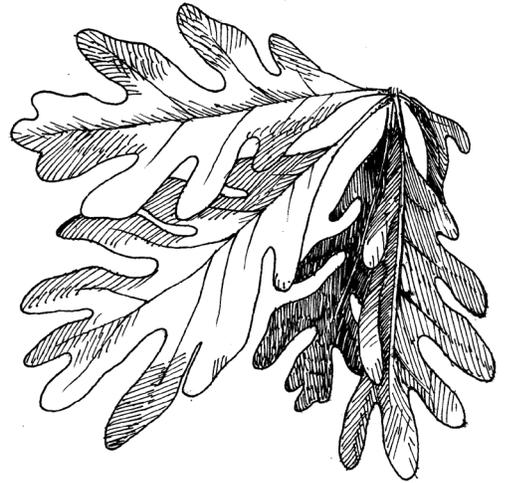


# THE WEST VIRGINIA WILD YARDS MANUAL

**A Guide to Landscaping  
for West Virginia Wildlife**



WEST VIRGINIA  
**DNR**

**West Virginia Division of Natural Resources  
Wildlife Resources Section, Wildlife Diversity Unit  
P.O. Box 67  
Elkins, WV 26241**

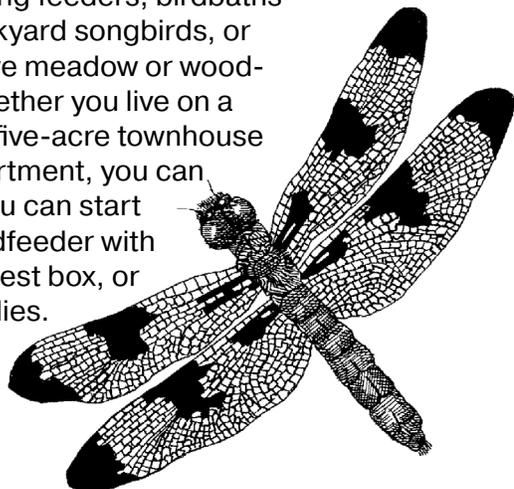
## INTRODUCTION

**M**any people provide habitat for wildlife around their homes without realizing it. Bird feeders, fruiting plants and water sources attract wildlife into our yards, fulfilling their needs and providing us with hours of enjoyment. Landscapes filled with native plants make our spaces more pleasant and enjoyable to live in, for us and for wildlife. Sharing space with wildlife and landscaping with their habitat needs in mind can be an enjoyable and inexpensive pastime.

The Wildlife Diversity Unit (WDU) of the West Virginia Division of Natural Resources (WVDNR) has developed the Wild Yards Program to recognize the efforts of backyard landscapers to create and maintain wildlife habitat. Approved properties are entered into a registry of certified Wild Yards kept by the WDU. The applicant will receive a certificate and a sign to place in their backyard habitat to let everyone know that the area is part of a statewide network of WV Wild Yards.

Why go wild? A diverse wild yard requires much less maintenance than a traditionally landscaped yard. Once established, native plants don't require additional watering, chemical fertilizers or pesticides because they are adapted to local conditions and local insect pests. The deep roots of native plants help trap water from rainstorms, reducing erosion and runoff. Landscaping with native plants can even save you money on your heating and cooling bills by providing shade in summer and windbreaks in winter. These are just a few benefits to landscaping with wildlife in mind.

How do you attract wildlife to your yard? Focus on providing the four necessary components all wildlife need: food, water, cover and places to raise young. You can start small by providing feeders, birdbaths and nest boxes for a few backyard songbirds, or dream big and restore a native meadow or woodlot for dozens of species. Whether you live on a quarter-acre suburban lot, a five-acre townhouse development, or in a city apartment, you can provide habitat for wildlife. You can start right away by filling a new birdfeeder with sunflower seeds, hanging a nest box, or planting milkweed for butterflies.



## HOW TO APPLY

**T**he application process for the WV Wild Yards Program is simple. First, read the enclosed information to learn more about landscaping for wildlife and about how to become eligible for certification. Then develop ideas for habitat improvements you'd like to make to your backyard. This manual contains information on plantings, wildlife needs and recommended readings.



An application for certification is also available. You do not have to achieve a mature habitat before seeking certification. After you are underway with your Wild Yard plan, fill out the enclosed application and mail it to the WDU. An online application is also available on the WVDNR website [wvdnr.gov](http://wvdnr.gov). WDU biologists will review your application to ensure that your habitat plan meets the needs of wildlife.

Any questions should be directed to the WV Wild Yards Coordinator at (304) 637-0245, or email [DNRWildYards@wv.gov](mailto:DNRWildYards@wv.gov).

To have your property considered as a WV Wild Yard, please do the following:

1. Review the materials in the WV Wild Yards manual
2. Evaluate your existing backyard habitat and ensure it meets the program criteria
3. Apply online or complete a paper application and submit it to:

WV Wild Yards  
WVDNR  
P.O. Box 67  
Elkins, WV 26241  
[DNRWildYards@wv.gov](mailto:DNRWildYards@wv.gov)

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# HABITAT

**W**ildlife will benefit from a well thought out backyard plan. To understand the needs of wildlife you must first learn about their habitat requirements. Habitat is the area in which a species lives. Simply stated, habitat consists of four basic requirements for survival: sufficient food, water and shelter, as well as places to raise young.

The specifics of these requirements vary greatly from one species to another, even from one season to the next. Generally, the larger and more diverse an area is, the more species of wildlife it can support. If your backyard is limited in size or in the variety of habitat components provided, most wildlife will be transient, using your yard for specific needs and then moving on.

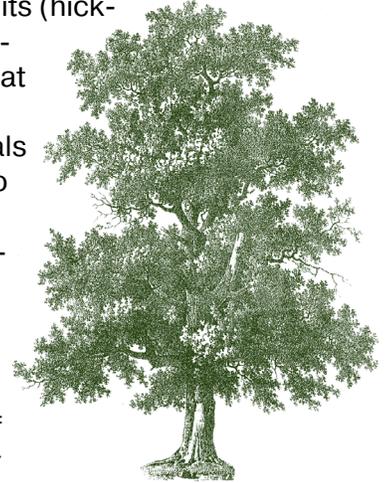
Given enough space, a well-conceived backyard habitat should include most of the following vegetative and physical components:

## Vegetative Components

Different layers and types of vegetation provide diverse ecological functions and visual interest to a backyard landscape. Native plant species should be favored whenever possible because local wildlife are adapted to using local native plants.

- Conifers and other evergreens provide good year-round cover as well as food. They also act as windbreaks to shelter homes and wildlife from frigid winter winds and parching summers.
- Grasses and forbs (herbaceous plants) provide food, cover and nesting sites for songbirds, ducks, voles, chipmunks and woodchucks. Insects that provide food for a host of wildlife also thrive in unmowed herbaceous vegetation.
- Vines are an integral part of natural landscapes, providing excellent cover for nesting birds as well as nectar for hummingbirds and butterflies, along with fruit and seeds.
- Nectar sources provide food for butterflies, moths, bees, hummingbirds and orioles. The fragrant native flowers also attract insects that provide food for other songbirds.

- Fruiting plants make up an important component of the diet of many songbirds, turtles and small mammals. Various plants fruit at different times throughout the growing season, providing food all season long.
- Hard mast plants, mostly tree species, provide hard fruits (hickory nuts, beech-nuts, acorns) that furnish fat and energy to animals from squirrels to deer and bear. Many mast-producing species produce nuts in cycles so it is important to have an array of species on your property.



## Physical Components

In addition to abundant native vegetation, certain physical or structural components of the landscape provide benefits to wildlife.

- Water is necessary for drinking, bathing and reproduction as well as keeping cool. Ponds are a great way to attract a variety of wildlife.
- Snags (dead standing trees) with cavities provide nesting and shelter for flying squirrels, other mammals and cavity-nesting birds. Some amphibians and reptiles will even use tree cavities for cover.
- Stumps and snags also provide food for insect eaters, hunting perches for raptors and singing perches for songbirds.
- Nest boxes are artificial cavities that can benefit cavity-nesting species and attract them to your yard. Proper box construction and placement is extremely important to ensure success. Nest boxes and feeders can help to supplement natural sources of food and cover.
- Brush piles give small mammals and birds safety from predators and protection from the weather. They provide shelter and protection for a variety of animals including chipmunks, cottontails, garter snakes

and turtles. You can use trimmings from trees and shrubs, old Christmas trees and leaves to construct a brush pile and hide it behind a garage or shed to obscure it from view.

- Fallen logs absorb and retain water while decaying, which creates a microenvironment for salamanders, snails, insects, millipedes and many other animals.
- Grit and dust are important for different reasons. Many birds use grit to grind their food and dust is used to absorb excess oil and sanitize their feathers of mites and other parasites. You can scrape vegetation away from a sunny area about 3'x3' square and keep vegetation away to create a dust bath.
- Rock piles and rock walls provide shelter for chipmunks, rabbits, lizards, snakes and frogs. Rocks that warm in the sun also provide areas for amphibians and reptiles to bask.
- Leaf litter under trees and shrubs creates habitat for insects and other invertebrates eaten by towhees, wrens, lizards, toads and frogs.



These vegetative and physical components can be added, modified, or removed, based on the needs identified in your backyard plan. Keep the following considerations in mind when managing your backyard wildlife habitat:

- Wildlife are more vulnerable or sensitive at certain times of year, usually when they're nesting or rearing young or during periods of harsh weather. Avoid major disturbances during these times of year, if possible.
- Major disturbances should be limited to just a portion of the existing habitat in your backyard at any given time to maintain some refugia for wildlife to go about their normal activities.
- Focus first on the vegetative and physical components that are missing or limited.

## Lights Out!

Artificial light at night in and around buildings has a negative impact on many species. Light pollution makes animals more visible and therefore vulnerable to nocturnal predators. Many animals use the moon or stars to navigate and artificial lighting can confuse and disorient them. Nighttime artificial lighting causes millions of bird deaths each year as migrating birds become disoriented and crash into windows or exhaust themselves circling around lit buildings in confusion. Artificial light drowns out the displays of fireflies, who use their unique flashing patterns to find mates. Limiting outdoor lighting is an important step to making your backyard safe for wildlife. Check out [DarkSky International](https://www.darksky.org/) for more information and ways to get involved.

Follow these tips to make your yard more dark sky friendly:

- Use timers or motion-sensing lights to illuminate areas only when necessary
- Use shielded lamps to direct light downwards and not outwards and upwards
- Use light bulbs with a lower lumen output to provide only the amount of light needed
- Use warm-tone light bulbs (<2700 K) as this light is less harmful than cool blue light



## NATIVE VEGETATION

**N**ative species are wild animals, plants and other organisms that have evolved in a particular region and environment. Native plants form the foundation of wild ecosystems, providing both the structure and the function. There is no forest without the trees, after all. West Virginia's natural beauty and heritage rests in its diverse array of native species—from the spectacular fall color of our native trees, to the springtime shows of trilliums and other spring ephemeral wildflowers, to the Appalachian folklore developed around using native plants for food and medicine. By landscaping with native plants, you can lend a distinct sense of place to your surroundings while also supporting wildlife.

Wildlife evolved alongside our native plants and adapted to make the most of the resources they provide. The foods provided by native plants are often more nutritious for wildlife than those from non-native plants. The tight ecological relationships between species formed over millennia mean, for instance, that most native insects can only feed on a few species of native plants. Many songbirds use caterpillars as high-energy food to support growing baby birds. A study by Doug Tallamy showed that Carolina chickadees might need over 6000 caterpillars to raise a single clutch of nestlings. Native vegetation forms the base of the food web that all wildlife depends on.

Native plants offer many benefits, in addition to year-round beauty and wildlife habitat. Using native plants can reduce the amount of maintenance your yard requires, so you can spend less time mowing and reduce air and noise pollution from noisy mowers and leaf blowers. Using plants native to your area in your yard can reduce outdoor water use by 20 to 50 percent, because native plants are adapted to local rainfall conditions. You can reduce your cooling bill by planting native shrubs to shade your air conditioning unit or by planting native deciduous trees on the south and west sides of your house. Leaving the leaves on the ground in the fall and through the spring provides habitat for many species that use the leaf litter for food or shelter and the leaf litter also suppresses weeds and naturally fertilizes the soil as it breaks down.

### What's Native?

There are a few authoritative resources to learn what is native to West Virginia and your local area.



The [WVDEP Planting Tool](#) was developed by the WV Department of Environmental Protection in coordination with the WVDNR, West Virginia University and the WV Native Plant Society. It provides county-level recommendations for native plants to use in habitat restoration projects, wetland mitigation sites, pollinator gardens and other sites.

The Checklist and Atlas of the Vascular Flora of West Virginia and the Biota of North America Program ([bonap.org](http://bonap.org)) have county maps to indicate if a plant is native to your area.

### What's in a Name?

Common names for plants can be confusing because several different species can have the same common name and a single species can have dozens of different common names. Paying attention to the Latin, or scientific, name of a plant will help ensure you know exactly what you are dealing with.

Horticultural cultivar names will typically be in single quotes after the scientific name and some cultivars are trademarked, so they may have a ® symbol next to the cultivar name. For wildlife gardening, it is typically best to use the straight species or 'wild type' of native plants rather than cultivars. Cultivars that change only the growth form, such as making a tall shrub shorter, are usually a safer bet than cultivars that change the color or shape of leaves or flowers. A cultivar bred for showy blooms may not provide as much food for pollinators or be more difficult for them to feed on and cultivars bred for unusual leaf colors may not be as nutritious for pollinator larvae or other wildlife. In general, it is best to be sparing in the use of 'nativars' because they are typically bred for ornamental over ecological value.

