



GREEN SPRING GARDENS

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USING NATIVE PLANTS TO ATTRACT BUTTERFLIES, MOTHS, BEES, AND - OTHER POLLINATORS IN THE WASHINGTON, D.C. AREA -

Gardening for wildlife is a unique kind of gardening that aims to attract and sustain wildlife. Butterflies, moths, bees, and other pollinators make a garden come alive. This information sheet features native plants that can help create a pollinator-friendly garden.

Our local plants and animals evolved together, so native plants are usually essential for hosting the egg-laying and larval stages critical to the life cycle of butterflies and moths. The flowers of native plants provide an abundance of pollen and nectar for adult butterflies, moths, bees, and other insects. Nectar provides carbohydrates for energy and water, and pollen provides protein and other nutrients. Other pollinators in our region include hummingbirds, beetles, wasps, and flies. An extensive list of references are available on P. 17 – 19: most of these publications and websites were used as references when developing this information sheet.

Pollination is the transfer of pollen from the male parts of a flower to the female parts of the same or another flower. Most flowering plants (angiosperms) need to be cross-pollinated by animal pollinators to produce fertile seed. Animal pollinators perform cross-pollination by moving pollen among flowers on different plants. Animals help pollinate over 75% of plants (<https://www.fws.gov/pollinators/>). Some plants rely on wind pollination such as most conifers (gymnosperms) and some flowering plants such as oaks and grasses. About 12% of flowering plants are wind-pollinated (<http://www.fs.fed.us/wildflowers/pollinators/wind.shtml>). Most of the time pollen is transferred between plants of the same species, but in nature hybrids between plant species are common in some genera: hybrid oaks are an example. In addition, a small number of plants are pollinated by water.

Self-pollination is the movement of pollen within a flower or between flowers on the same plant. These plants are self-compatible or self-fertile, but many still benefit from pollen vectors such as wind or insects. One native plant that can self-pollinate if animal pollinators are not available is bloodroot (*Sanguinaria canadensis*): it blooms in early spring (*Pollinators of Native Plants* by Heather Holm).

BUTTERFLIES

Butterfly Food Requirements

Food requirements change during the various stages of their life cycle. Plants that nourish caterpillars (larvae) are called **host plants or larval food plants**. Many adult butterflies feed on nectar from flowers.



Caterpillars (Larvae)

Most butterflies have specific host plant requirements. Some butterfly species can only use one plant species as a larval food plant, while caterpillars of other butterfly species can feed on a wide range of plants. Butterflies lay eggs on or near their host plants, and caterpillars hatch from these eggs. Most caterpillars eat leaves, but some eat flowers, fruits, and seeds. They molt or shed their skins several times

as they grow, then pupate to transform into an adult butterfly. Caterpillars are critical to the survival of birds: most terrestrial birds rely on insects and spiders to feed their young.

Adult Butterflies

When a butterfly emerges from its pupa or chrysalis, it has transformed into an adult butterfly. **Most adult butterflies use their tongue (proboscis) to sip nectar.** Unlike caterpillars, the adults of many species are less particular about nectar sources. Some plant species are highly preferred for nectaring and attract many species of butterflies, while other nectar plants attract less butterflies. Butterflies nectar on what is locally available. **Not all adult butterflies feed on nectar.** Some butterflies only occasionally or never feed on nectar: some feed on tree sap, rotting fruit, decaying fungi, carrion, dung, or aphid honeydew. Some butterflies only live off food reserves obtained during the larval stage.

Gardening For Butterflies and Other Pollinators

Attracting butterflies and other pollinators to your garden is easy and fun. Some basic steps for success are:

- **Grow a diversity of native plants to provide flowers throughout the growing season, with a variety of flower colors.** Cluster plants of the same species together to make it easier for pollinators to feed. Most woodland wildflower species bloom in the spring, but some species bloom in the summer and fall. Most native sun-loving perennials start to bloom later in the spring, with a large number of species blooming by midsummer and plenty of species blooming into the fall.
- **Grow a mixture of nectar and host plants to provide food for all stages of the life cycle of insects.** A diversity of habitats is important – most adult butterflies find nectar in sunny areas. Many trees and shrubs are host plants and overwintering sites, so mimic nature and grow layers of herbaceous and woody vegetation.
- **Eliminate pesticide use, especially insecticides** - Most insecticides do not discriminate between ‘good’ and ‘bad’ insects. This includes organic insecticides such as Bt, which is used to control unwanted caterpillars and mosquitoes. The populations of many butterfly species have been reduced by sprays to control gypsy moths. Monarch populations have been significantly reduced by applications of Roundup (glyphosate) on plantings of corn, soybeans, and other crops genetically altered to tolerate the herbicide. Spraying of communities for the Zika virus at night may affect some pollinators as well, such as moths.
- **Take a more relaxed approach to turf care and to maintaining the less formal areas of your yard.** Let some plants that seed readily like wild blue violets decorate portions of the lawn and garden beds. Many weedy plants are larval food plants, nectar plants, and important sources of food for other pollinators.
- **Leave dead foliage of many perennials up until early spring to allow for winter cover, and do not be too tidy in your spring cleanup** - Some butterflies overwinter as larvae or pupae in leaf litter at the base of host plants. Rake up leaves only where you absolutely need to in garden beds, such as an extra thick layer from leaves blowing in.
- **Protect existing native plant communities and their specialized habitats if you live by a natural area.** Ecological restoration is also used to restore native plant communities. -
- **Remove invasive plants and when needed replace them with native plants** - The Division of Natural Heritage in the Virginia Department of Conservation and Recreation lists invasive plant species in Virginia on their website (<http://www.dcr.virginia.gov/natural-heritage/invspdflist>). Invasive plants are found in gardens and in natural areas.

Gardening For Native Bees

Many native plants do not attract butterflies or moths but are valuable sources of pollen and nectar for native bees, including Virginia sweetspire (*Itea virginica*). Bees pollinate more plant species than any other group. The USDA estimates that bees pollinate about 75% of the fruits, vegetables, and nuts that we eat in the U.S, with native bees being effective pollinators of many fruits and vegetables. It is estimated that 80% of the world’s flowering plants are pollinated by native bees. Steps to attract butterflies will also benefit native bees. In addition, many native ground-dwelling bees need bare ground to nest, so leave some bare

soil in the landscape. Standing dead trees, a stump, a standing log, or brush piles can support cavity-nesting bees (<https://www.usgs.gov/news/buzz-native-bees> and http://www.xerces.org/wp-content/uploads/2008/11/farming_for_bees_guidelines_xerces_society.pdf).

Native bees assist in pollinating some food plants that are self-fertile. Although tomatoes are self-compatible, flowers need to be vibrated by wind or bees in order to release pollen for fertilization. To achieve the most effective pollination, flowers must be vibrated at a specific frequency to release the pollen. Bumble bees and other native species can produce this frequency (*Native Bee Pollination of Cherry Tomatoes* - http://www.xerces.org/wp-content/uploads/2008/10/factsheet_cherry_tomato_pollination.pdf).

A. NATIVE PLANTS FOR BUTTERFLIES IN THE WASHINGTON, D.C. AREA

The following plants have ornamental value, documented wildlife value, and are available in the nursery trade from propagated sources. Most species are native to Virginia unless otherwise noted. Plants not native to Virginia are native to the eastern and southeastern United States. Most of these plants are growing at Green Spring Gardens.

