These universally available observations are how iNaturalist has become a substantial force for good works.

Global data for conservation. For land managers, scientists, and conservationists wanting to promote healthy ecosystems, knowledge of "what is out there" is priceless. More data help us to better understand critical ecosystem dynamics such as what corridors are essential for migration, the impact of roads, or where a disease may spread. Various research and conservation projects use iNaturalist data. For instance, iNat data has been used to map the spread of many invasive species such as sea figs in Uruguay, crayfish in Canada, and invasive beetles in Africa. iNaturalist observations are also used to explore climate change impacts, such as monitoring shifts in Monarch migrations, and the spread of seastar wasting disease on the Pacific Coast. New species have been identified, lost species rediscovered, and distribution maps of species improved with iNaturalist data. As of January 2022, over 2,000 research studies cited iNaturalist as a source of data.

Research grade observations. Some projects use iNaturalist "research grade" observations. These are observations whose identification has been agreed upon by at least two humans. Research grade observations are estimated to be 95% accurate. Thus far, the 7 million users of iNaturalist have provided over 117 million research grade observations. While this "two humans plus" vetting is considered good enough by many projects, others independently verify each piece of iNat data by consulting human experts before incorporating the observation into their database. For instance, the Maryland Biodiversity Project has two levels of human expert verification.

Ways to use iNaturalist. When we are out in the field, we'll most likely use the iNaturalist app on our phones. But we can also use iNaturalist by visiting the website, especially when we want to look at other folks' observations or do some kind of analysis. One way to analyze data is to group observations into an iNaturalist project, which can be done "one-by-one" or automatically based on some inclusion criteria. There are loads of iNaturalist projects to dig into, for instance, there are over 250 projects with the name "Maryland" in them. Other fun ways to use iNaturalist include playing with the "Explore" tab, or checking if the bluebells or lady slippers are blooming. Finally, iNaturalist is helpful to gardeners trying to decide if they want to remove or nurture an unknown plant. Note that for identifying and reporting invasive species, EDDMapS is more appropriate and useful.

Calling all citizen scientists. iNaturalist contributions to science, conservation, learning, and community building will only continue to grow. You can be part of all that, simply by using a free app to learn about plants, and, oh about animals and fungi too.

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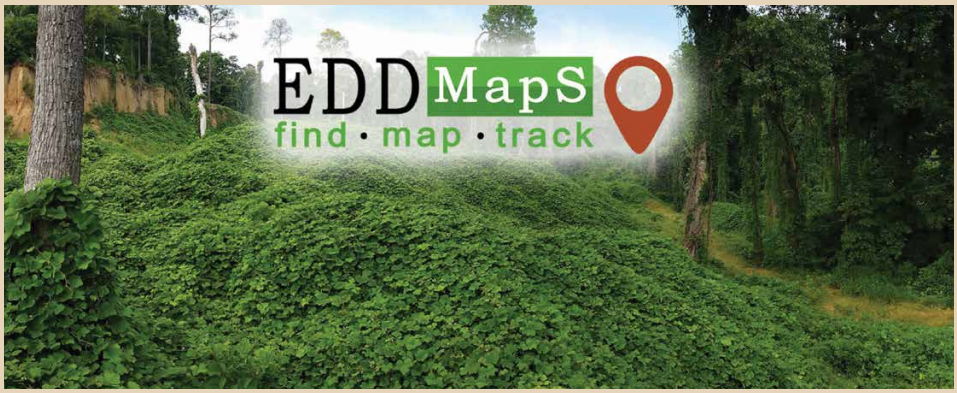
Use EDDMapS to Report Invasives

By REBEKAH D. WALLACE, CHARLES BARGERON and JIL SWEARINGEN

Invasive Species Recognized as a National Threat. Twenty five years ago, President Clinton's Executive Order on Invasive Species (E.O. 13112, 1999) officially defined invasive species and recognized them as a major threat to ecosystems, the economy, and to human health. The Executive Order also charged federal agencies with preventing the introduction and spread of invasive species and taking actions to control them. With support from non-governmental organizations like The Nature Conservancy, Exotic Pest Plant Councils, and the University of Georgia's Center for Invasive Species and Ecosystem Health (Bugwood), federal agencies eagerly responded.