# OBTAINING NATIVE PLANTS

When choosing native plants for your backyard habitat, refrain from digging and removing entire plants from the wild because this can cause populations to decline. Instead, collect a few seeds from a robust population and plant them in your garden. If you find areas planned for development, such as new road construction, housing developments, or a proposed parking lot, you may be able to obtain permission from the landowner to move some of the native plants to your property before construction begins.

The Center for Plant Conservation recommends that you collect no more than 10% of a single plant's seeds and no more than 10% of the total seeds from a population in a single season. If you see signs (trampled vegetation, stripped or removed seed heads) that someone else has already collected seed there, move on to another spot.

The best method for collecting and processing seeds will depend on the species. Most seeds of wildflowers or grasses can be collected by shaking the inflorescence or cutting it from the stem and placing it in a paper bag to process later. Separate seeds from any fruit or flesh so that they dry properly and do not rot in storage. Make sure to label your seed collections with the species, location and date and store seeds in a cool, dry place.

The requirements for germination vary between species, but in general, most native seeds require cold damp stratification. This can be as simple as sowing the seeds in the fall and waiting for spring, but you can also stratify seeds in the fridge. Put your cleaned and dried seeds on a clean, damp paper towel and place the towel in a sealed zip-top plastic bag in the fridge for 6 weeks to a few months. You can also use damp sand instead of a paper towel. Once the seeds are stratified, they are ready to plant. Early spring is the best time to plant bare-root perennials, shrubs and trees.

More and more suppliers are offering native plants and seed for backyard gardeners. The list of suppliers on the following pages are a non-exclusive list of some nurseries and seed suppliers that carry plants native to West Virginia. If you purchase native plants from a nursery, be sure to inquire about where the plants originated to ensure that they were propagated from seeds or cuttings and not collected from the wild. When it comes to sourcing seeds or plants, the closer the source population is to your property, the better.

Key:

G: Graminoids (grasses, sedges, etc.)

H: Herbaceous plants (perennials, biennials and/or ferns)

S: Seeds

SH: Shrubs

T: Trees

W: Wetland plants or aquatics

MO: Mail-order

## West Virginia Suppliers

Birds Nest Natives

47 Birds Nest Way

Shepherdstown, WV 25443

304-283-6821

[birdsnestnatives.com](http://birdsnestnatives.com)

G, H, SH

Freed's Greenhouse

57 Freed Drive

Bridgeport, WV 26330

304-592-0897

[freedsgreenhouse.com](http://freedsgreenhouse.com)

H, SH, T

Freedom Forest Nursery

200 Turkey Run Ln

Kearneysville, WV 25430

304-215-1033

[freedomforestnursery.com](http://freedomforestnursery.com)

H, SH, T, MO

Native Roots

598 Deems Rd

Mineral Wells, WV 26150

330-309-4651

[nativerootsinc.com](http://nativerootsinc.com)

H, S, SH, T, W

Sunshine Farm and Gardens

696 Glicks Rd

Renick, WV 24966

304-497-2208

[sunfarm.com](http://sunfarm.com)

G, H, SH, W, MO

Terra Fate

2202 Madison Ave

Huntington, WV 25701

304-691-0124

[terrafate.com](http://terrafate.com)

G, H, W, MO

## Out-of-State Suppliers

Amanda's Garden

Dansville, NY

585-750-6288

[amandasnativeplants.com](http://amandasnativeplants.com)

G, H, W, MO

Arcadia Natives

Washington, PA

724-986-0907

[arcadianatives.com](http://arcadianatives.com)

G, H, SH, T, W

Earth Sangha

Springfield, VA

703-333-3022

[earthsangha.org](http://earthsangha.org)

G, H, SH, T, MO

Ernst Conservation Seeds

Meadville, PA

1-800-873-3321

[ernstseed.com](http://ernstseed.com)

S, MO

Go Native Trees

Lancaster, PA

717-399-0195

[gonativetrees.com](http://gonativetrees.com)

SH, T, MO

Hungry Hook Farm

Bainbridge, PA

717-216-0136

[hungryhookfarm.com](http://hungryhookfarm.com)

G, H, S, SH, T, W, MO

Indigenous Landscapes

Cincinnati, OH

[lovenativeplants.com](http://lovenativeplants.com)

S, SH, T, MO

Izel Native Plants

Washington, DC

410-989-3721

[izelplants.com](http://izelplants.com)

G, H, SH, W, MO

Musser Forests

Indiana, PA

724-465-5684

[musserforests.com](http://musserforests.com)

SH, T, MO

Prairie Moon Nursery

Wimona, MN

866-417-8156

[prairiemoon.com](http://prairiemoon.com)

G, H, S, SH, T, MO



Roundstone Native Seed

Upton, KY

888-531-2353

[roundstoneseed.com](http://roundstoneseed.com)

S, MO

Seven Bends Nursery

Winchester, VA

540-416-2662

[www.sevenbends.org](http://www.sevenbends.org)

G, H, SH, T, W, MO

Tennessee Naturescapes

Clinton, TN

865-730-3122

[tennesseesnaturescapes.com](http://tennesseesnaturescapes.com)

G, H, SH, T, MO

Toadshade Wildflower Farm

Frenchtown, NJ

908-996-7500

[www.toadshade.com](http://www.toadshade.com)

G, H, S, SH, T, W, MO

Additional suppliers of native plants and seed can be found on the WVDNR website at [wvdnr.gov](http://wvdnr.gov). While an effort has been made to provide a complete and accurate listing of services, omissions or other errors may occur and therefore, other available sources of information should be consulted. Inclusion on this list does not constitute an endorsement by the West Virginia Division of Natural Resources.

# INVASIVE PLANTS

Nearly a quarter of the plant species found in West Virginia today did not evolve in West Virginia but were introduced—whether from another part of the United States or from as far away as Europe and east Asia. Among those that have escaped cultivation, a few are invasive. These non-native invasive species grow quickly, spread rapidly and disrupt native ecosystems by displacing native plants, sometimes becoming a monoculture where no other plants can thrive. In addition to displacing native vegetation, they can harbor new diseases and pests, damage buildings and other infrastructure and typically provide less valuable food and cover for wildlife than native plants. Even if an invasive plant seems not to pose a problem in your own yard, the seeds and fruits of invasive plants in developed areas are spread far and wide by wind, water and animals where they make their way to natural areas.

These non-native invasive species may have been introduced accidentally, intentionally, or through natural or human-induced disturbance. Unlike in their native range, these invasive species often have no natural controls in the area where they are introduced, allowing their populations to increase rapidly. Many invasive plants were first introduced in horticultural settings and some continue to be sold in nurseries and garden centers, despite the harm they pose to natural ecosystems. Some of the most invasive plants in West Virginia include autumn olive, multiflora rose, garlic mustard and reed canarygrass.

## Controlling Invasive Plants

A variety of techniques are available for controlling invasive plants, from manual to chemical. In general, focus on working from best to worst. Start with areas that have minimal invasive species to promote native plants in those areas and then work to slowly constrict a more dense infestation by working from the edges to the core. Develop a plan for treatment based on which invasive species are present, the extent of infestation, and what your goals for the area are. Based on your available time and resour-

es, come up with a plan to address invasive species in combination with other issues or challenges your property may face such as high deer pressure or erosion.

Manual methods for controlling invasive plants include pulling, mowing, cutting and pruning.

Manual control is effective for most invasive plants, but typically is more time-consuming and labor-intensive. However, some plants like tree of heaven and Japanese knotweed are very difficult to control manually because they resprout so readily after cutting and may leave you with more of it to deal with than when you started.

A thriving community of native plants makes it more difficult (but not impossible) for invasive plants to squeeze their way in. It's important to monitor your property regularly for signs of new invasive species so that you can take care of things before they get out of hand. Choosing native plants that are well suited to your location gives them the best chance of competing with non-native invasive plants.

For larger infestations of invasive plants, chemical control may be the most efficient and economical option. Carefully applied herbicide targeted at specific plants can be a safe and effective means of controlling invasive plants and restoring habitat for native plants and wildlife. Always read the full label of any herbicide you intend to use and make sure you wear the correct personal protective equipment and follow all instructions for use. Chemical control functions best when it is part of an integrated management plan to address invasive species and other concerns affecting your backyard habitat.



The berries of invasive bush honeysuckles may not be as nutritious as those produced by native shrubs and provide less energy for migrating songbirds. *Photo by Chris Evans*

### Get Involved

You can use apps like iNaturalist, Wild Spotter, or EDDMapS to identify and report invasive species near where you live. Get connected with local organizations doing invasive species control and native plant restoration near you.



Each method of control is just one possible tool for the job.

Do not apply herbicide if rain is forecast within a 24-hour window and be especially careful applying herbicides around water sources. Several common herbicide formulations used in controlling invasive plants are not recommended for use near water.



Garlic mustard and stiltgrass can form a carpet of invasive plants that shade out native spring ephemerals. *Photo by David Capaert*

Glyphosate and triclopyr are some of the most common active ingredients in herbicides used for invasive plant control. Different formulations vary in their effectiveness and suitability for different control scenarios, so be sure to choose the right formulation for the job.

Three of the most common methods of herbicide application for controlling invasive plants are foliar, basal bark and cut stump. Foliar spraying is effective for most plants, but carries a higher risk of affecting any non-target vegetation that may be growing among the invasive plants. Foliar spraying the regrowth after mowing or cutting back tall growth of invasive plants can be very effective. Foliar 'spot-spraying' of individual invasive plants can be an effective way to maintain your property after most of the invasives have been removed.

Basal bark spraying is good at controlling many species of invasive shrubs like bush honeysuckles, autumn olive, multiflora rose and others. Many of our invasive shrubs leaf out earlier than native shrubs, so early spring is a great time to identify and treat these shrubs before native plants have emerged. Because you can target invasive shrubs by directly spraying their stems, there is a much lower risk of affecting non-target native species. The ester formulation of triclopyr (Garlon® 4 and equivalents) is a common choice for basal-bark applications.

Cut stump applications are another effective means of controlling woody vegetation like invasive trees, shrubs and vines. Cut the stem or trunk of the plant

and then apply a small amount of concentrated herbicide directly to the cut surface. Again, because this application technique applies a more concentrated herbicide directly to the surface of the plant, much less volume of herbicide needs to be used and there is a lower risk of contacting non-target plants. Cut stump applications are most effective in late summer to early fall when plants are naturally drawing nutrients down into the roots from the upper portions of the plant.

For more information on invasive plants, contact the WVDNR Wildlife Diversity Unit, WVU Extension, or the WV Department of Agriculture (WVDA). WVDA maintains a list of [certified pesticide applicators](#) that can assist you in controlling invasive species on your property.

## Tools and Equipment

**Root shovel:** A sharp-edged shovel helps to dig out and completely remove the root system of invasive shrubs.

**Hori-hori knife:** A garden knife/trowel can be used to dig out the taproots of invasive weeds.

**Weed wrench:** Secure the jaws of this tool around the base of invasive shrubs or small trees and pull on the handle to lever invasive shrubs and trees out by the roots.

**Plastic tarp:** You can use black plastic tarp or clear greenhouse plastic to kill weed seeds and prepare a bed for planting. Clear plastic allows sunlight to heat up the soil enough to kill many weed seeds.

**Gloves, a long sleeved shirt, pants, sturdy shoes and eye protection** are useful when dealing with thorny shrubs or other dense vegetation and may be required by the label when using herbicide.

**Backpack or pump sprayer:** Choose a sprayer designed for the herbicide formulation and solvents you intend to use, with sturdy seals and durable components.

## A Note on Pesticide Use

Pesticides can be dangerous to wildlife that feed on treated plants and insects. Broadcast foliar application of herbicides can reduce food and cover for wildlife. Reducing pesticide use promotes a healthier environment, especially during the nesting season, when bird parents rely on high-protein insect food sources to give nestlings a healthy start in life.

Neonicotinoid pesticides used in agriculture and urban landscapes pose a serious danger to native bees and other pollinators because the pesticide persists in the pollen and nectar. Check the label to make sure that plants you use on your landscape were not treated with neonicotinoid pesticides. When using herbicide to control invasive plants, read the label carefully and apply the least amount of herbicide necessary to control the infestation.

### Common backyard invasive plants and native alternatives

Common Name	Latin Name	Threat Level	Growth Form	Native Alternatives
Norway maple	<i>Acer platanoides</i>	High	Tree	Sugar maple, red maple
Tree-of-heaven	<i>Ailanthus altissima</i>	High	Tree	Black walnut, hickory, sumac
Garlic mustard	<i>Alliaria petiolata</i>	High	Forb	Native spring ephemerals
Japanese barberry	<i>Berberis thunbergii</i>	High	Shrub	Spicebush, winterberry, lowbush blueberry
Spotted knapweed	<i>Centaurea stoebe ssp. micranthos</i>	High	Forb	Native thistles, New York ironweed
Autumn olive	<i>Elaeagnus umbellata var. parvifolia</i>	High	Shrub	Winterberry, red chokeberry
Winged euonymus, burningbush	<i>Euonymus alata</i>	High	Shrub	Eastern wahoo, hearts-a-bustin
Japanese honeysuckle	<i>Lonicera japonica</i>	High	Vine	Trumpet-creeper, virgin's bower
Invasive bush honeysuckles	<i>Lonicera spp. (maackii, morrowii, tatarica)</i>	High	Shrub	Northern bush honeysuckle, winterberry
Purple loosestrife	<i>Lythrum salicaria</i>	High	Forb	Blazing star, blue vervain
Japanese stiltgrass	<i>Microstegium vimineum</i>	High	Grass	White grass, other native grasses
Mile-a-minute	<i>Polygonum perfoliatum</i>	High	Vine	Virginia creeper
Callery (Bradford) pear	<i>Pyrus calleryana</i>	High	Tree	Serviceberry, hawthorn
Japanese knotweed	<i>Reynoutria japonica</i>	High	Forb/Sub-shrub	Silky dogwood, ninebark, black willow
Multiflora rose	<i>Rosa multiflora</i>	High	Shrub	Pasture rose, swamp rose
Wine raspberry	<i>Rubus phoenicolasius</i>	High	Shrub	Black raspberry, Allegheny blackberry
Lesser periwinkle	<i>Vinca minor</i>	High	Forb/Vine	White wood aster, golden ragwort, wild ginger
Lesser celandine	<i>Ficaria verna</i>	Med	Forb	Golden ragwort
English ivy	<i>Hedera helix</i>	Med	Vine	Virginia creeper
Privet	<i>Ligustrum spp. (vulgare, obtusifolium, sinense)</i>	Med-High	Shrub	Blackhaw, arrowwood

Threat levels based on invasiveness rankings from the WV Natural Heritage Program. For a more complete list of invasive species in West Virginia, check out the WVDNR website [wvdnr.gov](http://wvdnr.gov)

# FOOD

The best way to provide food for a wide diversity of wildlife is with native plants. Even a small space can accommodate a few native plants, enough to make a pollinator oasis in a sea of turf-grass lawns. A good rule of thumb when gardening for wildlife is to include enough plants to cover the three major bloom times (early, middle, late), including flowers of at least three different colors and three different shapes or heights. This will provide food for pollinators throughout the growing season and benefit many other species of wildlife. Use the lists of native food plants on the following pages to help you select plants to include in your backyard habitat plan.