The most important perennial plants for butterfly gardens are in table format since they are a favorite of gardeners. Woody plants as well as some other perennials are in list format. Plant information sheets with more detailed cultural information about these plants is available under **Gardening** on Green Spring’s website (<http://www.fairfaxcounty.gov/parks/greenspring/>) or in the Green Spring library. **Many butterfly species are uncommon or rare in the Washington, D.C. area and have localized populations in natural areas.** Many butterfly species are unlikely to be found in home gardens unless they are by natural areas and specialized habitats.

1. Native Perennials For Butterfly Gardens In The Washington, D.C. Region

Scientific Name & Common Name Of Plants That Are Common Food Plants For Butterflies An extensive amount of information was obtained from Butterflies and Moths of North America (http://www.butterfliesandmoths.org).	Food Plants For Caterpillars For The Following Butterfly Species In The Eastern U.S. Species are common or abundant in the Washington, D.C. area unless otherwise noted (http://leplog.wordpress.com/local-and-regional-lists-and-info/butterflies-occurring-in-the-dc-area/). The D.C. area is defined as Arlington, Alexandria, & Fairfax counties in Virginia, as well as the District of Columbia & Montgomery & Prince George’s Counties in Maryland.	Adult Butterflies In The Eastern U.S. (Mostly Nectar Plants) Species are common or abundant in the Washington, D.C. area unless otherwise noted. The adults of many species are less particular about nectar sources so few are listed.
<i>Antennaria plantaginifolia</i> <i>A. virginica</i> (pussytoes)	American lady Painted lady (uncommon)	Adult – 2 uncommon species reported: Eastern pine elfin Juniper or olive hairstreak

<p><i>Asclepias</i> (milkweed) – the easiest species to grow in gardens is <i>A. tuberosa</i> (butterfly weed)</p> <p>Other species for gardeners: <i>A. exaltata</i> (tall milkweed; likes light shade; harder to purchase & grow than some others) <i>A. incarnata</i> (swamp milkweed; constantly moist to wet sites) <i>A. purpurascens</i> (purple milkweed; rare in VA; buy propagated plants) <i>A. syriaca</i> (common milkweed; excellent host plant - naturalistic use in larger spaces since spreads by rhizomes)</p>	<p>Monarch</p>	<p>Adult</p>
<p>Aster - old scientific name for North American species but still the common name (an Asian species at Green Spring is still <i>Aster</i>).</p> <p>When using the old classification, Aster ranks #2 for herbaceous plants for supporting butterfly & moth species according to research by Douglas Tallamy – http://www.bringingnaturehome.net/what-to-plant.html.</p> <p>See plant species for butterflies under <i>Doellingeria</i>, <i>Eurybia</i>, & <i>Symphotrichum</i>.</p> <p>According to the above research, <i>Eurybia</i> & <i>Ionactis</i> did not support butterflies or moths. However, in <i>Illinois Wildflowers</i> (http://www.illinoiswildflowers.info) they were reported to attract some butterflies.</p>	<p>Best for <i>Doellingeria</i> & <i>Symphotrichum</i> species:</p> <p>Pearl crescent</p> <p>Silvery checkerspot (uncommon – specialized habitat)</p> <p>Note: <i>Pollinators of Native Plants</i> by Heather Holm lists <i>Eurybia macrophylla</i> (large-leaved aster) as a host plant for both butterfly species in MN.</p>	<p>For <i>Doellingeria</i> & <i>Symphotrichum</i> species: Adult (sun-loving asters attract the most)</p> <p>Note: <i>Pollinators of Native Plants</i> by Heather Holm does not list <i>Eurybia macrophylla</i> (large-leaved aster) as attracting adult butterflies in MN.</p> <p>Only successful at Green Spring in the Rock Garden: <i>Ionactis linariifolia</i> (stiff-leaved aster; needs very dry sites such as rock gardens).</p>
<p><i>Baptisia australis</i> (wild blue indigo)</p> <p><i>B. tinctoria</i> (yellow wild indigo) - needs sandy soil unlike the others (made a sand bed at Green Spring).</p> <p>Note: <i>B. alba</i> (wild white indigo) – the similar Midwestern <i>B. lactea</i> is a host plant for clouded sulphur in MN (<i>Pollinators of Native Plants</i> by Heather Holm).</p>	<p>Eastern tailed-blue</p> <p>Orange sulphur</p> <p>Wild indigo duskywing</p> <p>Hoary edge (uncommon)</p> <p><i>B. tinctoria</i> also is a host for clouded sulphur.</p> <p>Frosted elfin (rare; <i>B. tinctoria</i> & sometimes <i>B. australis</i>)</p>	<p>Attract a few adult butterflies</p>

<p><i>Chelone obliqua</i> (pink turtlehead; the best pink species) & <i>C. glabra</i> (white turtlehead)</p> <p>True <i>C. lyonii</i> (pink turtlehead; native to NC & other states) is harder to find & grow.</p>	<p>Common buckeye (feeds on <i>Chelone</i> species but rarely eats <i>Chelone</i> in NC so may be true in VA also)</p> <p>Baltimore checkerspot (uncommon; feeds on <i>C. glabra</i>)</p>	<p>Adult – monarch at Green Spring</p>
<p><i>Cimicifuga racemosa</i> (preferred in Tropicos) or <i>Actaea racemosa</i> (in the Flora of Virginia & preferred in Encyclopedia of Life) (common black cohosh, bugbane, fairy candles)</p>	<p>Appalachian azure (rare)</p>	<p>Adult – have seen eastern tiger swallowtail at Green Spring</p>
<p><i>Conoclinium coelestinum</i> (<i>Eupatorium coelestinum</i>) - blue mistflower - fairly short & seeds around</p>		<p>Adult</p>
<p><i>Coreopsis major</i>, <i>C. verticillata</i>, & other species (coreopsis)</p>		<p>Adult</p>
<p><i>Delphinium tricornis</i> (dwarf larkspur)</p>		<p>Adult</p> <p>Note: <i>D. exaltatum</i> (tall delphinium) according to Missouri Botanical Garden but no butterflies listed on wildflower.org</p>
<p><i>Doellingeria umbellata</i> (<i>Aster umbellatus</i>) (flat-top aster, tall flat-topped white aster)</p>	<p>Pearl crescent</p> <p>Silvery checkerspot (uncommon – specialized habitat)</p>	<p>Adult</p>
<p><i>Echinacea purpurea</i> (eastern purple coneflower; naturalized in Va. – native to NC & other states). This species has been crossed with other more western species such as <i>E. pallida</i> & <i>E. paradoxa</i> to produce many colorful cultivars.</p> <p>Note: <i>E. laevigata</i> (smooth purple coneflower) is the true Va. native & it is not grown in gardens. It is imperiled in VA, federally endangered, & hard to grow.</p>		<p>Adult – commonly see great spangled fritillary</p>
<p><i>Erigeron annuus</i> (annual fleabane) - an annual species that reseeds readily.</p> <p><i>E. pulchellus</i> (Robin's plantain) - herbaceous perennial; found on soils in nature with higher calcium levels - calcareous soils; harder to grow in our region than the above.</p>		<p>Adult</p>