Invasives Database. The first step was to evaluate a growing list of non-native pests throughout the U.S. and to create a database to amalgamate the information. Bugwood already had a large and widely used image database of pest insects, plants, and plant disease organisms (ForestryImages.org), developed with support from the US Forest Service and others. From this image database, Bugwood created the invasive.org website which became the springboard for EDDMapS.

Mapping Invasives. With collaboration and input from many agencies and organizations, Bugwood began developing an associated mapping component connected to its data. In 2006, the group launched the Early Detection and Distribution Mapping System, or "EDDMapS" to help government agencies, NGOs, researchers, and the public document invasives affecting ecosystems. At first, the tool was available only as a desktop computer operation, but Bugwood soon created a field app that was easy to use with a suitable cell phone and a little instruction. Working with the National Park Service, EDDMapS-based



apps like ***'IveGot1'*** (primarily for Burmese pythons in Florida) and the ***Mid-Atlantic Early Detection Network (MAEDN)*** were launched. These and other EDDMapS-based apps led to a surge of reporting across the U.S. and the revolutionary ability to quickly get a picture of where many invasive species occur.

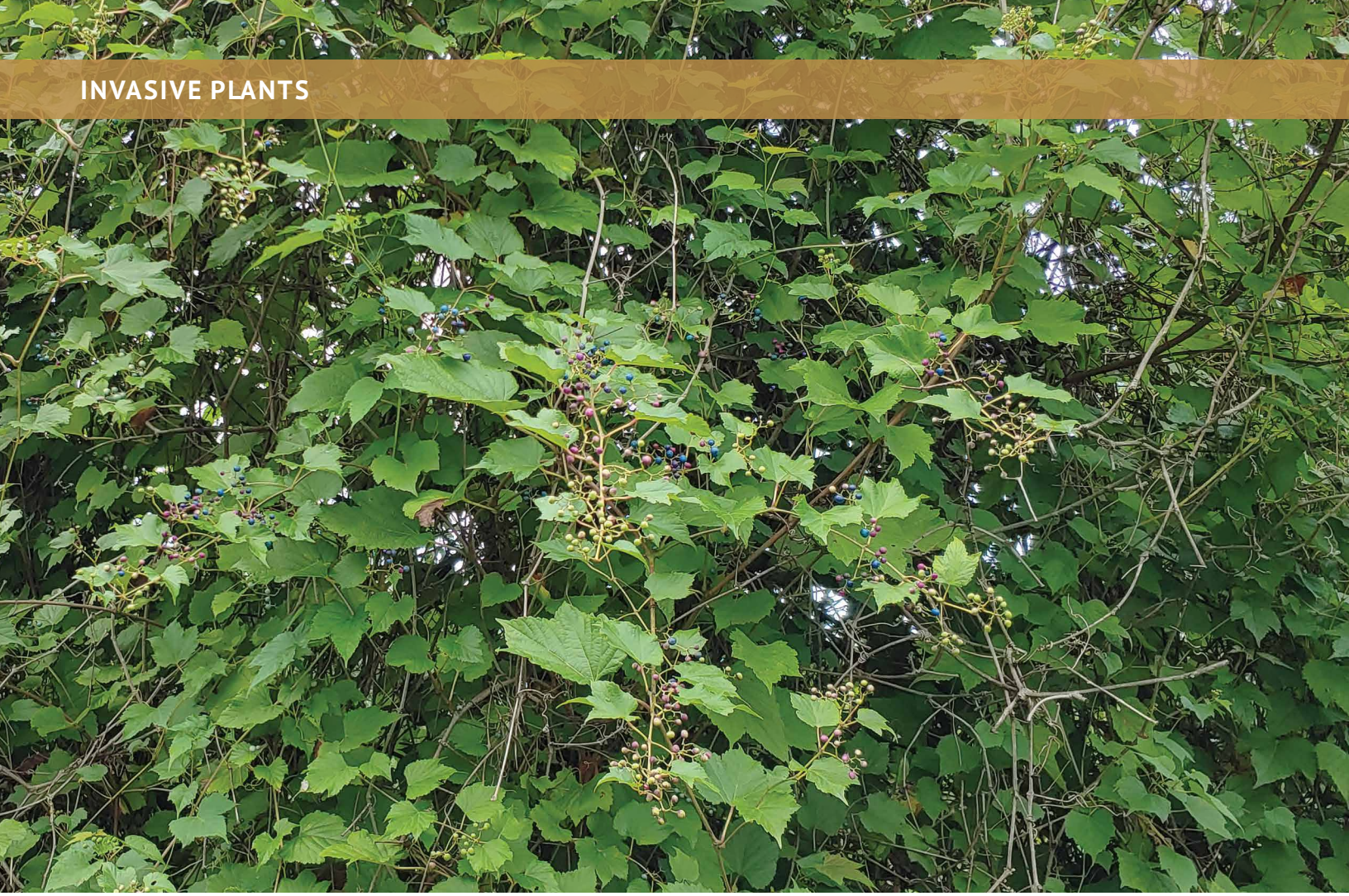
One EDDMapS App. With technology advancements and the desire to streamline reporting, all of the local and regional apps have been retired in favor of a single EDDMapS app for nationwide use. EDDMapS is freely available to anyone with a cell phone or computer. You can use the app in the field to quickly report invasive plants, insects, wildlife and pathogens, and add pictures to support your identification. The app provides images and information to help with identification. Each report is reviewed and verified by qualified experts before being made available–this is a distinctive feature of EDDMapS. An account is needed to report species (you might want to do this while you're home) but is not required for looking at the field guides or maps.