Redbud trees provide an early source of nectar for pollinators, and birds eat the seeds in summer.

## Spring-blooming species

Common Name	Latin Name	Growth Form	Flower Color
Blue cohosh	<i>Caulophyllum thalictroides</i>	Forb	Yellow/Purple/Green
Springbeauty	<i>Claytonia virginica</i>	Forb	White-Pink
Wild geranium	<i>Geranium maculatum</i>	Forb	Pink
Golden ragwort	<i>Packera aurea</i>	Forb	Yellow
Blue phlox	<i>Phlox divaricata</i>	Forb	Blue-Purple
Common blue violet	<i>Viola sororia</i>	Forb	Blue-Purple
American hazelnut	<i>Corylus americana</i>	Shrub	Yellow
Spicebush	<i>Lindera benzoin</i>	Shrub	Yellow
Hillside blueberry	<i>Vaccinium pallidum</i>	Shrub	White-Pink
Blackhaw	<i>Viburnum prunifolium</i>	Shrub	White
Red maple	<i>Acer rubrum</i>	Tree	Red
Sugar maple	<i>Acer saccharum</i>	Tree	Yellow
Yellow buckeye	<i>Aesculus flava</i>	Tree	Yellow-Red
Serviceberry	<i>Amelanchier arborea</i>	Tree	White
Pawpaw	<i>Asimina triloba</i>	Tree	Purple-Brown
Hackberry	<i>Celtis occidentalis</i>	Tree	White-Green
Redbud	<i>Cercis canadensis</i>	Tree	Pink-Purple
Flowering dogwood	<i>Cornus florida</i>	Tree	White
Honey locust	<i>Gleditsia triacanthos</i>	Tree	Yellow-Green
Tulip poplar	<i>Liriodendron tulipifera</i>	Tree	Yellow-Orange
Cucumber magnolia	<i>Magnolia acuminata</i>	Tree	White
Black cherry	<i>Prunus serotina</i>	Tree	White
Sassafras	<i>Sassafras albidum</i>	Tree	Yellow-Green
American basswood	<i>Tilia americana</i>	Tree	Yellow, White

## Partnering with Pollinators in the Yard and Garden

Take it easy with the lawnmower! Sometimes providing food for wildlife is as easy as doing nothing—waiting to mow your lawn in late spring can provide pollinators with access to an early source of nectar from low-growing yard ‘weeds’ like clover, dandelions and violets. You can continue to mow your lawn the rest of the year, but raising the blade so that these low-growing plants can bloom is an easy first step to provide a little something for pollinators.

Nearly one in every three bites of food you eat depends on a pollinator. At the industrial scale, non-native European honeybees do much of this pollination, but native bees are important pollinators for many agricultural crops. Some common garden fruits, vegetables and herbs can provide food for our native pollinators, especially if you let them bolt or flower. For example, black swallowtail butterfly caterpillars use parsley and dill leaves.

Native bees and butterflies may benefit from mint, lavender, or chives that are allowed to bloom.

Other garden plants that can benefit native pollinators include those in the onion family (garlic, chives, leeks), brassicas (cabbage, kale, Brussels sprouts), peppers, tomatoes, beans, melons, squash, apples and stone fruit like cherries and plums.

You might also consider edible landscaping with native plants. Wild edibles you could grow in your own backyard include serviceberry, pawpaw, hazelnut, wild strawberry, sunflowers, black raspberries, elderberry and wild blueberries, just to name a few.



### Summer-blooming species

Common Name	Latin Name	Growth Form	Flower Color
Black cohosh	<i>Actaea racemosa</i>	Forb	White
Hemp dogbane	<i>Apocynum cannabinum</i>	Forb	White
Common milkweed	<i>Asclepias syriaca</i>	Forb	Pink-Purple
Butterflyweed	<i>Asclepias tuberosa</i>	Forb	Orange
Canada honewort	<i>Cryptotaenia canadensis</i>	Forb	White
Rattlesnakeweed	<i>Pilosella venosa</i>	Forb	Yellow
Foxglove beard-tongue	<i>Penstemon digitalis</i>	Forb	White
Wintergreen	<i>Gaultheria procumbens</i>	Shrub	White
Black huckleberry	<i>Gaylussacia baccata</i>	Shrub	Pink
Smooth hydrangea	<i>Hydrangea arborescens</i>	Shrub	White
Mountain laurel	<i>Kalmia latifolia</i>	Shrub	Pink
Great laurel	<i>Rhododendron maximum</i>	Shrub	White
Carolina rose	<i>Rosa carolina</i>	Shrub	Pink
Deerberry	<i>Vaccinium stamineum</i>	Shrub	White
American holly	<i>Ilex opaca</i>	Shrub/Tree	White-Green
American elderberry	<i>Sambucus canadensis</i>	Shrub/Tree	White
American persimmon	<i>Diospyros virginiana</i>	Tree	Yellow-Green
Sweetgum	<i>Nyssa sylvatica</i>	Tree	Green
Sourwood	<i>Oxydendrum arboreum</i>	Tree	White
Black locust	<i>Robinia pseudoacacia</i>	Tree	White
Trumpet creeper	<i>Campsis radicans</i>	Vine	Orange-Red

## Fall-blooming species

Common Name	Latin Name	Growth Form	Flower Color
White snakeroot	<i>Ageratina altissima</i>	Forb	White
White wood aster	<i>Eurybia divaricata</i>	Forb	White (yellow)
Joe-Pye-Weed	<i>Eutrochium fistulosum</i>	Forb	Pink-Purple
Thinleaved sunflower	<i>Helianthus decapetalus</i>	Forb	Yellow
Yellow jewelweed	<i>Impatiens pallida</i>	Forb	Yellow
Evening primrose	<i>Oenothera biennis</i>	Forb	Yellow
Jumpseed	<i>Polygonum virginianum</i>	Forb	Green-Pink-White
Tall goldenrod	<i>Solidago altissima</i>	Forb	Yellow
Bluestem goldenrod	<i>Solidago caesia</i>	Forb	Yellow
Canada goldenrod	<i>Solidago canadensis</i>	Forb	Yellow
Gray goldenrod	<i>Solidago nemoralis</i>	Forb	Yellow
Wrinkleleaf goldenrod	<i>Solidago rugosa</i>	Forb	Yellow
Calico aster	<i>Symphotrichum lateriflorum</i>	Forb	White-Pink (yellow)
White vervain	<i>Verbena urticifolia</i>	Forb	White
Wingstem	<i>Verbesina alternifolia</i>	Forb	Yellow
New York ironweed	<i>Vernonia noveboracensis</i>	Forb	Purple
Witch hazel	<i>Hamamelis virginiana</i>	Shrub	Yellow
Virgin's bower	<i>Clematis virginiana</i>	Vine	White

## Hazards of Supplemental Feeding

Not only do natural food sources like native plants provide a variety of benefits to many different species of wildlife, they avoid some of the hazards of supplemental feeding at feeders or food stations.

Because supplemental feeding tends to concentrate animal activity more than natural food sources, there is an inherent risk of spreading disease. That is why it is so important to clean bird feeders and birdbaths regularly—once every two weeks or so and to monitor any feeding stations for signs of rotting food or diseased animals. See the section on Supplemental Bird Feeding for more info on cleaning bird feeders. Diseases like rabies and chronic wasting disease which have negative impacts for both wildlife and humans are easily spread at artificial food sources.

## Deer Feeding Prohibitions in the Eastern Panhandle

“A “CWD Containment Area” is an area designated by the Director of the Division of Natural Resources where deer have been found, or are near, to animals being infected with chronic wasting disease (CWD). The purpose of a containment area is to manage, control, eradicate and/or prevent the spread of the disease. The CWD Containment Area includes all of Berkeley, Hampshire, Hardy, Mineral and Morgan (carcass transport & baiting and feeding restrictions) and Grant and Jefferson Counties (baiting and feeding restriction only).” Baiting or feeding deer in these counties is prohibited. The counties included in the containment area may change if the disease is found in new counties, so check the WVDNR website or the most recent hunting regulations booklet for up-to-date information.

## Hard mast trees and shrubs

Hard mast trees and shrubs include native oaks and hickories, as well as black walnut, yellow buckeye and American beech, along with shrubs like American hazelnut. Many hard mast trees produce nuts in cycles so it is important to have an array of native species on your property. This way, there should be at least some hard mast available each year.



## Soft mast trees, shrubs and vines

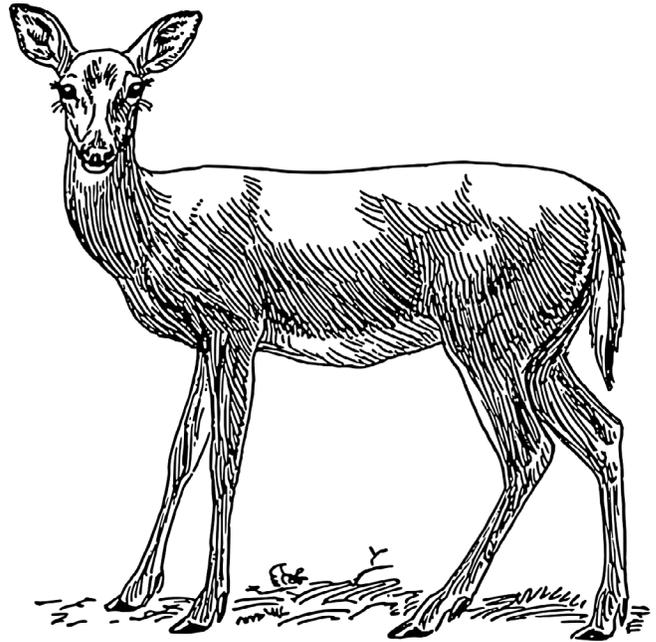
Soft mast trees, shrubs and vines provide berries and other fruits for songbirds, small mammals and other wildlife like box turtles and black bears. Berries and fruits that hang on through winter provide nutritious food for wildlife in the lean times of the year as well as a pop of color against the winter landscape.

## Soft mast trees, shrubs and vines

Common Name	Latin Name	Growth Form	Flower Color
Wintergreen	<i>Gaultheria procumbens</i>	Shrub	White
Black huckleberry	<i>Gaylussacia baccata</i>	Shrub	Pink
Spicebush	<i>Lindera benzoin</i>	Shrub	Yellow
Carolina rose	<i>Rosa carolina</i>	Shrub	Pink
Black raspberry	<i>Rubus occidentalis</i>	Shrub	White
Hillside blueberry	<i>Vaccinium pallidum</i>	Shrub	White-Pink
Deerberry	<i>Vaccinium stamineum</i>	Shrub	White
Blackhaw	<i>Viburnum prunifolium</i>	Shrub	White
Northern arrowwood	<i>Viburnum recognitum</i>	Shrub	White
American holly	<i>Ilex opaca</i>	Shrub/Tree	Yellow-Green
American plum	<i>Prunus americana</i>	Shrub/Tree	White
American elderberry	<i>Sambucus canadensis</i>	Shrub/Tree	White
Common serviceberry	<i>Amelanchier arborea</i>	Tree	White
Pawpaw	<i>Asimina triloba</i>	Tree	Purple-Brown
Flowering dogwood	<i>Cornus florida</i>	Tree	White
American persimmon	<i>Diospyros virginiana</i>	Tree	Yellow
Blackgum	<i>Nyssa sylvatica</i>	Tree	Green
Black cherry	<i>Prunus serotina</i>	Tree	White
Sassafras	<i>Sassafras albidum</i>	Tree	Yellow-Green
Virginia creeper	<i>Parthenocissus quinquefolia</i>	Vine	Yellow-Green
Fox grape	<i>Vitis vulpina</i>	Vine	White-Green

## Trouble with Deer?

Consider a few of these plants that are more deer-resistant but still provide value to pollinators and other wildlife. Deer tend to avoid plants with strongly-scented, waxy, or hairy foliage, and typically prefer flowers and tender leaves and shoots over grasses and ferns. Fencing or tubes can help protect saplings and shrubs until they are tall enough to withstand deer browse. Especially in the absence of other large predators, sustainable deer harvest, particularly antlerless deer harvest, remains an important tool for keeping deer populations in balance and protecting native plants from excessive browsing pressure. Small trees and shrubs may benefit from a 5-6 foot wire fence encircling the lower branches you are trying to protect. This can protect the plant until it is large enough to withstand or outgrow the reach of a deer.