<p><i>Eryngium yuccifolium</i> (rattlesnake master)</p>		<p>Adult – at Green Spring have observed red-banded hairstreak & American snout (uncommon). Several species were reported in MN (<i>Pollinators of Native Plants</i> by Heather Holm)</p>
<p><i>Eurybia divaricata</i> (white wood aster; can reseed & spread vigorously) <i>E. macrophylla</i> (large-leaved aster; more vigorous in the mountains)</p> <p><i>Eurybia</i> did not support butterflies or moths according to research by Douglas Tallamy at the University of Delaware (http://udel.edu/~dtallamy/new_xls/webplants.xls). However, <i>Illinois Wildflowers</i> (http://www.illinoiswildflowers.info) reported some.</p>	<p>Possibly pearl crescent & silvery checkerspot (uncommon – specialized habitat)</p> <p>Note: <i>Pollinators of Native Plants</i> by Heather Holm lists <i>E. macrophylla</i> as a host plant for both butterfly species in MN.</p>	<p>Adult (shade-loving aster do not attract many butterflies compared to sun-loving asters)</p> <p>Note: <i>Pollinators of Native Plants</i> by Heather Holm does not list <i>E. macrophylla</i> as attracting adult butterflies in MN.</p>
<p><i>Eutrochium</i> species (<i>Eupatorium</i> was the former name of most species)</p> <p>Joe Pye Weed – tall pink-flowered species: <i>Eutrochium dubium</i>, <i>E. fistulosum</i>, & <i>E. maculatum</i> are the most commonly grown.</p> <p>Note: another former <i>Eupatorium</i> is now <i>Conoclinium coelestinum</i> (blue mistflower) - fairly short & seeds around.</p>		<p>Adult</p> <p>Note: Several other plant species for meadows & naturalistic use. <i>Eupatorium perfoliatum</i> (boneset) still has the original name - white flowered & fairly short, but not long lived (pops up here & there).</p> <p>Thoroughwort species such as <i>Eupatorium serotinum</i> are best for naturalistic use due to heavy reseeding.</p>
<p><i>Helenium autumnale</i> (cultivars are hybrids with a western species)</p>		<p>Adult</p>

<p><i>Helianthus</i> (sunflower) (ranks #3 for herbaceous plants for supporting butterfly & moth species according to research by Douglas Tallamy - http://www.bringingnaturehome.net/what-to-plant.html).</p> <p>Perennial species: <i>H. angustifolius</i> (swamp sunflower) <i>H. divaricatus</i> (spreading sunflower, woodland sunflower) <i>H. hirsutus</i> (hairy sunflower) <i>H. strumosus</i> (woodland sunflower, paleleaf woodland sunflower, roughleaf sunflower) Evaluating <i>H. occidentalis</i> (Western Sunflower, Fewleaf Sunflower)</p>	<p>American lady</p> <p>2 uncommon butterflies (painted lady & silvery checkerspot – specialized habitat)</p>	<p>Adult</p> <p>Note: <i>H. tuberosus</i> (Jerusalem artichoke) is best left in the wild unless you like to eat the tubers – aggressive spreader</p>
<p><i>Liatris spicata</i> (liatris or blazing star; the easiest species to grow).</p> <p><i>L. aspera</i> & <i>L. microcephala</i> (native to NC & other southeastern states) have done well in some dry locations. <i>L. squarrosa</i> has not been as persistent. Other native species were short-lived.</p>		<p>Adult</p>
<p><i>Lobelia cardinalis</i> (cardinal flower) <i>L. siphilitica</i> (great blue lobelia)</p>		<p>Adult</p> <p>Note: <i>Pollinators of Native Plants</i> by Heather Holm says bees (mostly bumblebees) pollinate <i>L. siphilitica</i> in MN.</p>
<p><i>Monarda didyma</i> (bee balm) <i>M. fistulosa</i> (wild bergamot, bee balm)</p> <p>Note: many cultivars are available from the above species, & hybrids with the above & other native species (Mt. Cuba is evaluating cultivars - http://www.mtcubacenter.org/plant-trials/category/monarda-evaluation-2014-2016/)</p>		<p>Adult</p> <p>Note: <i>M. punctata</i> (spotted beebalm, horsemint) also attracts butterflies but it is short - lived & has an unusual look. Best for dry sites in full sun.</p>
<p><i>Packera aurea</i> (<i>Senecio aureus</i>) (golden ragwort)</p>	<p>Painted lady (uncommon)</p>	

<p><i>Phlox</i> – the best garden plants are: <i>P. divaricata</i> (wild blue phlox) <i>P. glaberrima</i> (smooth phlox) <i>P. paniculata</i> (garden phlox) <i>P. subulata</i> (moss phlox)</p> <p>Note: <i>P. pilosa</i> (downy phlox) - often a vigorous spreader in moist sites including the cultivar 'Eco Happy Traveler' – so higher maintenance needs.</p> <p><i>P. stolonifera</i> (creeping phlox) is not a butterfly plant - nectar for moths.</p>		<p>Adult</p> <p><i>P. divaricata</i> is a favorite of swallowtails in the spring & attracts more butterflies than creeping phlox species like <i>P. subulata</i> & <i>P. nivalis</i> (butterfly information from Alonso Abugattas in Arlington County Parks)</p> <p><i>P. nivalis</i> (trailing phlox) - likes sandy or rocky soils so best for rock gardens</p>
<p><i>Pycnanthemum</i> (mountain mint; the <i>Flora of Virginia</i> describes as a complicated & difficult genus for ID purposes): <i>P. montanum</i> (not in the <i>Flora of Virginia</i> but in other plant references; Green Spring plants may be hybrids) <i>P. muticum</i> <i>P. verticillatum</i> var. <i>pilosum</i> (the showiest variety; native to WV, TN, KY, & other states)</p> <p>Species that can tolerate wetter sites: <i>P. flexuosum</i>, <i>P. tenuifolium</i>, & <i>P. virginianum</i></p>		<p>Adult</p>
<p><i>Rudbeckia fulgida</i> (orange coneflower) <i>R. laciniata</i> (cutleaf coneflower)</p> <p>Shorter lived-biennials or short-lived perennials: <i>R. hirta</i> (black-eyed Susan). The wild type attracts butterflies (not the tetraploid cultivars). <i>R. triloba</i> (three-lobed coneflower, brown-eyed Susan)</p>	<p>Silvery checkerspot (uncommon – specialized habitat)</p>	<p>Adult</p> <p>Note: <i>R. subtomentosa</i> (sweet coneflower; native to TN, NC, & the central U.S.) - attracts bees & does not attract butterflies according to wildflower.org</p>

<p><i>Solidago</i> species (goldenrod) – (ranks #1 for herbaceous plants for supporting butterfly & moth species in a study by Douglas Tallamy - http://www.bringingnaturehome.net/what-to-plant.html).</p> <p>For full sun: <i>S. rugosa</i> ('Fireworks') (rough-stemmed goldenrod, wrinkleleaf goldenrod) <i>S. sempervirens</i> (seaside goldenrod) - needs dry soil in full sun or can be floppy; can reseed heavily in moist soil. <i>S. shortii</i> 'Solar Cascade' (species native to Kentucky & Indiana)</p> <p>Shade Lovers: <i>S. caesia</i> (wreath goldenrod) <i>S. flexicaulis</i> (zigzag goldenrod; <i>Pollinators of Native Plants</i> by Heather Holm does not list adult butterflies as a pollinator in MN)</p> <p>Adaptable to full sun or light shade (does not like extremely dry soil): <i>S. sphacelata</i> 'Golden Fleece'</p>		<p>Adult</p> <p>Another species that is available in the nursery trade is <i>S. nemoralis</i> (gray goldenrod, prairie goldenrod) - reported to attract butterflies.</p> <p>Not all goldenrods may attract butterflies: <i>S. ulmifolia</i> (elmleaf goldenrod) is listed on wildflower.org as attracting bees, as is <i>S. simplex</i> var. <i>racemosa</i> (<i>S. racemosa</i> in the <i>Flora of Virginia</i>; racemose goldenrod; a short plant that is good for dry areas like slopes & rock gardens; rare in VA).</p> <p>Two goldenrod species planted in 2016 – <i>S. odora</i> (sweet goldenrod; likes sandier, dry soils) & <i>S. speciosa</i> (showy goldenrod); trying both again.</p> <p>Best not to grow species that spread by long rhizomes in gardens – an example is <i>S. canadensis</i> (Canada goldenrod; some forms have been reclassified as <i>S. altissima</i>). This species reseeds readily; best for natural areas such as meadows.</p>
<p><i>Symphotrichum</i> (formerly <i>Aster</i>): <i>S. cordifolium</i> (heart-leaved aster) <i>S. laeve</i> (formerly <i>A. laevis</i>) (smooth blue aster; 'Bluebird' is a showy cultivar) <i>S. novae-angliae</i> (New England aster) <i>S. oblongifolium</i> (shale barren aster) Note: <i>S. lateriflorum</i> (calico aster) is beautiful but not long-lived in gardens.</p> <p>Garden hybrids with native parentage such as 'Wood's Blue' & 'Wood's Purple' are available.</p>	<p>Pearl crescent</p> <p>Silvery checkerspot (uncommon – specialized habitat)</p>	<p>Adult (sun-loving asters attract the most)</p> <p><i>S. ericoides</i> 'Snow Flurry' (white heath aster) – growing in rock garden settings.</p> <p>Other aster species are best in naturalistic settings such as <i>S. prenanthoides</i> (crooked-stem aster).</p> <p><i>S. puniceum</i> (purple-stemmed aster) has performed well in a moist to periodically wet site but it is large & informal.</p>
<p><i>Verbena hastata</i> (swamp verbena or vervain)</p>	<p>Common buckeye</p>	<p>Adult</p>