Sharing Data. Anyone can download and incorporate data from EDDMapS into their systems by using the Advanced Query Tools or through the Bugwood API. Researchers, managers, and policymakers can access species occurrence maps and underlying data for analysis and the development of management and prevention plans. The EDDMapS Tools page and EDDMapS Dashboards allow users to query data, view graphs and statistics, and see recent observations. For grants, awareness campaigns, and other efforts, EDDMapS Projects can be used to link records related to a unique project.

EDDMapS Impacts. EDDMapS' distribution maps help educate the public, policy-makers, land managers, and others to better understand the scope of the invasive species problem, develop management and prevention plans, report new invasives, and track the spread of invasives in the U.S. and Canada. As of February 2024, EDDMapS contains 8 million reviewed and publicly available records covering over 6,000 invasive species submitted by more than 34,000 reporters across the US and Canada.

To download the app. Go to: apps.bugwood.org/apps/eddmaps/ or to your phone's app store and type in EDDMapS.

The Bottom line: If you are mainly interested in reporting invasive species, use EDDMapS. If you are trying to identify a native plant, animal, or other organism, use iNaturalist. Your observations matter!



Porcelain berry (*Ampelopsis glandulosa* ssp. *brevipedunculata*) overtakes native vegetation in a park in suburban Maryland. Photo by Jil Swearingen.

A Rational Approach to Invasive Plants

By PRU FOSTER

I spend part of every day wandering my garden. I meander along the paths and check on all the plant babies. Who is budding? Who is blooming? Who needs water? There are a thousand questions to be answered. But my peace and wonder are often shattered by anxiety at the sight of swaths of stilt grass or blankets of English Ivy. I wonder "How am I ever going to win *that* battle?" More depressing still is the thought that even if I can remove all the invasives, many of them will rebound the moment I turn my back. It's safe to say that I am one of the more obsessive of gardeners, yet I am not winning my battle against invasives. How can we expect normal people to even try?

It turns out that I have been approaching the invasives issue in "A hamster running in her wheel" kind of way rather than in a "Gaia bringing forth new life" way. Writing this article, I've learned about some critical mistakes I was making, like trying to remove the most persistent invasives first rather than targeting new arrivals. I've learned about easy ways to contribute to the fight against invasives beyond my patch - using iNaturalist or EddMaps (see pages 16-17). And I've also come to the reluctant, yet empowering, conclusion that the judicious application of herbicides is my best hope for getting rid of Japanese honeysuckle and wineberry amongst the tulip tree roots. Altogether, these new perspectives have reframed my lonely, desperate battle against invasive plants into part of a coordinated and effective attack. One message stands out: The starting point of the battle against invasives is arming ourselves with knowledge.

Global View of Invasives. Most readers will probably know what invasives are and why there is so much concern over them. But just to be clear: invasive plants are non-native species that were introduced by humans AND disrupt ecosystem functions. Once they get a foothold, invasives replace highly diverse communities of native plants, animals, and other organisms with dense, often monocultural, growths of introduced plants. These new communities disrupt ecosystem functions by altering soil

chemistry and fertility in favor of non-natives, displacing native host plants needed by native insects, and the wildlife that depends upon the insects. There are uncountable ways in which the loss of habitats cascades into other negative impacts, including the loss of flood prevention, soil retention, and carbon sequestration.