### Deer-resistant native plants

Common Name	Genus	Growth Form	Flower Color
Hemp dogbane/spreading dogbane	<i>Apocynum</i>	Forb	White, Pink
Milkweeds	<i>Asclepias</i>	Forb	Various
Wild indigo	<i>Baptisia</i>	Forb	Purple/Yellow
Blue cohosh	<i>Caulophyllum</i>	Forb	Yellow/Purple/Green
Wild bergamot/bee balm	<i>Monarda</i>	Forb	Various
Golden ragwort	<i>Packera</i>	Forb	Yellow
Jumpseed	<i>Persicaria</i>	Forb	White
Mountain mint	<i>Pycnanthemum</i>	Forb	White-Purple
Carpenter's square	<i>Scrophularia</i>	Forb	Green-Purple
Goldenrods	<i>Solidago</i>	Forb	Yellow
White vervain	<i>Verbena</i>	Forb	White
New York ironweed/Giant Ironweed	<i>Vernonia</i>	Forb	Purple
Leatherwood	<i>Dirca</i>	Shrub	Yellow
Black elderberry/Red elder	<i>Sambucus</i>	Shrub	White
Paw paw	<i>Asimina</i>	Tree	Purple-Brown
American holly	<i>Ilex</i>	Tree	White/Green
Trumpetvine	<i>Campsis</i>	Vine	Red-Orange
Virgin's bower	<i>Clematis</i>	Vine	White

# COVER

**W**ildlife use cover to escape from predators, to protect themselves and their young against wind and weather and as a place to rest. Cover resources include areas with unmowed, tall vegetation like native bunchgrasses, ferns and wildflowers, as well as areas with dense woody vegetation like shrubs and vines.

Clump-forming native bunch grasses provide important cover for many ground-nesting birds and small mammals as well as seeds for food.

Leaf litter provides cover for amphibians and reptiles in addition to harboring the insects and invertebrates that they eat.

Rock piles or rock walls provide nooks and crannies for many animals to seek shelter as well as basking spots for reptiles and amphibians.

## Native bunchgrasses and other groundcovers

Common Name	Latin Name	Growth Form	Height (ft)
Hayscented fern	<i>Dennstaedtia punctilobula</i>	Fern	1-2
Sensitive fern	<i>Onoclea sensibilis</i>	Fern	1-2
New York fern	<i>Thelypteris noveboracensis</i>	Fern	1.5
Wild ginger	<i>Asarum canadense</i>	Forb	0.5-1
Wild strawberry	<i>Fragaria virginiana</i>	Forb	0.5
Alumroot	<i>Heuchera americana</i>	Forb	1-2
Golden ragwort	<i>Packera aurea</i>	Forb	1-2
Blue phlox	<i>Phlox divaricata</i>	Forb	0.5-1
Moss phlox	<i>Phlox subulata</i>	Forb	0.5
Mayapple	<i>Podophyllum peltatum</i>	Forb	1-1.5
Foamflower	<i>Tiarella cordifolia</i>	Forb	0.5-1
Common blue violet	<i>Viola sororia</i>	Forb	0.5
Big bluestem	<i>Andropogon gerardii</i>	Grass	4-7
River oats	<i>Chasmanthium latifolium</i>	Grass	2-5
Deer-tongue witchgrass	<i>Dichanthelium clandestinum</i>	Grass	2
Bottlebrush grass	<i>Elymus hystrix</i>	Grass	2-5
White cutgrass	<i>Leersia virginica</i>	Grass	1-4
Switchgrass	<i>Panicum virgatum</i>	Grass	4-6
Little bluestem	<i>Schizachyrium scoparium</i>	Grass	2-4
Common wood sedge	<i>Carex blanda</i>	Sedge	0.5-2
Pennsylvania sedge	<i>Carex pennsylvanica</i>	Sedge	0.5-1.5

Log piles, brush piles and other coarse woody debris provide hiding places for birds, reptiles, amphibians and small mammals as well as nesting places for native bees.

Native plants with hollow stems provide important overwintering and nesting habitat for solitary bees. You can also construct 'bee hotels' by drilling holes of various sizes into a block of wood or tying together a clump of bamboo or other stems.

In ponds and wetlands, submerged vegetation provides a place for minnows, tadpoles and other wildlife to hide from larger predators and seek shade in hot conditions.



## REPRODUCTIVE RESOURCES

For many animals, reproductive habitat will overlap with the other resources needed by adults. For some though, a little extra thought and effort is necessary. Many species of wildlife, from amphibians to songbirds, use different resources and habitats as juveniles than they do as adults.

Reproductive resources for butterflies and other pollinators include the native plants that larvae feed on. Native trees like oaks, cherries, maples and birches along with wildflowers like goldenrods and sunflowers support hundreds of species of caterpillars. In turn, these caterpillars are important for nesting songbirds that use caterpillars as high-energy baby food for growing nestlings. Native trees and shrubs provide a place for birds to nest with lots of food close by.

Amphibians like spotted salamanders and wood frogs use fish-free water sources like vernal pools as breeding grounds.

Turtles need soft, sandy soil in a sunny location to lay their eggs.

Dragonflies and damselflies use water sources like streams, ponds and wetlands to lay their eggs, with dragonfly nymphs sometimes taking several years to develop.

Bat boxes provide a warm, safe environment for bats to raise their young. Check out the section on Bats to learn more.

Stumps and fallen logs, hollow-stemmed plants and bee hotels provide places for solitary bees to nest.

### Nest Boxes

Nest boxes for Eastern bluebirds, wood ducks and purple martins provide these cavity-nesting birds with a safe place to raise young where natural cavities like those found in large snags are scarce. The right nest boxes can also help American kestrels, barn owls and common mergansers. It is important to choose the right design for a nest box to suit the desired species and to make sure the hole is the correct size (and shape). Especially for bluebird boxes, non-native house sparrows can be a problem as they will remove nest material and even kill bluebirds and their nestlings in their attempts to nest. Placement is another important aspect to consider when providing nest boxes: branches leaning near the entrance may make it easy for predators to enter the nest. Visit [Nestwatch.org](https://www.nestwatch.org) to learn more.

#### Get Involved

Help monitor bird nesting behavior and population trends by participating in the national NestWatch monitoring program. Visit [Nestwatch.org](https://www.nestwatch.org) to learn more.



Attracting eastern bluebirds is an easy way to get started with landscaping for wildlife. Bluebirds feed on insects for most of the year, so make sure to have areas with native vegetation for those insects to live in and feed on. A bird bath or water dish provides a place for bluebirds to drink and clean their feathers, and a nest box provides a place for them to raise their young.

# WATER

**W**ater is often an overlooked component, but it is essential for all wildlife. Providing a year-round source of water is one of the simplest ways to attract wildlife to your yard.

There are a variety of natural water sources found in West Virginia, from streams, rivers, lakes and ponds to vernal pools and springs.

You can provide supplemental water with a birdbath or another shallow container filled regularly with clean, fresh water. A variety of heated birdbaths and water heaters are available to help keep the water in your birdbath above freezing all winter long. Providing a water source elevated above ground will attract many kinds of birds and can benefit bees and other pollinators as well. A water source at ground level mimics natural water sources and will provide water for wildlife that can't fly to an elevated birdbath.

Help protect existing water sources like streams, wetlands and vernal pools from runoff, erosion and pollutants by following the recommendations listed below:

- Do not use pesticides or herbicides except for controlling invasive species and always follow the label instructions for using herbicides around water. If possible, have a natural buffer between the application site and any source of water. Do NOT apply if rain is forecasted within a 24-hour window. Several common herbicide formulations used in controlling invasive plants are not recommended for use around water.
- Native plants don't need chemical fertilizers—leaf litter and organic compost are typically the only soil amendments needed. Biochar is another organic soil amendment that helps to retain soil nutrients and make them more available to plants.
- Consider collecting rainwater for use in any ornamental plantings or vegetable gardens. Check out the [WVDEP website](#) for more information on rain barrels.
- Rain gardens are shallow depressions in the ground planted with native plants that can help slow the flow of rainwater into waterways and reduce runoff and erosion.

- Riparian buffers filter sediment, nutrients and pollutants out of waterways. The strip of vegetation buffers and slows the flow of stormwater, thus reducing flooding and erosion. Strips of vegetation only 30 feet wide can provide important water quality benefits, but for wildlife habitat, the bigger the buffer, the better!

The WVDEP has more information on how to manage stormwater in and around your yard as well as other ways to protect waterways from pollution and runoff [dep.wv.gov](http://dep.wv.gov).

## Vernal Pools

Vernal pools are seasonal depressions that fill with water. In West Virginia, they are usually found in a forest swamp wetland habitat. They provide reproductive habitat for several species of amphibians including wood frogs, spring peepers, spotted salamanders and Jefferson's salamanders. These fish-free depressions fill with snowmelt and rainwater through the winter and spring and then typically dry out by summer.

If you have a vernal pool on your property, celebrate the fact you have such a valuable habitat on your property and leave it be! Don't try to fill it or turn it into a fish pond—it may lose much of its current value to local wildlife.



A vernal pool on the Monongahela National Forest

### Get Involved



Check out the WVDEP website to find your local [watershed groups](#) and get involved by monitoring [vernal pools](#) and [stream health](#) in your area.

## Natural Wetlands

Wetlands are areas where the land is covered by shallow water or the soil is saturated near the surface for at least two weeks during the growing season. Some common names for different wetland habitats are swamp, marsh and bog.

These areas, defined by their hydrology, soils and plant community, provide important ecological functions such as reducing flooding, recharging groundwater supplies, removing pollution and providing habitat for many different kinds of wildlife. Wetlands make up less than one percent of West Virginia's total area, but provide habitat for 23% of West Virginia's plant species and 44% of the rare plant species found in the state.

Historically, many wetlands were drained or filled so the land could be used for other purposes. In West Virginia, we have lost 80-90% of our wetlands, so the few that remain are more precious than ever as land continues to be converted from wetlands for development, construction and industry. Invasive species and pollution threaten the health of many West Virginia wetlands.



## PONDS AND WATER GARDENS

Providing water for wildlife will round out the habitat requirements of your Wild Yard. One way to do this is to create a pond. Your garden pond may range in size from a bathtub sunk in the corner of your yard to much larger constructed ponds. Many species of backyard wildlife will benefit from this permanent water source.

Small insects and mammals can subsist on rainwater, puddles, or morning dew, but they and larger creatures will appreciate any new source of clean water. Even if you only have room for a simple pool built from a washtub, you can still have a lovely water garden visited by an amazing variety of wildlife.

### Ponds Made Simple

You can make a small pond from a variety of materials—from an above ground or buried aluminum horse trough or a buried bathtub to a large plastic bucket. (Note: Do not use copper if you plan to have fish, because it is toxic to them). Pre-formed pond liners or fiberglass pools are another option.

Backyard ponds should have gently sloping sides so that amphibians and other wildlife can get in and out easily. Steep-sided pools without an exit ramp may trap small animals in the pool. If your buried tub has steep sides, place partially submerged rocks or logs in the water for animals to climb on to get in and out of the water easily.

Once you have placed the tub where you like, fill it partially with sandy loam soil. (Do not add compost or other organic matter to the soil; it will cloud the water). Let the water trickle slowly into the container from a hose until the container is a bit more than half-full. After planting with a few aquatic plants, fill the container to the top, adding water at a slow trickle as before.

If the water you use to fill your pond is highly chlorinated, you may want to wait a few days to add plants or fish to let the chlorine evaporate. Fish and aquarium supply stores can recommend products to help dissipate chlorine. A small water pump can be used to circulate the water, providing oxygen and helping to discourage mosquitoes. Choose one with a screen so that dragonfly and damselfly nymphs are not sucked in and killed.

## Choosing Your Pond Site

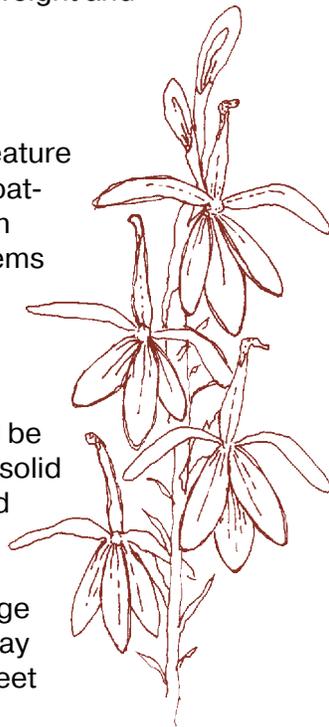
Wildlife ponds need a combination of sun and shade. Some shade, particularly over the shallow parts of the pond, will keep the water from overheating and reduce algae growth. Trees and shrubs on the west side of a pond will provide shade in the hottest parts of the day. Some aquatic plants require a lot of sunlight, so choose your pond location and selection of plants wisely based on the site conditions. Be mindful of placing your pond near sources of runoff like surrounding lawns and roads. Choose an area with level ground to make excavation and maintenance easier. You can use a flexible garden hose to lay out the outline of your pond.

## Deciding on a Pond Liner

In soils with very high clay content, a pond liner may not be necessary, especially if you compact the soil after digging the pond. In most areas though, some kind of pond liner will be necessary for the pond to retain water. Pre-formed plastic or fiberglass ponds typically come in a limited array of sizes and depths, often with steep sides that require the addition of a slope to make a suitable wildlife pond. Flexible pond liners on the other hand let you be more creative with the shape and depth of your pond. Synthetic pond liners can be made out of PVC, polyethylene, EPDM and other synthetic rubbers, which vary in their durability, thickness, weight and cost.

## Depth of a Pond

Your wildlife pond should feature shallow areas to support floating and emergent (rooted in soil, but with leaves and stems extending out of the water) plants as well as deeper areas of refuge from predators and extremes in temperature. Your pond should be deep enough to not freeze solid in winter—typically, two and half feet in smaller ponds and four feet in larger ponds is deep enough. Large ponds in colder climates may need to be as deep as six feet to avoid freezing.