<i>Verbesina alternifolia</i> (wingstem)	Silvery checkerspot (uncommon – specialized habitat)	Adult – only bees reported on wildflower.org. Possibly some adult butterflies.
<i>Vernonia gigantea</i> & <i>V. noveboracensis</i> (ironweed)	American lady	Adult
<i>Viola</i> species (violet): Some of the easier species to grow are <i>V. canadensis</i> (Canada violet), <i>V. pubescens</i> (yellow violet), <i>V. sororia</i> (common blue violet), & <i>V. striata</i> (striped cream violet) - naturalistic use since spread readily. Not all native violets are easy to grow in cultivation. <i>V. pedata</i> (bird's foot violet) likes very dry, sunny sites & is short-lived in local gardens. <i>V. palmata</i> (wood violet) has restrained growth & attractive leaves but is hard to find commercially (not very vigorous).	Great spangled fritillary Meadow fritillary (uncommon) (more fritillary species found in the mountains & Piedmont)	Adult - may attract some adult butterflies <i>V. pedata</i> is the best butterfly plant but hard to grow. <i>Pollinators of Native Plants</i> by Heather Holm lists bees but not butterflies as a pollinator of <i>V. pubescens</i> in MN. Canada violet also reported to attract the snowberry clearwing moth (butterfliesandmoths.org)
<i>Zizia aptera</i> (heart-leaved golden alexanders, meadow zizia) <i>Z. aurea</i> (golden alexanders, golden zizia)	For <i>Z. aurea</i> - black swallowtail (this butterfly likes open spaces, not forest interiors) Non-native plants in the carrot family like Queen Anne's lace & parsley are commonly used as host plants now.	Adult – <i>Z. aurea</i> – possibly some butterflies in our region (<i>Pollinators of Native Plants</i> by Heather Holm lists azure butterflies as a pollinator in MN) On wildflower.org: <i>Z. aptera</i> is not listed as attracting butterflies but attracts bees.

2. A Native Perennial for Water Gardening for Butterflies (suitable for small home ponds) -

Pontedaria cordata (pickerelweed) – **Adult**

3. Native Perennials That May Support A Few Adult Butterflies In This Region

(Delaware study by Dr. Tallamy: http://udel.edu/~dtallamy/new_xls/webplants.xls; a few other references as well) -

Boltonia asteroides (boltonia, eastern doll's-daisy) – skippers at Green Spring -

Geranium maculatum (wild geranium) – however *Pollinators of Native Plants* by Heather Holm does not list butterflies as a pollinator in MN -

Heliopsis helianthoides (false sunflower) -

Hibiscus moscheutos (hardy hibiscus or rose mallow) -

Hylotelephium telephioides (once *Sedum*; Alleghany stonecrop) – some sedum species & cultivars attract butterflies but this species did not attract butterflies in Delaware study. -

Iris versicolor (northern blue flag iris) & *I. virginica* (Virginia iris) – butterflies found in southeastern Va & - mountains -

Kosteletskya virginica (seashore mallow) -

Maianthemum racemosum (false Solomon's seal) -

Parthenium integrifolium (American feverfew) -

Physostegia virginiana (false dragonhead) -

Salvia lyrata (lyreleaf salvia; purple leaved forms more commonly grown in gardens) & *S. azurea* (azure - blue salvia; native to TN, KY, & other southern states) -

Scutellaria incana (downy skullcap) – swallowtails nectar on it sometimes at Green Spring. A host plant for - moths. -

Sedum ternatum (wild stonecrop; shade lover unlike most *Sedum*) – West Virginia white reported in the - mountains. Sun-loving native *S. glaucophyllum* (cliff stonecrop) may attract butterflies but is harder to grow. - *Silphium perfoliatum* (cup plant) & *S. laciniatum* (compass plant; native to the central U.S. & naturalized in - Virginia) attract occasional butterflies according to wildflower.org. -

In contrast, the following are only reported to attract bees: *S. asteriscus* (& *S. asteriscus* var. *trifoliatum*; rosinweed) & *S. terebinthinaceum* (prairie rosinweed, prairie dock). -

Stokesia laevis (Stoke's aster) – butterflies reported but have not observed adult butterflies on this species - at Green Spring (native to NC & other southern states) -

Veronicastrum virginicum (Culver's root) – only one butterfly or moth species in Delaware study -

Note: Some plants are used by butterflies and moths in some states, but not reported nationwide by - wildflower.org or the Missouri Botanical Gardens – *Polemonium reptans* (Jacob's ladder) is an example - (used in Minnesota according to *Pollinators of Native Plants* by Heather Holm; Delaware research reported - only one butterfly or moth species feeding on the species). -

4. Native Perennials For Butterflies That Are Best for Naturalistic Use -

C = Caterpillar (food plant for larvae). **Adult** = food for adults (mostly nectar). -

(You will not able to purchase some of these plants, so you may want to keep some if you have them.) -

Apocynum species (dogbane; spreads by suckering) – **Adult**

Bidens species (tickseed sunflower or beggar-ticks; seeds readily stick to clothing) – **Adult**

Boehmeria cylindrica (false nettle; doesn't sting like true nettle) – **C** - eastern comma, question mark, & red admiral so important plant for butterflies.

Desmodium canadense & others (tick trefoil; for meadows & naturalistic use since reseeds readily & seeds stick to clothing) – **C & Adult**

Ruellia caroliniensis & *R. humilis* (called wild petunia but not a *Petunia*) – **C** - common buckeye. Hard to kill in gardens if want to remove – very vigorous in full sun but better behaved in a dry area in light shade.

5. Unlikely To See Butterflies On These Native Perennials In Home Gardens In The Washington, D.C. Area

Aquilegia canadensis (wild columbine) – **C** - columbine duskywing – in the mountains

Arunco dioicus (goatsbeard) – **C** - dusky azure – in the mountains

Cardamine concatenata (*Dentaria laciniata*; cutleaf toothwort) – falcate orangetip (uncommon – specialized habitat); West Virginia white in mountains - **C & Adult** for both butterfly species.