There are about 37,000 established non-native species worldwide. Less than 10% of these exotic species—about 3,500 species, are considered invasive. Amongst non-native plants in the U.S., only 6% (1061 plants) are considered invasive. However, the impact of these species on our ecosystems is immense. Sometimes folks will use the word "invasive" for native plants that grow aggressively, such as Golden Ragwort *(Packera aurea)* or Woodland Oats (*Anemone canadensis*). However, by definition, invasives are non-native, introduced species that harm biodiversity. To avoid confusion, it's probably best to refer to the muscular natives as "aggressive" or "weedy" rather than "invasive".

The United Nations has identified invasive species as one of the five horsemen of the biodiversity apocalypse - and we must stop this apocalypse if we are to have a viable future. The other four horsemen driving the biodiversity apocalypse are land use change, pollution, climate change, and excessive hunting. Invasives are included as one of the horsemen, in part, because they have contributed to 60% of all recorded species extinctions. And, even though extinction rates today are 10 to 100 times higher than ever seen in the geological record, this is not what keeps ecologists awake at night, rather is what *accompanies* the high modern extinction rate. Underlying nearly every extinction are mountains upon mountains of losses of local populations and impairment of ecosystem functions. In other words, extinctions are usually just the tip of the iceberg of biodiversity impacts.

Fig Buttercup (*Ficaria verna*) invades the forest floor and trailsides at Chesapeake and Ohio National Historical Park, Cabin John, Maryland. Photo by Jil Swearingen.

Three-way hellscape of non-native invasives: English Ivy (*Hedera helix*), Creeping Euonymus (*Euonymus fortunei*), and Lilyturf (*Liriope spicata*). Photo by R.H. Simmons.

Invasives in Maryland. There are roughly 300 invasive plants in the mid-Atlantic. As Marylanders, we can see the contribution of invasive species to the loss of local populations across the state. Common reeds in Maryland's marshes grow deep roots and quickly outcompete natives as well as alter the soil chemistry in their favor. Barberry boosts invasive earthworm populations, leading to erosion and sediment problems, as well as harboring high quantities of deer ticks. Invasive vines like English Ivy (*Hedera helix*) and Japanese Honeysuckle (*Lonicera japonica*) strangle trees and shrubs, and displace and repel native herbaceous plants. Bradford pear (*Pyrus calleryana*) invades so fast as to reduce the meadow and shrub phase of succession (following a disturbance like a tree fall) from the normal 20 years to just 5 years - depriving our open-woodland creatures of much-needed habitat. This list, as I'm sure you know, goes on and on.

Fight invasives with knowledge.

To develop successful strategies for fighting invasive species, we first need to understand the stages involved in their establishment: simply described as "arrive, survive, and thrive". *Arrive*: First, a plant is introduced by humans, either on purpose or inadvertently, to an area where it is

continued on page 20

Invasives *continued from page 19*

not native. Kudzu (*Pueraria montana* var. *lobata*), for example, was intentionally introduced to the U.S. and distributed in southern states to stop erosion. Stiltgrass (*Microstegium vimineum*) snuck into the US as packing material for porcelain. *Survive*: The second stage is when the non-native plant establishes a local community. Japanese Spurge (*Pachysandra terminalis*) is establishing new patches in my back garden as you read this sentence. *Thrive*: Finally, the non-native plant spreads (with help from wind, water, wildlife, or humans, including gardeners), and colonizes new locations. We can battle invasives at any of these three stages, but success requires knowledge of each species' biology and habitat adaptability, in order to choose the most appropriate control strategies.

Arrival Stage. As you may well guess, preventing the introduction of invasive species is by far the most effective way to control invasives. The metaphor "Don't let the genie out of the bottle" couldn't be more appropriate. It may surprise you that an estimated 82% of invasive species in the United States were introduced through horticulture! It is surely irresponsible to knowingly sell ecologically damaging plants, but this practice continues. Maryland law defines 'Tier 1' plants as those which can not be sold, due to their ecological or economic threat, and 'Tier 2' plants as those which can only be sold if the nursery posts signage stating "This plant is invasive". At the time this article was sent to print, there were just six 'Tier 1' and 13 "Tier 2" plants. Hopefully, these laws will be strengthened through the actions of the Maryland Native Plant Coalition, Maryland representatives Linda Foley and Ben Brooks, and our voices of support to our representatives. Meanwhile, we can all take the extremely effective action of not planting or spreading any invasives, regardless of regulation.