## Planting Your Aquatic Oasis

About half to three-quarters of your pond's surface should be vegetated, with 5% emergent, 10-25% floating and 25-50% submerged plants and the rest maintained with open water. Use native aquatic plants wherever possible and do not use any invasive aquatic plants like parrot's-feather, curly pondweed, or yellow iris. Surround your pond with native grasses, sedges, forbs and shrubs, but leave an area of the pond's edge free from vegetation to provide small animals access and make it easier for you to access your pond to clean it. Leaving a few paths and 'beaches' around the edge will also provide places for you to view your plantings and observe any wildlife visitors to your pond.

Keeping pond plants in containers makes it easy to take them out to clean the bottom of the pond or to bring tender plants in for the winter. Whether you put plants directly into the soil or in pots, use a heavy clay soil *without* perlite or vermiculite as these will float. Adding a layer of pea gravel to the top of the pots will also help keep the water from muddying.

## About Fish

Ponds less than one acre in size are difficult to manage for stocked sunfish or bass. A small backyard pond is usually able to support amphibians or fish, but not both. However, if your pond has an area with shallow water and dense vegetation, tadpoles and aquatic larvae may be able to hide from predatory fish, but it may not support as many frogs, dragonflies and other aquatic wildlife as a fish-free pond.

Typical native sportfish that may be stocked in a larger constructed pond include bass (smallmouth and largemouth), channel catfish, as well as sunfish like bluegill and redear sunfish and minnows like fathead minnows or golden shiners. If you have multiple ponds, consider having one with fish and one without.



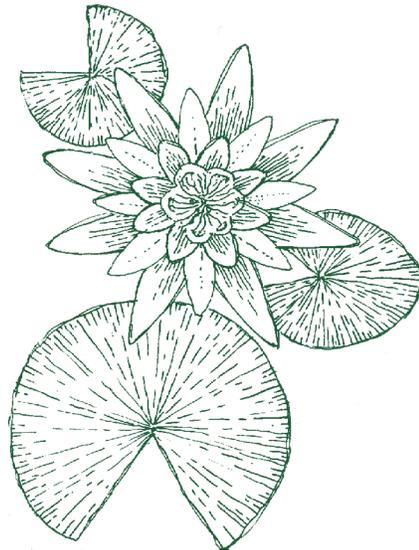
Always remember to call 811 before you dig!

## Pond Maintenance

Small ponds need more attention than large ponds. Larger ponds with more water are able to maintain more stable temperatures and water chemistry. Outside of removing large leaves and dead plants before they rot or making sure to remove the occasional dead frog or fish, caring for a wildlife pond is not difficult.

Over time, sediment accumulates in ponds and vegetation can become crowded, so plan to clean your pond once every two to three years. Remove excess algae and decaying plant material, divide or remove plants that have gotten too large or dominant and remove any unsightly debris. Check in on your pond regularly to make sure no invasive plants have established and remove any that have appeared.

Winter is a good time for pond maintenance, as much of the wildlife activity will have slowed down. If you leave material removed from the pond by the water's edge for a day or two, any critters that were dormant in the pond muck should be able to find their way back to the water.



### Plants for water gardens

Moist soil/water's edge plants		Aquatic & marsh plants	
Common Name	Latin Name	Common Name	Latin Name
Buttonbush	<i>Cephalanthus occidentalis</i>	Hornwort	<i>Ceratophyllum demersum</i>
Smooth alder	<i>Alnus serrulata</i>	Duckweed	<i>Lemna minor</i>
Hop sedge	<i>Carex lupulina</i>	Spatterdock	<i>Nuphar advena</i>
Tussock sedge	<i>Carex stricta</i>	Fragrant waterlily	<i>Nymphaea odorata</i>
Silky dogwood	<i>Cornus amomum</i>	Broadleaf arrowhead	<i>Sagittaria latifolia</i>
Flat-top goldentop	<i>Euthamia graminifolia</i>		
Orange jewelweed	<i>Impatiens capensis</i>		
Wood-nettle	<i>Laportea canadensis</i>		
Cardinal flower	<i>Lobelia cardinalis</i>		
Blue vervain	<i>Verbena hastata</i>		

# CITY GARDENS

People who live in apartments, townhouses and condominiums can still provide habitat for wildlife. Space is typically at a premium in urban settings and fewer species of wildlife may be present than in more rural areas. However, with a little creativity, you can still provide habitat for wildlife even with limited space.

## Space Savers for City Gardens

- Tube feeders
- Suet feeders
- Nyjer socks/feeders
- Hanging baskets
- Trellis for climbing plants
- Hummingbird feeders
- Suction-cup feeders on windows
- Dwarf varieties of trees and shrubs
- Pollinator nest boxes and bee hotels
- Window boxes with native wildflowers
- Container gardens on balconies, decks, or rooftops
- Interplanted trees, shrubs and annuals

Check out the section on Supplemental Bird Feeding to learn more about what foods and feeder types attract which birds.

Especially in urban areas, it is important not to spill seed on the ground, as this will attract larger flocks of undesirable birds as well as rodents and other pests.



Birds gather at a tube-style feeder in winter

## Get Involved

Learn more about local birds and contribute to research by participating in the [Celebrate Urban Birds Project](#)



Columbine, alumroot and native grasses fill out this spring container planting. *Photo: Mt. Cuba Center*

## Containers

Never underestimate the effects of planting in containers! Container gardening can completely transform small areas like fenced-in backyards and porches. You can use traditional pots, or any other container that can hold soil and moisture to turn your city space into a gardener's paradise. You can create a butterfly garden by putting some larger planters clustered together in an area of sunlight protected from the wind. See the section on Butterfly Gardening to learn more on what to plant for butterflies.

Create beautiful container plantings by combining 'Thrillers, Fillers and Spillers'. 'Thrillers' are taller plants with bold flowers or eye-catching foliage. 'Fillers' are clumping plants that add volume to the planting and 'Spillers' drape over the edges of the container.

### Thrillers

bee balm\*, black-eyed susan\*, butterfly weed\*, cardinal flower\*, cinnamon fern, cutleaf coneflower, foxglove beardtongue\*, sensitive fern, wild columbine, wrinkleleaf goldenrod\*

### Fillers

American alumroot, blue phlox, blue violet, calico aster\*, golden alexanders, heartleaf foamflower, lanceleaf coreopsis\*, little bluestem, soft rush, white wood aster\*, wild geranium

### Spillers

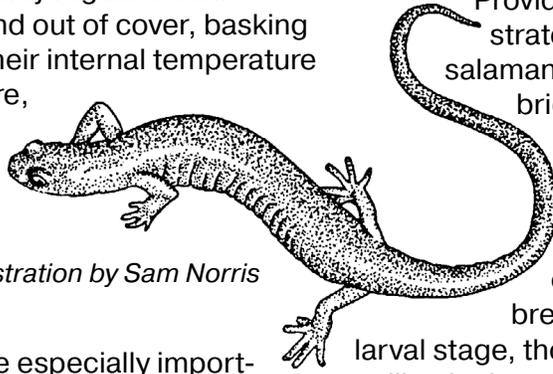
maidenhair fern, Pennsylvania sedge, river oats, wild ginger, wild strawberry\*

\*Plants with exceptional value to pollinators

# AMPHIBIANS AND REPTILES

There are more than 80 species of amphibians and reptiles in West Virginia. Amphibians include frogs, toads and salamanders while reptiles include snakes, skinks, lizards and turtles. Unlike mammals and birds, these animals are ectothermic and use the environment to regulate their internal temperature. They regulate their temperature by moving in and out of cover, basking or hiding in shade to keep their internal temperature at the perfect level. Therefore, providing the right kinds of cover, open space and moisture can be particularly important for attracting amphibians and reptiles.

*Illustration by Sam Norris*



Cover and places to hide are especially important for small ground-dwelling amphibians and reptiles. A yard without leaf litter or other debris will not attract these species. Hiding places as well as places with moisture or standing water are key for both amphibians and reptiles.

Amphibians and reptiles are less likely to move into a new area than birds, butterflies, bats and larger animals, so you should figure out which amphibians and reptiles are already present in your area and cater to their needs. Do not attempt to introduce amphibians or reptiles to your backyard habitat. Moving amphibians and reptiles from one place to another risks spreading disease and it is also illegal to capture or transport native amphibians and reptiles in West Virginia.

## Amphibians

Amphibians produce unshelled, sensitive eggs and require water or moist habitats for breeding. All frogs and toads lay their eggs in water and have an aquatic larval (tadpole) stage. Bullfrog and green frog tadpoles take several years to develop into adult frogs. Because amphibians have permeable skin that they use for oxygen exchange, water intake and releasing waste, they are especially vulnerable to any toxins or pollutants in their environment and act as indicator species. Limit the use of pesticides, fertilizers and road salt to prevent runoff into waterways where amphibians live and breed.

Common amphibians found in West Virginia include green frogs, American toads, wood frogs, red backed salamanders and eastern newts.

Tadpoles are omnivorous and require pools or ponds with lots of organic material for foraging, like leaf litter and aquatic vegetation. Larval salamanders will eat other tadpoles and smaller salamander larvae as well as aquatic insects and invertebrates. Adult frogs and toads are carnivores and eat almost any insect, worm, small mammal, amphibian, bird, or reptile small enough to fit in their mouth.

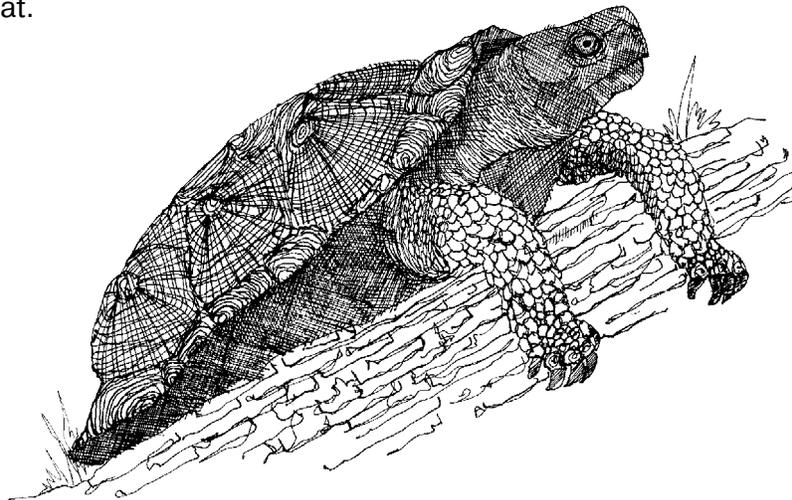
Provide lots of space with soft soil substrate and leaves where toads, frogs and salamanders can hide. Old boards, logs, bricks and debris piles can all be ideal hiding places for amphibians and their prey. Some of the smaller species of tree frogs and chorus frogs will use holes in trees, snags, or downed logs. Some salamanders breed in pools or streams and have a larval stage, though these larvae are carnivorous unlike the larvae of frogs and toads. The woodland salamanders have no aquatic stage outside the egg and lay their eggs in moist places under rotting logs or rocks and crevices. Woodland salamanders are also lungless, conducting most of their respiration through their skin, which increases the need for moisture. Adult salamanders eat a wide variety of insects, worms and other small invertebrate prey. Placing logs, rocks, boards, or other objects under which salamanders can hide and find a moist microclimate is key for these secretive animals.

## Reptiles

Reptiles are less restricted by moisture than amphibians because tough scales and shelled eggs protect them from drying out. Common reptiles in West Virginia include box turtles, snapping turtles, garter snakes and ratsnakes, as well as five-lined skinks and eastern fence lizards. A community science project conducted by the WVDNR between 2020 and 2021 collected observations from residents across West Virginia and showed that box turtles occur in every county in the state! As with amphibians, a complex landscape with lots of hiding places is best. Providing logs, rocks, debris piles, old boards, etc. will attract lizards and snakes. Eastern fence lizards seek out dry places with plenty of places to climb like rocks, trees, fence posts, or even the sides of buildings. The five-lined skink is a common woodland species attracted to abandoned barns and houses, as well as stumps, sawdust piles and rock piles. Unlike fence lizards, skinks are not climbers and look for places to hide on the ground.

Snakes are some of the most misunderstood animals that may benefit from habitat improvements made to your yard. Only two of the over 20 snake species in West Virginia are venomous and all snakes play an important role in their ecosystems as predators. Snakes serve a valuable function of pest control by preying on rodents and small mammals that transmit Lyme disease and Hantavirus. Debris piles, stacks of firewood, crawl spaces under houses, old barns and even ponds and streams can all harbor snakes. Most importantly, there must be a good source of food such as insects, small mammals, fish, crayfish and even other amphibians and reptiles.

Most turtles in West Virginia require a large permanent pond, stream, or other wetland. Snapping turtles, stinkpots and painted turtles are all common in ponds, but the pond must be large enough to support the fish, aquatic insects and worms on which the turtles feed. The surrounding landscape must also provide soft, sandy soils for egg laying. The eastern box turtle spends most of its time in woodlands and grassy edges, but will regularly enter water bodies to find food and thermoregulate. Wood turtles, found in the eastern panhandle, move between rivers and nearby woodlands to find food, mates and nesting habitat.



## Conservation Issues

Major threats to amphibians and reptiles include collection for the pet trade, road mortality and subsidized predators like raccoons, foxes, and feral cats. In addition to these threats, many snakes and snapping turtles are still persecuted and killed out of fear and misunderstanding.

You can protect these special creatures by keeping them wild and leaving them in their natural habitats. You can help turtles and other reptiles or amphibians cross the road in the direction they were headed if it is safe to do so.

Keep cats and other pets indoors or supervise them closely. Keep trash secure to prevent raccoons, foxes and other predators from concentrating around your home, where they can grow accustomed to searching for turtle eggs in addition to human garbage.