Adult - dusky azure - in the mountains.

Penstemon hirsutus (hairy penstemon) – Baltimore checkerspot (uncommon) – **C** (none reported on

P. digitalis – white penstemon) -

Senna hebecarpa & *S. marilandica* (formerly *Cassia*) – **C** - cloudless sulphur & sleepy orange (both rare) -

6. Native Ornamental Grasses For Gardens – Host Plants For Butterflies

These butterflies include common wood nymph, northern pearly eye (uncommon), & several skipper - species. They are found in specialized habitats – meadows & grasslands. Grasses that need to grow in wet - soil are not included here since most gardeners do not have that habitat. All listed grasses are perennials. -

Andropogon virginicus (broomsedge bluestem), *A. glomeratus* (bushy bluestem), & *A. gerardii* (big bluestem) -

Elymus hystrix (*Hystrix patula*) (bottlebrush grass; the most ornamental & better behaved). *E. canadensis* (Canada wild rye) – less ornamental – tough areas & quick groundcover use like meadow establishment - (can crowd out showier plants in gardens) -

Panicum virgatum (switchgrass) -

Saccharum brevibarbe var. *contortum* (bent-awn plume grass) & *S. giganteum* (giant plume grass) -

Schizachyrium scoparium (little bluestem; the best bluestem for garden use)

Note: *Bouteloua gracilis* (blue grama) is a host plant for skippers where it is native (central & western U.S.). 'Blonde Ambition' is a nice cultivar.

7. Native Ornamental Grasses For Naturalistic Use Only - Host Plants For Butterflies

Chasmanthium latifolium (river oats). Did not have luck planting *C. laxum* (slender woodoats) but want to try again (native to Green Spring). -

Dichanthelium clandestinum (*Panicum clandestinum*) (deer tongue grass); many other species as well -

Eragrostis spectabilis (purple lovegrass; needs dry or sandy soils) -

Sorghastrum nutans (Indiangrass) – specialized habitat (rare butterfly species in our area) -

Tridens flavus (purpletop, purpletop tridens, redtop) -

Note: Some perennial grasses may not be host plants. *Muhlenbergia capillaris* (purple muhly, hair awn - muhly) may not be a host plant but attracts beneficial insects such as ladybird beetles -

(http://plants.usda.gov/factsheet/pdf/fs_muca2.pdf). -

Sporobolus heterolepis (prairie dropseed) – host plant for a skipper species in Minnesota & nothing listed in Delaware by Douglas Tallamy. It provides nesting material and structure for native bees (wildflower.org). -

8. Native Ornamental Sedges – Host Plants For Butterflies - *Carex pensylvanica* (Pennsylvania sedge), *C. plantaginea*, (plantainleaf sedge), & *C. stricta* (tussock sedge) are host plants for skippers according to *The Living Landscape* by Rick Darke & Douglas Tallamy. Other species are host plants for butterflies as well.

9. Native Perennial Vines For Butterflies

Ipomoea pandurata (perennial wild morning glory; has a large fleshy root – seldom find in the nursery trade) – **Adult** (plants in the Virginia Native Plant Garden hybridized with other species so it needs to be removed).

Passiflora incarnata (maypops; borderline hardy so site in warm areas) & *P. lutea* (yellow passionflower) – **C** - variegated fritillary (uncommon) & gulf fritillary (a southern species that is found in southern VA - prefers *P. incarnata*). **Adult** - gulf fritillary (adults occasionally in the DC area - don't reproduce here - I had one visit my home garden for a couple of weeks in late summer)

B. Native Annual Or Biennial Herbaceous Plants for Butterflies

Amphicarpaea bracteata (hog peanut; a fairly short vine; annual or short-lived perennial) – **C** - Silver-spotted skipper, 2 uncommon species (northern cloudywing & possibly southern cloudywing), & long-tailed skipper (rare). Seldom available from nurseries since not showy – naturalistic use.

Impatiens capensis (jewelweed; annual; mostly for naturalistic use) - **Adult**

Phacelia bipinnatifida (fern-leaved phacelia; biennial) – **Adult** (possibly some butterflies)

Pseudognaphalium obtusifolium (*Gnaphalium*) (sweet everlasting; annual or biennial; pops up here & there) – **C** - American lady

C. Native Woody Plants for Butterflies

1. Native Deciduous Trees for Butterflies

(Butterflies are common or abundant in the Washington, D.C. area unless otherwise noted – most common - species listed first.) -

C = Caterpillar (food plant for larvae). **Adult** = food for adults (mostly nectar). -

Amelanchier species (juneberry, serviceberry, or shadblow) -

C - red-spotted purple, occasionally coral hairstreak (uncommon), & striped hairstreak (rare). **Adult**. -

Asimina triloba (pawpaw) – **C** - zebra swallowtail

Betula nigra (river birch) & other species (uncommonly grown in home gardens in our region) - **C** - dreamy duskywing, eastern tiger swallowtail, red-spotted purple, & possibly others. **Adult** - the sap of birch can be used by some butterflies like mourning cloak & northern pearly eye.

Carpinus caroliniana (American hornbeam or ironwood) – **C** - eastern tiger swallowtail, red-spotted purple, & striped hairstreak (rare)

Carya species (hickory) – **C** - banded hairstreak (uncommon)

Celtis occidentalis (northern hackberry) – **C** - mourning cloak, question mark, occasionally eastern comma, & 3 uncommon species (hackberry emperor, tawny emperor, & American snout)

Cercis canadensis (eastern redbud) – **C** - Henry's elfin (rare). **Adult.**

Cornus florida (flowering dogwood) & *C. alternifolia* (alternate-leaf dogwood; possibly a host plant but *C. florida* is preferred) - **C** - spring azure. **Adult.**

Crataegus viridis & other species (hawthorn; naturalistic use) – **C** - red-spotted purple & 2 rare species (striped hairstreak & harvester). **Adult.**

Fraxinus: the most common species in cultivation are *F. americana* (white ash) & *F. pennsylvanica* (green ash) – **C** - eastern tiger swallowtail, mourning cloak, Baltimore checkerspot (uncommon; can feed on *F. americana* after overwintering on other plants), & 2 rare species (striped hairstreak & harvester). Unfortunately the emerald ash borer from Asia is devastating trees in our region (several of Green Spring's trees have been treated with a systemic insecticide).

Gleditsia triacanthos (honeylocust; only grow thornless forms in gardens) – **C** - silver-spotted skipper -

Juglans nigra (black walnut) – **C** - banded hairstreak (uncommon) -

Liriodendron tulipifera (tulip tree) - **C** - eastern tiger swallowtail & spicebush swallowtail. **Adult.** -

Magnolia virginiana (sweetbay magnolia; our local ecotypes are deciduous to semi-evergreen) – - **C** - eastern tiger swallowtail & spicebush swallowtail -

Morus rubra (red mulberry) – some plants may be hybrids with the non-native, invasive *M. alba* (white - mulberry) - **C** - mourning cloak -

Ostrya virginica (American hophornbeam) – **C** - mourning cloak & red-spotted purple -

Prunus serotina (black cherry) & *P. virginiana* (chokecherry; small tree that is found in the mountains of - Virginia; seldom grown in other regions – testing at Green Spring) - **C** - eastern tiger swallowtail, red-spotted purple, viceroy, coral hairstreak (uncommon), & striped hairstreak (rare). **Adult.** - Also feed on wild plum species (*P. americana*, *P. angustifolia*, & *P. maritima*). **The *Prunus* genus (native cherry & plum species) ranks #2 for woody & herbaceous plants combined in supporting butterfly & moth species** (research by Douglas Tallamy - <http://www.bringingnaturehome.net/what-to-plant.html>). -

Ptelea trifoliata (hoptree) – **C** - eastern tiger swallowtail & giant swallowtail (rare)

Quercus species (oak) – **C** - horace's duskywing, juvenal's duskywing, red-spotted purple, banded hairstreak (uncommon), & 4 rare species (sleepy duskywing, southern hairstreak, striped hairstreak, & white M hairstreak). Edwards' hairstreak has been wiped out of the Washington, D.C. region. Also red-banded hairstreak likes to eat fallen leaves. **The *Quercus* genus (oak) ranks #1 for woody & herbaceous plants combined in supporting butterfly & moth species** (research by Douglas Tallamy at <http://www.bringingnaturehome.net/what-to-plant.html>).