Survival Stage. The second phase of invasion is the establishment of patches of invasive species. It is far easier to remove a small patch than a dispersed one, but it requires quick identification and action. As naturalists, we can provide critical observations using EDDMaps, and as stewards, we can target new plant colonies for removal. My garden has small patches of four highly invasive species: White Mulberry (*Morus alba*), Leatherleaf Mahonia (*Mahonia bealei*), Fig Buttercup/ Lesser Celandine (*Ficaria verna*), and Chinese Silver Grass (*Miscanthus sinensis*). Because they are all readily spread by wildlife and the wind, and they are in small patches, I've prioritized them for removal.

Giant Hogweed (*Heracleum mantegazzianum*) is by far the largest of any of the Apiaceae in Maryland and is rarely encountered. Its sap can cause serious harm to human flesh. It is sometimes confused with the much smaller and non-toxic native Cow Parsnip (*Heracleum maximum*) that lacks purple splotches on stems. Photo courtesy Invasive Species Council of British Columbia.

"Perhaps the most impactful shift in my approach to battling invasives is the appreciation that the war against invasives isn't lost just because I can't control all the invasives where I garden."

Thrival Stage. (ha ha) And then there is phase three: trying to control, or even eradicate, an invasive species that is thriving. It is in this frontier that I have focused my battle against invasives, spending hour upon hour pulling and digging. Small wonder I felt defeated. Granted, I have had a few successes - garlic mustard is nearly gone and we've saved the native trees from an English Ivy (*Hedera helix*) chokehold. But I have had far more failures than successes. I've tried hard to remove Japanese stiltgrass (*Microstegium vimineum*), Amur honeysuckle (*Lonicera mackii*), and multiflora rose (*Rosa multiflora*). In retrospect, my efforts were pretty much doomed to failure.

The stiltgrass is in the lawn now as

well as being abundant on neighbors' properties. The roots of honeysuckle and multiflora rose, I've learned, are resilient, and little bits left in the soil have resulted in resprouting. Like many a naturalist before me, I've concluded that if I want native cover in my woodland, I will have to employ herbicides. Not the dreaded rampant spraying of herbicide on foliage, but rather small amounts of herbicide applied judiciously to freshly cut stems. And stiltgrass? I am endeavoring to accept that the stiltgrass will be back. This is not to say I won't pull it out and mow it down as the summer progresses. But rather I'm learning to accept that de-stilting is likely to be an annual task and I'm changing some garden beds to make trimming easier.

A new mindset. Perhaps the most impactful shift in my approach to battling invasives is the appreciation that the war against invasives isn't lost just because I can't control all the invasives where I garden. Rather, I'm learning to focus on battles that can be won: removing newly established colonies, not introducing new invasives, and strengthening laws. And we can all contribute to mapping and reporting the species that are in our areas. There's also hope for the invasive "genies that are already out of the bottle". Clever gardeners may yet develop cultural approaches to kill off invasive populations, or scientists may discover a fungus or virus or insect that attacks only a certain plant. Meanwhile, there are plenty of effective steps we can take against invasives to give our ecosystems a better chance to thrive.

Non-native invasive Asian Jumpseed (*Persicaria filiformis*) (left) and native Virginia Jumpseed/ Knotweed (*Persicaria virginiana*) (right) along Arlington Run, Arlington County, VA. Photo by R.H. Simmons.

Weapons in the Anti Invasives Arsenal

KNOWLEDGE. Which invasives are present, which are on the brink of exploding?

LEGISLATION. Support invasive species legislation by writing letters and electing sympathetic officials.

CITIZEN SCIENCE. Log your observations of invasive species with EDDMapS.

PREVENTION. Never plant or share invasive species. Cut flowers before fruit set and cut maturing fruits to prevent spread by seeds.

LOCAL BATTLES.

Take an inventory of the plants in the area you are targeting.

Prioritize which invasives to remove first - especially small new outbreaks.

Research what methods of control work best for your targets.

Make a plan and perhaps jot down a few key tasks in your yearly calendar.

Execute your plan.

SPREAD THE WORD. Share your knowledge, and maybe some of your native plants.