### Living with Snakes

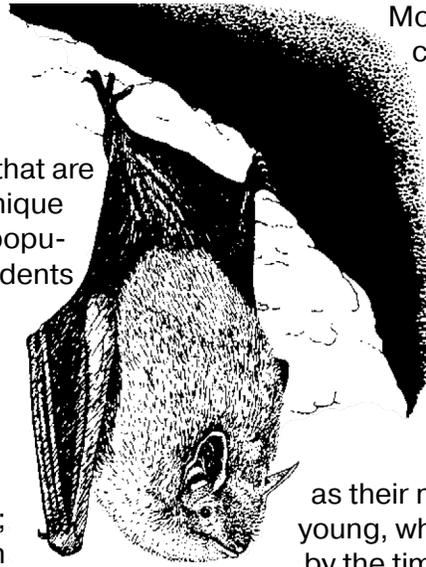
Keeping an area immediately around your house mowed or more sparsely vegetated is one way to discourage snakes from getting too close for comfort if you would rather not have them near buildings.

A gentle stream of water from a hose is typically all that is needed to encourage a snake to move along to another area. You can also gently touch the snake's tail with a long pole to encourage it to move. If you have a snake in your house or on your property that you do not feel comfortable moving yourself, you can call a wildlife control agent. Killing a snake in your yard is illegal and in the case of venomous snakes, dangerous. Attempting to kill it puts you in close proximity with the snake and increases the risk of being bitten. See the *Living with Rattlesnakes* brochure by the WVDNR for more information.

# BATS

## What are Bats?

**B**ats are a group of mammals that are very specialized towards a unique lifestyle—flight! Contrary to popular misconceptions, bats are not rodents with wings. The scientific name for the group is “Chiroptera” meaning “hand-wing,” and indeed their wings consist of elongated fingers with a thin membrane of skin stretched between them. Bats are the only mammals that can truly fly; others, such as flying squirrels, can only glide.



*Illustration by Sam Norris*

## Diversity of Bats

Bats are a very diverse group. In fact, nearly 1 in 4 mammal species worldwide is a bat. About 40 species of bats occur in the United States, 13 of which occur in West Virginia. All the bats in West Virginia feed only on insects.

## Bats are Beneficial

Bats are a highly effective natural form of pest control. Insect eating bats may save U.S. farmers \$23 billion each year by reducing pesticide costs and crop damage. Bats can catch and consume an enormous quantity of insects, eating anywhere from half to 100 percent of their bodyweight in insects each night.

## Do All Bats Live in Caves?

Many bats in our state use caves during at least part of the year. Because they feed on insects, there is no food available to bats during the coldest months. Non-migratory bats put on fat during the autumn and live off these reserves until warm weather returns.

Caves offer ideal conditions for hibernation because they maintain fairly stable temperatures that remain cool, but above freezing, throughout the winter. To move around in the total darkness of the cave and at night, bats use echolocation to navigate. They emit ultrasound (above the range of human hearing) clicks and listen for the echoes. The quicker the echo returns, the closer the object that reflected the sound. This system is so sensitive that objects as thin as monofilament fishing line can be detected.

Most bats spend the summer outside of caves in hollow trees, old buildings, etc., but one species, the federally endangered Virginia big-eared bat, raises its young in caves each summer.

## Reproduction

Unlike mice, which may have several litters of young each year, most bats produce only one or two young, known as a ‘pup’ each summer. The young are born blind and hairless and may weigh almost a quarter as much as their mother at birth. The females nurse their young, which grow rapidly. Most bats start to fly by the time they are one month old. Although they reproduce slowly, bats are long-lived (sometimes up to 30 years) and can produce young for many years.

## Bats and Rabies

All mammals may contract rabies and bats are no exception. The incidence of rabies in bats has often been exaggerated. Rabies is relatively rare among bats, but the best way to stay safe is to not touch any wild animal, including bats, with your bare hands.

## Bat Exclusion

No lethal means can be used for bat control.

While bats are ecologically important and provide excellent insect control, they can become a nuisance when they take up residence in structures. During the maternity season, or when bats are suspected to be hibernating in the building, the best option for addressing nuisance bats is to bat-proof the living space, or provide “interior seals.” This work consists of locating openings (typically areas where air flows) leading into the living space from attics, garages, walls, or any place that bats are roosting. Entry/exit points can be as small as 5/8-inch round or 1/4-inch wide and 3/4-inch long that open into the living space.

Bats may occasionally find their way into a living space, especially during the summer months when young bats are becoming more independent. This is not necessarily an indication that a bat is rabid. In most cases, the bat will attempt to find an exit and leave on its own. Open windows and exterior doors to assist the bat, and close doors to any

adjacent rooms. Stay calm and be patient, and do not. If someone has been bitten or scratched by the bat or if there are concerns about rabies exposure, call your local or state public health department to determine if the bat will need to be captured and tested for rabies. Homeowners should contact their physician or health department and follow the Center for Disease Control's guidelines to determine if a rabies exposure has occurred, as exposures are not always apparent.

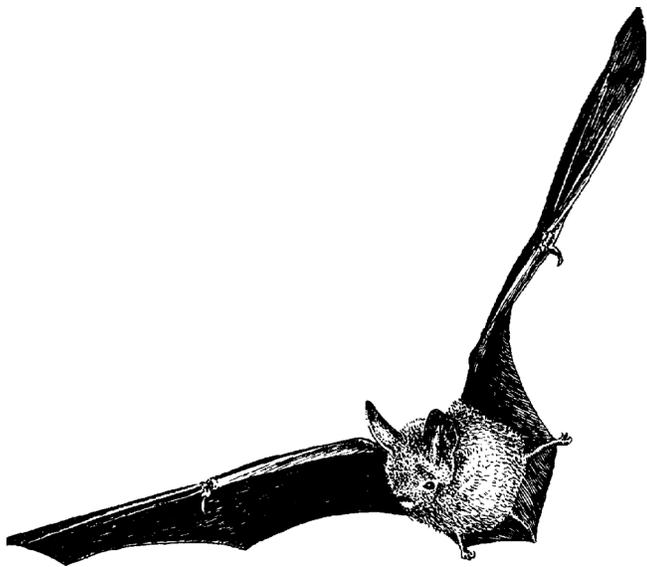
The only effective way to permanently get bats out of structures without harm and to prevent reentry is to perform a humane eviction, using one-way bat excluders at the entries/exits. An evening emergence survey ("bat watch") can help to identify the bats' primary access points, but a close visual inspection is often needed to locate secondary entrances and other potential access points. After all bats are out of the structure (bat excluders should be used for a full week to ensure all bats have left) seal all holes, cracks, or crevices in the structure that could serve as potential entry/exit points using building appropriate materials.

Check out the WVDNR website ([wvdnr.gov](http://wvdnr.gov)) or [Bat Conservation International](http://Bat Conservation International) for more information on dealing with nuisance bats and how to construct a bat excluder.

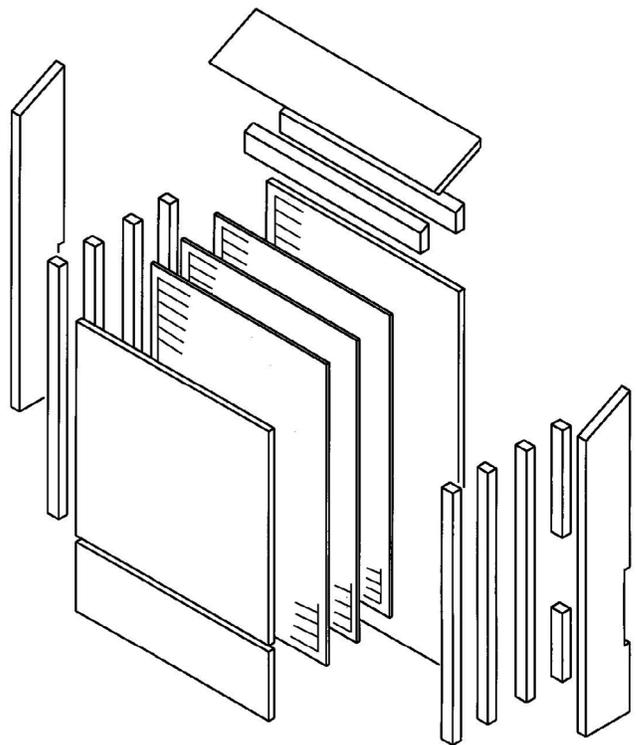
## Bat Habitat and Bat Houses

Bats are attracted to water, such as ponds, where they feed on insects over the water and to other areas with lots of flying insects. Since bats swoop down to the surface of the water to drink on the wing, they need a water source at least 7-10 feet long. One way to attract bats to your property, or to give them an alternate roost after excluding them from a building, is to provide them with a bat house. Plans for making your own bat house are available from [Bat Conservation International](http://Bat Conservation International). If you put up multiple bat boxes, consider one rocket box and one nursery chamber box, since these different styles appeal to different species.

Even if you can't follow all of these recommendations, don't be discouraged from installing a bat house. The more of these guidelines you follow, the more successful your bat box is likely to be. Bat houses mounted on buildings typically maintain more stable temperatures than those mounted on poles. Bat houses should not be mounted to trees because they are too vulnerable to predators and are typically too shaded to maintain the correct temperatures. The exterior of bat boxes should be painted a medium shade of green, gray, or tan since boxes painted black may get too hot too quickly.



*Illustration by Sam Norris*



## BIRDS

**W**ithout question, birds are among the most popular of backyard wildlife. With their bright colors, cheerful songs and charming behaviors, backyard birds have inspired many to learn a love of wildlife. You can support birds by providing a variety of foods, water, shelter and nesting resources throughout the year. Be careful, though: if house cats visit your yard they may prey on the birds you attract.

The breeding season for songbirds typically begins in spring. However, many songbirds fine-tune their breeding cycles to coincide with favorable weather and abundant food resources. Since natural foods begin to become available as spring progresses, you may slowly phase out supplemental feeding stations in spring. Check out the section on Food for more information.

A variety of water sources can attract summer birds, from birdbaths to ponds and streams. Adult birds can benefit from supplemental feeding, as it gives them more time to take care of their nestlings. Young birds will benefit from quiet, protected areas where they can learn about their surroundings in relative safety while their parents continue to feed and care for them.

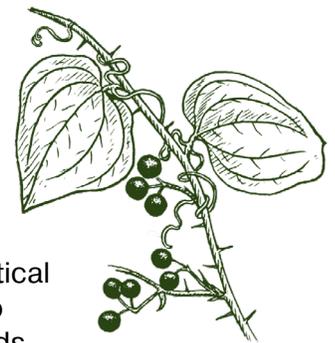
Autumn is the time to winterize your garden and prepare for winter needs. Prepare your winter bird feeders and add additional cover to brush piles and protection around feeders. Clean out nest boxes so they can be used as winter roost sites. Leave seed crops, such as wildflowers and old-field vegetation, unmowed. Birds will benefit from the seeds and cover provided. Fall is a great time to sow bird-friendly wildflowers that will germinate the following spring.

Winter can be a difficult time of year for wildlife. Providing cover and an unfrozen water source along with food resources can help birds through the winter. Feeders supplied with black oil sunflower seeds and a few suet cakes should cater to the majority of birds that visit your yard. Cover, like native evergreens and shrub thickets, provides shelter from wind, rain and snow, as well as places to roost. Clean, fresh, unfrozen water, whether provided in birdbaths, shallow containers on the ground, or backyard ponds, is another vital resource.

## Native Plants for Birds

The best sources of food for birds are native plants, which provide a variety of resources, from nectar to seeds and fruits. Native plants are also especially important for raising young birds because native plants support the caterpillars and other insects that birds use to feed their young. Goldenrods, sunflowers and other asters are great choices because finches, indigo buntings and sparrows eat the seeds and a wide variety of birds will eat the insects that are attracted to these plants. Soft-mast producing trees, shrubs and vines provide berries and other fruits that birds enjoy. Native plants also provide nesting material, nesting cover and shelter from weather and predators. Native grasses and wildflowers with downy seed coats can furnish nesting materials. Plants with dense branching or thorns offer protection for nesting and wintering birds. The trees and shrubs listed below provide food and nesting resources for a variety of birds.

Native vines are an excellent addition to a garden for birds. They provide ground cover, shade, privacy and protection from wind, dust, glare, or reflected heat. Vines can take advantage of vertical space in areas that are too small for shrubs. Vine seeds and fruits are good sources of food and the foliage provides an ideal site for nesting and raising young. Some vines with high food and cover value to birds and other wildlife include native grapevines, greenbriers, trumpet-creeper and Virginia creeper.



### Alder (*Alnus* spp.)

Alders provide shelter for many birds, including blue jays and woodcock.

### Dogwood (*Cornus* spp.)

Summer tanagers and wood thrushes are attracted to nest in many of the native dogwoods found in the state.

### Hackberry (*Celtis* spp.)

Many birds, including indigo buntings and hummingbirds, nest in the state's three native hackberry species.

Hawthorn (*Crataegus* spp.)

The thorny branches of hawthorns provide abundant nesting sites for smaller birds, including cedar waxwings, hummingbirds, cardinals and indigo buntings.

Eastern Hemlock (*Tsuga canadensis*)

Hemlocks are outstanding nesting plants. Many species of warblers, as well as American robins, dark-eyed juncos, acadian flycatchers, American goldfinches and blue jays, are among the birds that nest in hemlocks. However, the invasive hemlock woolly adelgid presents a serious pest problem for hemlock trees; landowners may wish to consider treatment where present.

Holly (*Ilex* spp.)

Dense, prickly, evergreen foliage attracts towhees, thrashers and mockingbirds.

Maple (*Acer* spp.)

Maples provide valuable food and shelter for a wide variety of birds. Finches, grosbeaks and cardinals eat the winged seeds in summer, and the wide variety of insects supported by maples provide food for warblers as well as chickadees and nuthatches.