Adult - the sap of oak can be used by some butterflies like mourning cloak & northern pearly eye.

Robinia pseudoacacia (black locust) – **C** - silver-spotted skipper & zarucco duskywing (rare); possibly clouded sulphur (rarely used in NC – prefers herbaceous legumes) & dreamy duskywing

Salix nigra (black willow) – **C** - red-spotted purple, dreamy duskywing, eastern tiger swallowtail, viceroy, mourning cloak, & striped hairstreak (rare). Compton tortoiseshell can be a stray species in this region.

Sap for Adult – northern pearly eye feeds on sap. In addition, some rare or stray butterflies may nectar on it (unlikely to see in home gardens).

The *Salix* genus (willow) ranks #3 for woody & herbaceous plants combined in supporting butterfly & moth species (research by Douglas Tallamy at <http://www.bringingnaturehome.net/what-to-plant.html>).

Sassafras albidum (sassafras) – **C** - eastern tiger swallowtail & spicebush swallowtail. -

Palamedes swallowtail is a stray in our region - normally found south of here on the Coastal Plain. -

Tilia americana (basswood) - **C** - eastern tiger swallowtail, red-spotted purple, & possibly white M hairstreak - (rare) -

Ulmus americana (American elm) – **C** - eastern comma, mourning cloak, question mark, & painted lady - (uncommon). Compton tortoiseshell can be a stray species in this region. -

Viburnum prunifolium (blackhaw viburnum) & *V. rufidulum* (southern blackhaw viburnum) - **C** - spring azure. - **Adult** (listed in some references & not in others). -

Note: *Acer* species (maple) - **Adult:** sap can be used by some adult butterflies like mourning cloak & - northern pearly eye. -

The following species are host plants for rare butterflies, so unlikely to see in home gardens: -

Fagus grandifolia (American beech) – **C** - harvester. In addition early hairstreak mostly found in the - mountains. -

Hamamelis virginiana (witch hazel; large shrub to small tree) – **C** - striped hairstreak & harvester. -

Oxydendrum arboreum (sourwood) – **Adult** - white M hairstreak -

2. Native Evergreen Trees for Butterflies -

Ilex opaca (American holly) – **C** - holly azure (uncommon – specialized habitat) & Henry's elfin (rare). - Possibly **Adult** (spring azure reported in Illinois). -

Juniperus virginiana (eastern red cedar) – **C** - juniper (olive) hairstreak (uncommon)

Pinus echinata (shortleaf pine), *P. strobus* (eastern white pine), *P. taeda* (loblolly pine) & *P. virginiana* (Virginia pine) – **C** - eastern pine elfin (uncommon; *P. rigida* or pitch pine is found in the wild in sandy or rocky soils – it is also a host plant). Little *P. palustris* (longleaf pine) is left in the wild in southeastern Virginia due to the exclusion of fire (likes sandy soils; eastern pine elfin not listed in wildflower.org on this species).

3. Native Shrubs for Butterflies (noted if a plant is evergreen) -

Aesculus parviflora (bottlebrush buckeye; native to Alabama & Georgia) - **Adult** -

Alnus serrulata (hazel alder; wetland species) – **C** - harvester (rare)

Amelanchier stolonifera (running serviceberry or dwarf juneberry) – **C** - red-spotted purple, occasionally coral hairstreak (uncommon), & striped hairstreak (rare). **Adult**.

Aralia spinosa (Devil's walking stick) - **Adult**

Aronia arbutifolia (red chokeberry), *A. melanocarpa* (black chokeberry), & *A. prunifolia* (purple chokeberry) – **C** – occasionally host plant for coral hairstreak (uncommon – specialized habitat) & striped hairstreak (rare)

Cephalanthus occidentalis (buttonbush) – **Adult**
(**C** for a moth - hydrangea sphinx)

Clethra alnifolia (summersweet) - **Adult**

Cornus amomum (silky dogwood), *C. sericea* (redosier dogwood), & the less common *C. racemosa* (gray dogwood or racemose dogwood) – **C** - summer azure reported on *C. racemosa*. Possibly spring azure but *C. florida* (flowering dogwood – a small tree) is preferred. **Adult**.

Hydrangea arborescens (smooth hydrangea) – **Adult** – Edwards' hairstreak & gold-banded skipper have - been wiped out of the Washington, D.C. region. -
C (A moth uses this as a host plant – hydrangea sphinx). -

Ilex decidua (possumhaw holly), *I. glabra* (inkberry holly; evergreen), & *I. verticillata* (winterberry holly) – **C** - holly azure (uncommon – specialized habitat). Adult butterflies not listed in several references but provide nectar for other insects. -

Lindera benzoin (spicebush) – **C** - eastern tiger swallowtail & spicebush swallowtail -

Myrica cerifera or *Morella cerifera* (wax myrtle; evergreen) – **C** - red-banded hairstreak feeds on fallen - leaves -

Rhododendron species (native azaleas; several species) – **C** - striped hairstreak & brown elfin feed on - some species (both rare). Also a stray species normally found in the mountains (gray comma): so unlikely - to be used as a host plant in our area. Possibly **Adult**. -

Rhus copallina (shining sumac) & *R. typhina* (staghorn sumac) – **C** - red-banded hairstreak feeds on fallen, - rotting leaves. Spring azure & summer azure have been reported to feed on foliage in Illinois. **Adult** (red-banded hairstreak on sumac species; Edwards' hairstreak can nectar on *R. typhina* but wiped out of the - Washington, D.C region) -

Spiraea alba (var. *latifolia*) (white meadowsweet, spirea, or spiraea) – **C** – spring azure (flowers & buds - reported in Illinois). **Adult**. In addition *S. tomentosa* (steplebush) is listed under wildflower.org as - attracting butterflies. -

Vaccinium corymbosum (highbush blueberry), *V. stamineum* (deerberry), & others – **C** - red-spotted purple - & 3 rare species (striped hairstreak, brown elfin, & Henry's elfin). -
Adult – including juvenal's duskywing, eastern pine elfin (uncommon), & frosted elfin (rare) -

Viburnum acerifolium (mapleleaf viburnum), *V. dentatum* (arrowwood viburnum; botanists have reclassified - one type as *V. dentatum* var. *lucidum* or *V. recognitum*), *V. lentago* (nannyberry), & *V. nudum* (possumhaw - viburnum) – **C** - Baltimore checkerspot (uncommon; can feed on *V. dentatum* after overwintering on other - plants), possibly spring azure. *V. acerifolium* & possibly other species host to Henry's elfin (rare). -

Possibly **Adult** (not listed in *Landscaping for Wildlife With Native Plants*:

<https://content.ces.ncsu.edu/landscaping-for-wildlife-with-native-plants>). -

Note: *Ceanothus americanus* (New Jersey tea; good butterfly plant but not easy to grow in gardens locally) - **C** – spring azure & summer azure. **Adult**.