SMILE. Thank yourself for making a difference.

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MNPS Welcomes New Treasurer – Kirsten Hoffman

Kirsten Hoffman, MNPS' new treasurer, in front of limestone caves at Old Man's Cave, Hocking Hills State Park, Ohio

We are delighted to welcome Kirsten Hoffman to the board of the Maryland Native Plant Society (MNPS). Kirsten started working with the board this January and is already contributing significantly to MNPS administration as well as helping with a few projects. Kirsten is a retired architect and, most importantly, a native plant enthusiast. She is a board member of the Green Towson Alliance, where she helped develop a native street tree plan for downtown Towson and training materials for Baltimore County weed inspectors. As a Blue Water Baltimore Tree Steward for her neighborhood, she helped residents purchase, plant, and maintain more than 100 native trees over the past two years. Kirsten completed her Master Naturalist training at Cylburn Arboretum in 2023 and is currently working on a forest stewardship project for the arboretum. Starting in 2022, Kirsten assembled the working group that wrote and helped pass state legislation establishing the Maryland Native Plants Program. As a founding member of the Maryland Native Plant Coalition, she is working on legislation to update and improve Maryland's invasive plant law. Kirsten lives in Towson with her husband, the youngest of her three children, and her two cats. We are thrilled to have Kirsten on the board and are especially grateful to her for stepping up to the role of Treasurer. We look forward to working with her to promote the mission of the MNPS.

Mountain Maryland Native Plant Festival - May 11, 2024

NEW GERMANY STATE PARK, GRANTSVILLE, MARYLAND

Come celebrate the critical connection between native plants, people, and wildlife at the Ninth Annual Mountain Maryland Native Plant Festival, Saturday May 11th (10:00AM to 3:00PM), New Germany State Park in beautiful biodiverse Garrett County, Maryland. The main festival sponsors are New Germany State Park, Friends of New Germany State Park, and the Maryland Native Plant Society.

Volunteers, park staff, native plant nurseries, artisans, and conservation groups have teamed up to provide this festival highlighting the importance of native plants in the landscape. Always held on the second Saturday in May, the festival features native plant talks, native plants and craft for sale, displays peopled by natural resource experts, volunteers, and enthusiasts. The festival is FREE but your support of these vendors and groups through your purchases and donations is deeply appreciated!

For more information and updates on the Mountain Maryland Native Plant Festival, visit the MNPS event web page (mdflora.org) or phone the park office at 301-895-5453.

Despite the cold, rainy weather at the 2023 festival, native plant enthusiasts took their time to look through a large variety of native plants to find the perfect one for their garden.

FORMAL PROGRAMS

Jen Johnson, Owner/operator, Native Roots, Inc.- *Restoring Ecological Services with Native Plant Gardening.*

Ian Caton, Owner/operator, Wood Thrush Native Plant Nursery - *Super Tough Wildflowers.*

Mitch Hall, Director of Landcare Services, Fourth River Workers Guild - *Reading Between the Lines*

Alba Tirado

A monarch that Alba raised from an egg and released, stops by to say "Thanks Alba, for everything".

A true native plant hero who has given away more than 1,000 native plants (mostly native ecotypes!) Alba started humbly with no prior gardening experience, a yard full of non-natives, and some pesky invasives. Having lived through a severe drought as a teen, she was motivated to do something different in her yard. She learned about the Montgomery County Rainscapes program and about the same time heard Doug Tallamy speak about the interconnectedness of our yards and nature.

Twelve years and many garden hours later, Alba has transformed her landscape into a thriving ecosystem filled with mostly native ecotype species. "*I dug up my entire front lawn (start small they all said, ha, ha, ha) in an effort to sequester as much water as quickly as possible*." Now her yard is a year-round haven for Bluebirds, Chickadees, Cardinals, Carolina Wrens, Robins, White-throated Sparrows, Tufted Titmice, abundant pollinators, and an occasional opossum. To manage stormwater, Alba installed a 350-gallon cistern, eleven 55-gallon rain barrels, and a 1,000-gallon pond, connected by a series of pipes and berms to direct the water.

Alba has become an accomplished gardener and land manager. She shares plants from her garden with her friends, neighbors, and anyone else who shows an interest, including letter carriers, delivery folks, and trash collectors. She is a regular and prolific contributor to plant swaps held by the Wild Ones, Brookside Garden's Greenscapes, and school programs, and is an active Montgomery County Weed Warrior.