Red cedar/Juniper (*Juniperus virginiana*)

Junipers are very valuable nesting plants and important food trees. Chipping sparrows, American robins, song sparrows and northern mockingbirds are among the many species that nest in this native conifer. Dark-eyed juncos and other sparrows, along with yellow-rumped warblers frequently roost in the foliage and feed on the berries.

Oaks (*Quercus* spp.)

Oaks are outstanding trees for nesting. Blue-gray gnatcatchers, orchard orioles, scarlet and summer tanagers and blue jays are among the many species that nest in oaks.

Pines (*Pinus* spp.)

American robins and mourning doves are among the many birds that nest in pines.

Red spruce (*Picea rubens*)

Golden-crowned kinglets and many warblers nest in the evergreen foliage of our native red spruce. This tree grows best in cooler locales and higher elevations.

Rhododendron/Azalea (*Rhododendron* spp.)

Rhododendrons and azaleas provide valuable shelter when planted in thickets.

Rose (*Rosa* spp.)

The dense, prickly stems of native roses provide excellent nesting sites for smaller birds, including indigo buntings, northern cardinals, yellow warblers, towhees and sparrows. Avoid multiflora rose because it is aggressively invasive and will crowd out other plants!

Sumac (*Rhus* spp.)

Sumacs provide good summer shelter and winter forage.

Brambles (*Rubus* spp.)

The spiny canes of blackberries and raspberries provide secure nesting sites for indigo buntings, cardinals, yellow warblers, towhees and sparrows. They also provide food and shelter to recently fledged young of many songbirds.

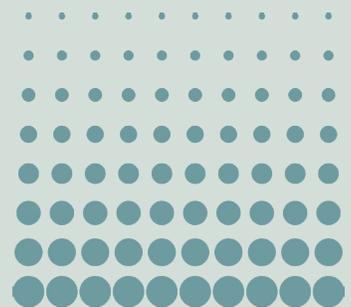
Elderberry (*Sambucus* spp.)

Warblers, rose-breasted grosbeaks and goldfinches nest in the foliage.

**Danger! Windows Ahead**

Birds cannot see glass, so windows can be deadly for birds. Interior plants close to windows, reflections of outside greenery and shiny glass surfaces trick birds into thinking they have a clear flight path and lead to hundreds of millions of bird deaths from building collisions each year.

External screens on your window and patterns or objects set 2-4 inches apart can reduce bird collisions by breaking up window reflections. Simply closing the blinds or curtains can also help. Single stickers of hawk silhouettes (or any other shape) are not effective at preventing collisions. You can also place bird feeders directly on windows or within 3 feet of the window so that birds can't build up the momentum to crash into the window.



# SUPPLEMENTAL BIRD FEEDING

No matter how extensive their wildlife gardens are, some people can't get enough of birds. Supplemental bird feeding is a popular activity and the choices of feeder types, seeds and feeder placement are endless. In general, bird feeders should supplement, rather than replace, natural food sources like those provided by native plants. That said, here are a few guidelines when feeding birds in the backyard.

Make sure to keep birdseed and containers dry and free from mold and insects and clean your feeders regularly (about every two weeks). You can clean bird feeders with soapy water in the sink or a dishwasher. Rinse feeders well and dry them thoroughly before refilling.

If you observe any signs of disease among visiting birds, (like runny, crusty, or puffy eyes), sanitize your feeders with a ten percent bleach solution after washing. Since diseases may be communicable, it's a good idea to stop feeding and remove birdbaths for a week or two to avoid disease transmission.

Avoid placing food for birds directly on the ground, as this attracts house sparrows and mammals such as squirrels and other rodents, raccoons and bears.

## Feeders

### Platform Feeders

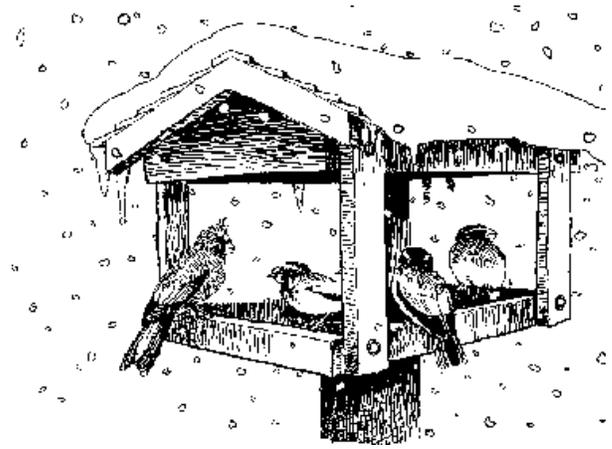
These feeders are popular with most backyard birds. A screen bottom or plenty of drainage holes along with a roof will keep seeds dry and a gap on one side provides for easy cleaning. These feeders can be mounted on a pole, or screen-bottom tray feeders can be suspended from each of the four corners.

### Hopper Feeders

Hopper feeders have reservoirs that can be filled periodically with seeds flowing out the bottom as they are eaten by birds. Depending on the size of the perches, these can attract a wide variety of birds.

### Tube Feeders

Commercially made feeders with ports of different sizes to accommodate different types of seed, these feeders are popular with many different kinds of birds. Short perches will accommodate smaller birds like finches while excluding larger birds like jays and grackles.



### Nyjer (Thistle) Feeders

Nyjer feeders provide a type of small seed particularly favored by finches. They can take the form of tube feeders with very small openings or mesh 'socks' filled with the seeds that finches pluck out with their beaks. Note that squirrels and raccoons can rip open holes in the sock-type feeders, spilling this expensive seed on the ground.

### Window Stick-on Feeders

Place these feeders in the center of your windows to enjoy the close-up view of birds feeding and make the food more difficult for squirrels or raccoons to reach.

### Counter-weighted Feeders

These feeders have feeding troughs or perches attached to counterweights that cause the feeder to close in front when heavy animals like squirrels or even some larger birds stand on the perch. Cheaper counter-weighted feeders often have openings that can entrap birds, so choose one with high-quality components from a reputable retailer.

### Suet Feeders

Suet feeders are typically wire cages with a suet block or cake placed inside, but suet can also be offered from an old mesh onion bag. Suet feeders that require the birds to feed upside-down will discourage the feeder from being overrun by starlings, but will still allow woodpeckers, nuthatches and chickadees to feed.

### Hummingbird Feeders (see below)

## Types of Bird Food

There are many different kinds of seeds and seed mixes available for attracting different kinds of birds. Generally, the most-preferred seeds include black oil sunflower seeds, peanut kernels and nyjer

seed. The least-needed or desired seeds include cracked corn, milo, millet, wheat, hulled oats and rape seed. You can attract and satisfy a wide variety of backyard birds by simply offering black oil sunflower seed (hulled or unhulled) and suet. Offering a seed mix that is too heavy on low-value seeds can be more wasteful than offering more expensive high quality seeds because many birds will pick through the seed mix to find the things they like and discard the rest. Uneaten or discarded seed can harbor mold and bacteria and attract pests.

#### Black oil sunflower seed

This seed is by far the most preferred by backyard bird species. Your mix should have at least 75% black oil sunflower seeds. Striped sunflower seeds have a longer, thicker shell which is more difficult for some birds to crack open. Hulled sunflower seeds avoid the mess created by the shells, which can harbor disease and need to be disposed of regularly.

#### Safflower

Safflower resembles small white sunflower seeds and is especially popular with cardinals and rose-breasted grosbeaks. It is not quite as popular with other songbirds, but also doesn't attract squirrels, European starlings and house sparrows as much as sunflower seed.

#### Nyjer (thistle)

Commonly called 'thistle' seed, nyjer comes from the *Guizotia abyssinica* plant, native to Africa and not closely related to North American thistle plants. This small and expensive seed is especially popular with American goldfinches but requires a special feeder with smaller openings to prevent the seed from falling on the ground and being wasted. Nyjer

seed spoils quickly, so the amount placed in a feeder should correspond to demand and uneaten seed should not sit out for more than a week, especially in humid conditions.

#### Peanuts

Peanuts are an excellent source of fats and protein that many birds (and squirrels) enjoy. Larger birds like blue jays and crows enjoy whole peanuts in the shell and smaller birds will enjoy shelled peanuts or peanut hearts. Avoid roasted peanuts, salted peanuts and peanuts with any coatings or flavorings.

#### Mealworms

Most songbirds eat insects during breeding season, so providing mealworms can attract birds like warblers that otherwise won't visit your feeders.

#### Corn

We do not recommend offering corn for birds or other wildlife. It can attract crowds of European starlings, sparrows, pigeons and doves, along with brown-headed cowbirds. Note that corn also attracts white-tailed deer who may stay to browse other plants in your yard. Corn can also harbor aflatoxin, which can be harmful or fatal to pets, livestock and wildlife.

#### Many birds also enjoy:

- Suet (with or without other seeds)
- Fruit such as apples, oranges, bananas, grapes and melons
- Dried or roasted seeds from pumpkins, squash, or melon
- Peanut butter
- Fruit jelly (in small quantities)

## Keep Cats Indoors

Cats enjoy watching birds at feeders, but both cats and birds are safer if cats stay indoors. Outdoor cats are estimated to kill more than a billion songbirds each year and represent the single biggest cause of bird mortality in North America aside from habitat loss.

If your cat is an outdoor cat, or cats visit your yard, consider carefully whether attracting birds to your yard will do them more harm than good. Attaching a bell to a cat's collar does not actually stop them from killing wildlife. Cats quickly learn to move slowly without making a sound, even with the collar on. Cats hunt prey even when they are well-fed and do not always present their trophies to their owners.

Placing bird feeders at least 6 feet away from trees, bushes and other hiding places may help, but doesn't reduce attacks on nesting or roosting birds by cats. Catio or other enclosed outdoor spaces can provide your cat with enrichment while also keeping them and the birds safe. Check out the American Bird Conservancy's [Cats Indoors Program](#) for more information.



## Unwanted Visitors at Feeders

Switching up the type of food offered and/or the type of feeder used can fix many problems with troublesome feeder visitors.

Raccoons feeding at bird feeders should be discouraged. They are attracted to suet feeders, hummingbird nectar and seeds. Methods to discourage raccoons include hanging suet bags on small branches that are too slender to support the raccoon's weight, moving feeders inside at night and temporarily removing feeders to break the raccoon's feeding patterns.



If black bears are present in your neighborhood, avoid offering supplemental sources of food during the bears' active period (from March to November). It is very dangerous for bears to associate human houses and yards with sources of easy food like bird feeders. Make sure to secure garbage as well. Check out [BearWise.org](http://BearWise.org) for more information on living with black bears.

The striped skunk normally feeds on insects and fruit and may occasionally be attracted to the area under feeders where it will be looking for grubs, beetles, mice and fruit. Keeping the area under your feeders cleaned up will usually be enough to keep skunks from becoming regular visitors.

House sparrows and European starlings are not native to the United States but were introduced to North America in the 19th century. They thrive around human-created habitats like cities, suburbs and agricultural fields. House sparrows can be aggressive around bird feeders and will destroy the nests, eggs, nestlings and adults of native cavity-nesting birds when seeking out a nest site. You can deter starlings from suet by making it so the birds must hang upside down to feed.

Because they are non-native species, house sparrows and European starlings are not protected by the Migratory Bird Treaty Act like our native songbirds and so you may selectively remove house sparrows from nest boxes. You can exclude European starlings from nest boxes by making the entrance hole smaller than 1 ½" in diameter, but house sparrows are small enough that completely deterring them from nest boxes can be difficult.

### Squirrels

Three different squirrel species may visit your feeders: eastern gray, fox and red. Squirrels may chew up your feeders, eat large quantities of seed and prevent songbirds from using the feeders. If squirrels at your bird feeders are bothering you, here are a few things to try:

- Distract them with other food sources including squirrel favorites like corn cobs and whole peanuts
- Squirrel baffles beneath feeders on posts or rotating baffles above hanging feeders
- Since squirrels weigh substantially more than the songbirds, try feeders that restrict access to feeding ports according to weight.
- Do not coat feeder poles with grease, oil, petroleum jelly, or other lubricants. These can mat bird feathers, causing them to lose their insulative properties.



# HUMMINGBIRDS

The over 300 species of hummingbird worldwide are all found in the Western Hemisphere, but only one, the ruby-throated hummingbird, nests in West Virginia. These tiny, iridescent birds can be an exciting addition to your backyard wildlife habitat. You can attract hummingbirds by planting some of the native plants listed below. Red or orange tubular flowers are especially attractive to these jewel-colored nectar feeders.

## Hummingbird Facts

- Hummingbirds, like helicopters and dragonflies, can hover. They can fly forward, sideways, or backwards at will.
- A ruby-throated hummingbird beats its wings about 50 times a second.
- Hummingbirds mainly feed on nectar, but also eat tiny insects and spiders and will occasionally sip at tree sap.
- Hummingbirds incorporate spider silk and plant fibers like dandelion down into their tiny nests, which are only as large as a walnut shell.

## Hummingbird Feeders

Hummingbird feeders can offer a supplementary source of food for hummingbirds in your backyard wildlife habitat. Avoid the buildup of mold and bacteria by choosing a feeder that is easy to take apart and clean.

Fill your feeders with a mixture of one part sugar to four parts boiling water and stir to dissolve. Allow the solution to cool before adding to your feeder. You can store unused solution in the refrigerator for up to a week. Never use honey or brown sugar solutions, as they are prone to harmful mold growth.

Red food dye is not necessary and may be harmful to the birds. Many feeders already include red flower decorations and even a red ribbon tied to the feeder may be enough to attract hummingbirds.

Clean and refill sugar water feeders every two to five days using hot water and a bottlebrush or a dilute bleach solution. Do not use soap or detergent and make sure to rinse and dry the feeder thoroughly before refilling. Clean feeders more frequently during hot weather or periods of increased bird activity.