Corylus cornuta (beaked hazelnut) - **C** - early hairstreak only found in the mountains

4. Native Woody Vines for Butterflies -

Aristolochia macrophylla (Dutchman's pipe, pipevine) – **C** - pipevine swallowtail (uncommon) -

Gelsemium sempervirens (Carolina jessamine; evergreen) – **Adult** - reported to attract adult butterflies (wildflower.org & <http://www.clemson.edu/extension/hgic/plants/landscape/groundcovers/hgic1103.html>)

Wisteria frutescens (Atlantic wisteria) – **C** - silver-spotted skipper & long-tailed skipper (rare).

Adult – juvenal's duskywing.

Note: *Lonicera sempervirens* (trumpet honeysuckle) - **C** – wildflower.org says spring azure but other plant species probably preferred. Not listed as a butterfly plant in *Landscaping for Wildlife With Native Plants* (<https://content.ces.ncsu.edu/landscaping-for-wildlife-with-native-plants>)

D. MOTHS

Many more moth species feed on native plants than butterflies. For example, our native witch hazel supports 62 species of caterpillars and only 2 of these species are butterflies. Many moths are not showy, but some species are very attractive. Moths have a similar life cycle to butterflies. Many moths are most active at dusk, at night, or even dawn.

Moth information in this section is limited to the **hummingbird clearwing** and the **snowberry clearwing**, commonly called hummingbird moths. The hummingbird clearwing is the most common species in Virginia. These moths are easy to identify with transparent patches in their wings. These late risers are frequently spotted nectaring on many flowers including bee balm, phlox, swamp milkweed, and blueberries. The adults hover much like miniature hummingbirds with antennae, and they are a joyous sight to behold with their high energy. For information about moth species see *Bringing Nature Home* by Douglas Tallamy, *Pollinators of Native Plants* by Heather Holm, and *Hummingbird Moth (Hemaris sp.)* by Beatriz Moisset (http://www.fs.fed.us/wildflowers/pollinators/pollinator-of-the-month/hummingbird_moth.shtml).



NATIVE PLANTS FOR CLEARWING MOTH CATERPILLARS (Woody And Herbaceous Plants) -

Apocynum species (dogbane; perennial; spreads by suckering – naturalistic use; generally self-seeded) -

Crataegus species (hawthorn; small trees) -

Diervilla lonicera (bush honeysuckle; shrub; Virginia native). **Adult** also. -

D. sessilifolia is not listed as a host plant by <http://www.butterfliesandmoths.org>; native to NC, TN, & other - southern states. This possibly may be because in the Piedmont of NC snowberry clearwing has been - reported to prefer *Lonicera sempervirens* (see below) (<http://bugguide.net/node/view/2639>). -

Lonicera sempervirens (trumpet honeysuckle; woody vine) -

Prunus species: *P. serotina* (black cherry; large tree), & *P. virginiana* (chokecherry; small tree that is found - in the mountains of Virginia; seldom grown in other regions of Virginia). -

Wild plum: *P. americana* (wild plum; small tree), *P. angustifolia* (chickasaw plum; small tree), & *P. maritima* (beach plum; large shrub or small tree)

Symphoricarpos orbiculatus (coralberry; shrub). **Adult** also.

Viburnum species (viburnum; shrub) – *Viburnum* in general according to *Bringing Nature Home* by Douglas Tallamy and *Caterpillars of Eastern North America* by David Wagner (what Wagner reported to be the most common host for the hummingbird clearwing). However, only the non-native *Viburnum opulus* (European cranberrybush viburnum) is listed at <http://www.butterfliesandmoths.org>.

E. References For Pollinators

References About Butterfly and Moths

- **Butterflies and Moths of North America** (<http://www.butterfliesandmoths.org>) – an extensive amount of information was obtained from this database.
- **Butterflies of North America (Kaufman Field Guides)**. Jim Brock and Kenn Kaufman.
- **Butterflies of the East Coast. An Observer's Guide**. Rick Cech and Guy Tudor.
- **Butterflies Through Binoculars: The East**. Jeffrey Glassberg.
- **Caterpillars in the Field and Garden. A Field Guide to the Butterfly Caterpillars of North America**. Thomas Allen, Jim Brock, and Jeffrey Glassberg.
- **Caterpillars of Eastern North America: A Guide to Identification and Natural History**. David Wagner.
- **Discover Northern Virginia Nature: Butterflies**. Prince William Conservation Alliance (<http://www.pwconserve.org/wildlife/butterflies/index.htm>).
- **Frequency of Butterflies Occurring in the D.C. Area**. Richard H. Smith (deceased in 2016) developed an occurrence level list for this region (<http://leplog.wordpress.com/local-and-regional-lists-and-info/butterflies-occurring-in-the-dc-area/>). The D.C. area is defined as Arlington, Alexandria, and Fairfax counties in Virginia, as well as the District of Columbia and Montgomery and Prince George's Counties in Maryland.
- **Gardening for Butterflies: How You Can Attract and Protect Beautiful, Beneficial Insects**. Xerces Society. -
- **Hummingbird Moth (Hemaris sp.)**. Beatriz Moisset - (http://www.fs.fed.us/wildflowers/pollinators/pollinator-of-the-month/hummingbird_moth.shtml).
- **Hummingbirds and Butterflies**. Bill Thompson III and Connie Toops. BirdWatcher's Digest.
- **Maryland's Wildlife Species - Butterflies of Maryland**. Maryland Department of Natural Resources. (http://dnr2.maryland.gov/wildlife/Pages/plants_wildlife/butterfliesofmaryland.aspx). Includes **Butterflies of Maryland: A Biological Summary and Checklist** (http://dnr2.maryland.gov/wildlife/Documents/butterfliesofmaryland_biological-summary_checklist.pdf) and **Common Maryland Butterflies and Skippers** (http://dnr2.maryland.gov/wildlife/Documents/CommonButterflies_Skippers.pdf).

Butterfly And Moth Information For Children

- **Butterfly and Moth**. Paul Whalley. DK Eyewitness Books. -
- **Butterfly Basics**. The Field Museum in Chicago (<http://archive.fieldmuseum.org/butterfly/basics.htm>) -
- **The Children's Butterfly Site** (<http://www.kidsbutterfly.org/>) -
- **The Family Butterfly Book**. Rick Mikula. -
- **The Life Cycles of Butterflies. From Egg to Maturity, a Visual Guide to 23 Common Garden Butterflies**. Judy Burris and Wayne Richards.
- **Monarch Magic, Butterfly Activities and Nature Discoveries**. Lynn M. Rosenblatt. -
- **National Wildlife Federation Garden for Wildlife** (<http://www.nwf.org/Garden-For-Wildlife.aspx>) -

References About A Variety Of Pollinators

- **Attracting Native Pollinators. Protecting North America's Bees and Butterflies**. Eric Mader, Matthew Shepherd, Mace Vaughan, Scott Hoffman Black, and Gretchen LeBuhn. Xerces Society.
- **Attracting Pollinators to Your Garden Using Native Plants**. U.S. Forest Service (U.S. Department of Agriculture) (<http://www.fs.fed.us/wildflowers/pollinators/documents/AttractingPollinatorsV5.pdf>)
- **Bringing Nature Home. How You Can Sustain Wildlife With Native Plants**. Douglas Tallamy.