"*I love that my garden is a Native Plant ambassador—folks stop by to read signs scattered throughout; children stop by to study and count the bees and insects, and occasionally strangers tell me that my garden was instrumental in their ridding their yard of lawn and planting natives.*"

Liz McDowell

Liz McDowell at the native plant demonstration garden, New Germany State Park. Photo by MNPS member JoAnn Kociolek.

Liz grew up in Philadelphia where her only "green space" was a small neighborhood park. She moved to Frostburg in 1979 to study cave-dwelling bats at the Appalachian Laboratory. After earning an MS in wildlife management, she chose the mountains of Maryland as her home. It was here that she discovered nature and a passion to share it with others. Today her educational outreach efforts emphasize the critical impact that individuals can have on regional biodiversity by planting appropriate native species and by removing exotic invasive species.

Liz worked as a naturalist and resource biologist for the MD Department of Natural Resources, an environmental specialist for the MD Department of the Environment, and a science teacher at Northern Garrett High School. In 2002, realizing that "life's too short" and missing her time outdoors, she and her husband, Ron Boyer, started a nature company—offering ecotours and outdoor classes—and a native plant nursery specialized in propagating local ecotypes. Their business is now closed, and they've shifted to other projects such as organizing volunteers to remove invasive plants at Bear Pen Wildlands, strengthening the native plant community, and educating others.

In 2006, along with Judith Gaydos and Cheryl Lough, Liz started the Western Mountains MNPS Chapter, with a focus on the Allegheny Plateau and Ridge & Valley of the central Appalachians. In 2014, Liz organized the first annual Mountain Maryland Native Plant Festival to celebrate the connection between native plants, people, and wildlife (see p. 22 and mdflora.org). With seemingly boundless energy, Liz, Linda Harris (Mountain Laurel Garden Club), and Ashley Bodkins (University of Maryland Extension) organized "The Power of Native Plants", a symposium held in April at Garrett College!

We're so grateful that Liz has chosen to spend her time connecting with people to promote the use of native plants and the preservation of native habitats in Maryland's mountains.

We hope Liz's and Alba's remarkable commitment to the environment and their actions inspire and bolster your ecowarrior efforts. Consider leading a field trip or recruiting someone else as a leader. If you are interested in getting more involved with MNPS, please reach out to info@mdflora.org, we'd love to hear from you!

Marilandica
Maryland Native Plant Society
PO Box 4877
Silver Spring, MD 20914

OUR MISSION

Promote awareness, appreciation and conservation of Maryland's native plants and their habitats. We pursue our mission through education, research, advocacy, and service activities.

Become a member.
Join online:
www.mdflora.org

UPCOMING EVENTS (MAY–NOVEMBER)

May 1-31 Statewide Plant Blitz. See MNPS website (mdflora.org) for details. Please join us this May for a field trip, or two. We'll be offering excursions across the state and documenting the plants we encounter with the iNaturalist app. If you'd like some training on how to use iNaturalist, we're holding a training session on April 23. By using iNaturalist, we'll be able to easily contribute data to the Maryland Biodiversity Project. To register for the field trips and the iNat training, visit mdflora.org/events.

May 11 Mountain Maryland Native Plant Festival, New Germany State Park, Grantsville, Maryland. See MNPS website (mdflora.org) for details.

MNPS Monthly Programs (Tuesdays, 7:00-9:00pm)*

Registration is required. Talks start at 7:30pm.** All programs are by Zoom and are recorded, unless indicated otherwise. Zoom opens at 7:00pm for board update and member Q&A. For registration, updates, and recordings of past presentations, go to **mdflora.org

June 25 Jenan El-Hifnawi. *Ask A Bumble Bee! Exploring Bumble Bee Floral Preference*

July 30 Wesley Gould. *Living shorelines of Maryland's Chesapeake Bay*

Aug 27 Faith Campbell. *Maryland's Trees Under Attack: What We Can Do About It?*

Sep 24 Chris Ludwig. *Grassland Restoration Project*

Oct 29 Rod Simmons. *Threatened Apiaceae of Maryland and vicinity*

Nov 26 Diane Beedle. *Community Native Planting Project*

Wild Blue Phlox (*Phlox divaricata*) in Cabin John MD, April 20, 2022. Photo by Jil Swearingen.