- **Conserving Pollinators: A Primer for Gardeners.** Eric Mader - (<http://articles.extension.org/pages/19581/conserving-pollinators:-a-primer-for-gardeners>). -
- **Creating Your Pollinator Garden.** North Carolina Botanical Garden. The University of North Carolina at Chapel Hill (<http://ncbg.unc.edu/uploads/files/CreatingPollinatorGarden.pdf>).
- **Habitat At Home.** Carol Heiser. Virginia Department of Game and Inland Fisheries - (<http://www.dgif.virginia.gov/wp-content/uploads/habitat-at-home.pdf>). -
- **Habitat Management to Support Pollinators and Other Beneficial Insects.** Nancy Adamson. Xerces Society and USDA-NRCS East National Technology Support Center, Greensboro, NC. Slide presentation with colorful images (<http://www.deq.virginia.gov/Portals/0/DEQ/CoastalZoneManagement/Habitat-Management-to-Support-Pollinators-and-Other-Beneficial-Insects-NLAdamson.pdf>).
- **Illinois Wildflowers** (<http://www.illinoiswildflowers.info>) - lists insect species and other wildlife that visit mostly native plants in Illinois (most plants are also native to Virginia). Not all of the listed adult butterflies are pollinators – some butterflies with short tongues obtain nectar from certain flowers but aren't able to pollinate them.
- **Kaufman Field Guide to Insects of North America.** Eric Eaton and Kenn Kaufman.
- **Landscaping for Wildlife With Native Plants** (<https://content.ces.ncsu.edu/landscaping-for-wildlife-with-native-plants>). One difference of opinion: according to some botanists *Ipomoea coccinea* (red morning glory) is considered to be introduced to the eastern U.S. from tropical America (Encyclopedia of Life – <http://eol.org/pages/580964/overview>).
- **The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden.** Rick Darke and Douglas Tallamy.
- **Pollinator Friendly Gardening. Gardening for Bees, Butterflies, and Other Pollinators.** Rhonda Fleming Hayes. Information about some non-native, non-invasive plants to attract pollinators to gardens as well.
- **Pollinator-Friendly Plants for the Northeast United States.** USDA – Natural Resources Conservation Service. Big Flats Plant Materials Center in Corning, New York (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/technical/?cid=nrcs144p2_027390 and document at https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/nypmctn11164.pdf)
- **Pollinators.** U.S. Fish and Wildlife Service (<https://www.fws.gov/pollinators/>) -
- **Pollinators. Our Future Flies on the Wings of Pollinators** - (<http://www.fs.fed.us/wildflowers/pollinators/index.shtml>)
- **Pollinators of Native Plants. Attract, Observe, and Identify Pollinators and Beneficial Insects with Native Plants.** Heather Holm. An excellent book about the wide range of insect pollinators on plants native to Minnesota (most plants also are native to Virginia).
- **Selecting Plants for Pollinators. A Regional Guide for Farmers, Land Managers and Gardeners in the Southeastern Forest Province** (<http://pollinator.org/PDFs/Guides/SoutheastMixedForestrx5FINAL.pdf>) – this is the guide for the immediate Washington, D.C. area. Guides for nearby areas: for the mountains (<http://pollinator.org/PDFs/Guides/CentralAppalachianrx7FINAL.pdf>) and for the Outer Coastal Plain (<http://pollinator.org/PDFs/Guides/OuterCoastalrx7FINAL.pdf>). These guides are strongest for their insect information and they are preferred over another Xerces Society guide for our region (*Pollinator Plants Mid-Atlantic Region*).

References About Bees

- **Bee Basics: An Introduction to Our Native Bees.** Beatriz Moisset and Stephen Buchmann. U.S. Forest Service and Pollinator Partnership (<http://www.pollinator.org/PDFs/BeeBasicsBook.pdf>).
- **The Buzz on Native Bees** (<https://www.usgs.gov/news/buzz-native-bees>)
- **Delaware Native Plants for Native Bees.** Extensive list of plants for bees in our region (<http://dda.delaware.gov/plantind/forms/publications/Delaware%20Native%20Plants%20for%20Native%20Bees.pdf>)
- **Enhancing Nest Sites For Native Bee Crop Pollinators** (https://plants.usda.gov/pollinators/Enhancing_Nest_Sites_For_Native_Bee_Crop_Pollinators.pdf)
- **Farming for Bees. Guidelines for Providing Native Bee Habitat on Farms.** Mace Vaughan, Jennifer Hopwood, Eric Lee-Mäder, Matthew Shepherd, Claire Kremen, Anne Stine, and Scott Hoffman Black (http://www.xerces.org/wp-content/uploads/2008/11/farming_for_bees_guidelines_xerces_society.pdf)
- **Native Plants for Summer and Fall Honey Bee Forage.** USDA – Natural Resources Conservation Service. National Plant Materials Center, Beltsville, MD. Honey bees often have a shortage of nectar sources in the summer and into the fall. (https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/mdpmbcr12090.pdf)

F. Plant References

Scientific Names Of Plants - Current Names Are From:

- **Encyclopedia of Life** (<http://eol.org/>) – institutional partners include Harvard University, the Missouri Botanical Garden, the Smithsonian Institution, and The Field Museum.
- **Tropicos** from the Missouri Botanical Garden (<http://tropicos.org/>)

If a second scientific name is given, it is usually an old name that is still seen in some references or used by some nurseries. However, the above databases do not always agree on names.

Other Plant References:

- **Digital Atlas of Virginia Flora** (<http://vaplantatlas.org/index.php?do=plant&plant=2394&search=Search>). Species distribution maps by county and photos of many plants.
- **Flora of Virginia**. Alan Weakley, J. Christopher Ludwig, and John Townsend. 2012. BRIT Press. Botanical Research Institute of Texas.
- **Kemper Center for Home Gardening Plantfinder**. Missouri Botanical Garden. An excellent reference for plant names, gardening information, and photographs of ornamental plants (<http://www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx>). It features plants in their Kemper Center display gardens.
- **Landscaping With Native Plants**. Maryland Native Plant Society. (<http://www.mdflora.org/resources/Publications/GardenersGuidelines/Landscaping-Natives.pdf>). This organization also recommends *Trees of Eastern North America*. Gil Nelson, Christopher J. Earle, and Richard Spellenberg. Princeton University Press (useful for identification).
- **Maryland Plant Atlas** (<http://www.marylandplantatlas.org>). Species distribution maps by county. Also **Maryland Biodiversity Project** (<http://www.marylandbiodiversity.com/>) – look for checklists under **Plants** and photos of many plants.
- **Minnesota Wildflowers. A Field Guide to the Flora of Minnesota**. Excellent side-by-side photos of native plants grouped by category. Most plants are also native to Virginia (<https://www.minnesotawildflowers.info/>). -
- **Native Plant Information Network**. Lady Bird Johnson Wildflower Center. Information about native plants throughout the U.S. (<http://www.wildflower.org/explore/>). -
- **Native Plants for Northern Virginia** (<http://www.plantnovanatives.org/>). It is a publication of the Plant - NoVANatives initiative, which includes the Virginia Native Plant Society. -
- **Pollinating Highbush Blueberries**. Rufus Isaacs, Jason Gibbs, Emily May, Eric Hanson, and Jim Hancock Michigan State University. An example of how pollination requirements can vary between cultivars of the same species in northern highbush blueberry. Cross-pollination is needed for some cultivars, others are intermediate, and some are self-pollinating <http://extension.umd.edu/sites/default/files/docs/programs/master-gardeners/Montgomery/Pollinating%20Highbush%20Blueberries.pdf>.
- **USDA PLANTS Database** (<http://plants.usda.gov/java/>) - this database focuses on plants native to the U.S. and to U.S. Territories and Protectorates, as well as naturalized non-natives and invasives. It is also used to determine distribution within Virginia by county.

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