## Native nectar-producing plants for hummingbirds

Common Name	Latin Name	Growth Form
Trumpet-creeper	<i>Campsis radicans</i>	Vine
Smooth azalea	<i>Rhododendron arborescens</i>	Shrub
Flame azalea	<i>Rhododendron calendulaceum</i>	Shrub
Catawba rhododendron	<i>Rhododendron catawbiense</i>	Shrub
Great laurel	<i>Rhododendron maximum</i>	Shrub
Pinxterbloom azalea	<i>Rhododendron periclymenoides</i>	Shrub
Wild columbine	<i>Aquilegia canadensis</i>	Forb
Indian paintbrush	<i>Castilleja coccinea</i>	Forb
Common rose-mallow	<i>Hibiscus moscheutos</i>	Forb
Spotted jewelweed	<i>Impatiens capensis</i>	Forb
Cardinal flower	<i>Lobelia cardinalis</i>	Forb
Scarlet beebalm	<i>Monarda didyma</i>	Forb
Wild bergamot	<i>Monarda fistulosa</i>	Forb
Eastern blue phlox	<i>Phlox divaricata</i>	Forb
Fire pink	<i>Silene virginica</i>	Forb

# BUTTERFLY GARDENING

**B**utterflies bring beauty, color and life to your backyard, patio or windowsill. Watching them flit from flower to flower and observing their transformation from caterpillar to chrysalis to adult are just some of the delights that attracting butterflies to your yard can provide. A butterfly garden in your yard also will help attract birds and mammals, adding even more diversity to your backyard habitat.

Observing and learning about your local butterfly species will help you plan your butterfly garden. Try to identify different butterfly species and take note of the date you observe them throughout the season, as well as what plants they seem to use most often. Field guides and online resources can help you identify the butterflies you see and which plants they prefer.

A butterfly garden should provide a shallow source of water, shelter from wind and numerous native flowering plants to provide host plants for caterpillars and food resources for adult butterflies.

## Nectar Plants

Plant a variety of flowers that bloom throughout the growing season, so there is always nectar available. Having multiple plants blooming during each bloom period (early, mid, late) will attract the greatest variety of butterflies to your garden. A good minimum guideline for pollinator plantings is to follow the Rule of Three:

- Three different species
- Three different colors
- Three different bloom periods

Limit the planting of cultivated varieties, such as flowers labeled 'Aztec Sunset' or 'Forest Pansy'. Cultivars are often bred for showy blooms and may not provide as much food for pollinators.

Most adult butterflies feed on nectar, though some species feed on rotting fruit, tree sap, carrion, or animal dung. Check out the section on Food for more information on plants for pollinators.

Raising the blade on your lawn mower (or leaving your lawn unmowed in early spring) so that low-growing yard 'weeds' like clover, violets and dandelions can bloom is an easy way to provide nectar for butterflies early in the season. Violets are also the only host plant for many fritillary butterflies.



Eastern tiger swallowtail butterfly on mountain laurel

## Host Plants

Host plants are the plants that butterflies lay their eggs on and that caterpillars eat. Nectar plants will attract butterflies, but host plants are what will keep them on the landscape into the future. Just as monarch butterflies need milkweed, many other caterpillars can only eat the leaves of a few native plant species.

The future of native butterflies depends on native host plants to provide their young with nutritious leaves. While many non-native ornamental plants can provide nectar for adult butterflies, they often do not provide food for caterpillars. Butterfly bush leaves, for example, (*Buddleja* spp., below left) do not support a single native caterpillar. Contrast that with native meadowsweet and steeplebush (*Spiraea* spp., below right) that support nearly 60 species of caterpillar, in addition to providing nectar for adult butterflies. Native oak, maple and dogwood trees support hundreds of species of caterpillars.



Butterfly bush flowers



Steeplebush flowers

## Leave the Leaves!

Several butterfly species such as the great spangled fritillary (*right*), overwinter in the leaf litter before completing their metamorphosis into adults. Leaving the leaves in the fall provides shelter and insulation for them to survive the winter.

Butterflies and other pollinators are sensitive to pesticides like herbicides, insecticides and fungicides. Make sure any plants you buy from a nursery have not been treated with neonicotinoid pesticides. These are toxic to butterflies (and bees) and widely used. Avoid the use of herbicides in your yard or use them only sparingly to manage non-native invasives that are crowding out native plants.



## Native plants for butterflies and caterpillars of West Virginia

Butterfly	Primary Host Plants	Nectar Sources
Pipevine Swallowtail	Dutchman's pipe	Milkweed, joe-pye-weed, ironweed
Zebra Swallowtail	Pawpaw	Dogbane, redbud, milkweed
Spicebush Swallowtail	Spicebush, sassafras	Joe-pye-weed, dogbane
Eastern Tiger Swallowtail	Black cherry, yellow poplar	Milkweed, ironweed, azaleas
Clouded Sulphur	Clovers	Clover, aster, goldenrod
Orange Sulphur	Legumes, clover	Clover, goldenrod, ironweed
Eastern Tailed-Blue	Red clover, legumes	Cinquefoil, dogbane, aster
Spring Azure	Dogwood, black cherry, wingstem	Black cherry, dogbane, spicebush
Great Spangled Fritillary	Violets, pansies*	Dogbane, ironweed
Meadow Fritillary	Violets	Aster, wingstem, goldenrod
Pearl Crescent	Aster	Aster, ironweed, black-eyed Susan
Question Mark	Nettle, elm, hackberry	Sap, rotting fruit, dung
Eastern Comma	Nettle, elm	Sap, rotting fruit, dung
American Lady	Pussytoes, pearly everlasting	Milkweed, dogbane, goldenrod
Red Admiral	Nettle	Sap, rotting fruit, dung
Red-spotted Purple	Black cherry, poplar, oaks	Sap, rotting fruit, dung
Little Wood Satyr	Grasses	Sap, carrion, dung
Monarch	Milkweed	Milkweed, dogbane, goldenrod
Silver-spotted Skipper	Black locust, tick-trefoil	Ironweed, Joe-pye-weed

\*Plants that are not native to West Virginia, but not aggressive invaders

Note: Nectar sources are not limited to the plants listed.

See the WVDNR *Butterfly Gardening in West Virginia* brochure for more information.



# MAMMALS

Providing habitat for mammals can be a fun challenge. Although many mammals are nocturnal (active at night), there are a few that are more active during the day. The chances of seeing the more nocturnal small mammals like shrews and white-footed mice are lower because they are quite secretive and often fall prey to cats and dogs.

Seed-producing trees and shrubs like oaks, hickories, pines and hazelnuts will attract many small mammals, as will feeders with peanuts and sunflower seeds. Some small mammals you may find feeding in your yard include squirrels, chipmunks, voles and white-footed mice. Common larger mammals to see in urban and suburban areas include foxes, raccoons and opossums.

## Bats

The most likely species of bats to visit your backyard are little brown and big brown bats. These nocturnal animals feed on flying insects and require roosting areas like the ones provided by bat boxes. See the section on Bats for more information.

## Chipmunks

These small, striped squirrels feed on seeds and berries as well insects, invertebrates and even bird eggs and nestlings. Coarse woody debris, brushy thickets and rock piles provide shelter from predators. A large, flat boulder near dense shrubs well supplied with sunflower seeds makes an ideal feeding platform for chipmunks.

## Flying Squirrels

The flying squirrel uses nest boxes or cavities as daytime hideaways in mature forest areas. At night, flying squirrels will come to feeding stations stocked with sunflower seeds and peanut butter located in forest openings. A bluebird-sized nest box placed high (16-20 ft) in an evergreen tree may be provided as a daytime retreat. Check for gnaw marks around the entrance to indicate use.

## Squirrels

Gray and fox squirrels require large trees such as oaks, hickories and black walnuts that provide hard mast in the form of nuts. Squirrels will also feed at

bird feeders, sometimes to the dismay of backyard birdwatchers. Placing a platform feeder near the ground and baffles on feeders can sometimes encourage them to leave the elevated bird feeders alone.

Talkative and acrobatic, red squirrels feed primarily on the seeds inside fir and pine cones, leaving middens of cone scales beneath their favorite feeding spots. They will also eat sunflower seeds and peanuts.

## Cottontail Rabbits

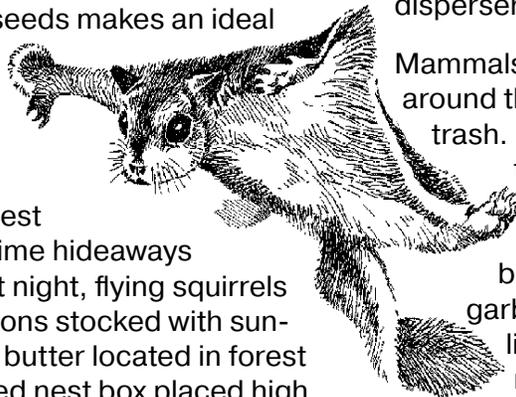
Eastern cottontails are frequent visitors to backyards, where they feed on young grass shoots, forbs like dandelions and clover and sometimes vegetables in the garden. During winter, they feed on the buds and inner bark of shrubs and saplings. Rabbits seek out low-growing shrubs or brush piles near the areas where they feed. Rabbits will dig their own burrows but may also use burrows created by woodchucks or other animals. Changes in agricultural practices and development leading to a loss of brushy, early-successional habitats have resulted in some decline of these rabbits across their range.

## Other Mammals

Mesopredators, like foxes, raccoons, skunks and opossums help control populations of insects, small mammals and birds. By eating seeds, nuts and fruits, omnivorous mammals also serve as seed dispersers.

Mammals can sometimes become a nuisance around the yard when they get into buildings or trash. Make sure to seal up entry points in structures (outbuildings and houses) to prevent this. See the section on Bat Exclusion for specifics on how to humanely get rid of bats from a home or other structure. Secure garbage cans and any other sources of food like containers of birdseed to prevent animals like raccoons, opossums and bears from becoming habituated.

If you are dealing with nuisance wildlife around your home or property, Wildlife Damage Control Agents may be able to help you humanely trap or kill the nuisance animal. For more information on preventing and addressing wildlife damage, visit [icwdm.org](http://icwdm.org). Check the WVDNR website for a list of Wildlife Damage Control Agents in your area.



# WILDLIFE LANDSCAPE PLANNING

**A**fter learning about the four habitat components needed by wildlife—food, water, cover and reproductive resources—you are ready to begin planning your wildlife landscape. Your habitat plan should benefit wildlife and be compatible with the needs of your home and property. Many people already have some completed habitat areas on their property and so the steps may vary depending on the individual.

## 5 Steps for Wildlife Landscaping

1. **Site Selection:** This step is probably completed since you already have a yard, a porch or some other area that you are planning to utilize as wildlife habitat. However, which part of the yard you will use may be in question. Does it provide water, food and shelter? In the summer, will there be shade for wildlife to seek relief from the heat? If you are hoping for a butterfly garden, is it in a sunny spot that is protected from the wind? In this stage of planning, it is time to bring together all of these considerations.
2. **Site Analysis:** Inventory and evaluate the features already present at your site. Take note of the wildlife that are present in your neighborhood and make a map of your backyard including the vegetative and physical components currently present. Identify any invasive species present and assess the relative level of infestation on different parts of your property. Take note of both dry and wet areas, as well as areas with the most sun and shade. A soil test can help you understand what plants will grow well in your yard. You can reach out to your local [WVU Extension office](#) for more information. This evaluation will be an ongoing process and as you add habitat to your yard, you may begin to notice wildlife that you did not previously know lived in your area.
3. **Rough Plan:** With your map of what is already present, the next step is the rough plan of your ideal wildlife garden. Think about what plants would grow well in different parts of your yard and what benefits they would provide to different wildlife. Try out different configurations of the habitat features you hope to create in your garden and see how they might all fit together. You can use a garden hose or stakes and string to help visualize the placement of different features. A yard with only a turf grass lawn pro-

vides a blank slate, but in most cases you will want to complement the habitat features that may already be present on the property. You can trace over aerial imagery or a parcel map to help you lay out your plan.

4. **Final Layout:** Once you have an idea of what features you want to add to your wild yard and which species you hope to plant, you are ready to draw up your final plan. Graph paper can be useful for this step because it will keep your ideas to scale, giving you a better idea of how the features fit in relation to one another. Add your list of plant names to this final plan and you are ready to begin.
5. **Building Your Garden:** With your final plan in hand, you are ready to start creating or modifying your Wild Yard. You may need to smother or rip up turf grass to prepare a bed for wildflower seeds, or remove invasive plants from a portion of your yard. You can peruse nursery inventories and seed catalogs for the plants from your plan and head to the workshop to construct that bluebird box or bat house. Slowly but surely, your habitat plans will take shape and materialize. Remember that creating wildlife habitat takes time, so be patient. Eventually you will see the rewards of your hard work.

## General Landscaping Guidelines

Your new habitat should ultimately make caring for your yard easier. Replacing part of your lawn with native species not only provides habitat, but is less expensive and easier to maintain than traditional landscaping. Less lawn makes less mowing and many native plants are hardy and drought-resistant so they need little or no additional watering once established.

Plant a variety of native trees or shrubs along the perimeter of your property. These will simulate a forest canopy and provide food, nest sites and protective cover for wildlife. They will also provide a privacy screen and shade your house from the sun in summer.

Plant smaller flowering and fruiting trees in clusters, not rows, near taller trees to develop an understory.

Wildflowers, ferns and other groundcovers can be planted around and underneath larger trees and shrubs. These will provide shelter for ground-feeding birds and mammals.

There are no straight lines in nature! Use gradual transitions from short to tall vegetation and curving rather than straight lines for edges and borders to give your plantings a more natural feel.

Remember that a necessary part of landscape planning is developing a time schedule and budget. It takes time to develop a successful wildlife habitat and your budget may play a deciding factor in developing your wildlife landscape. You may want to do a little planting each year until you have realized your desired landscape.

## Neighboring Native Landscaping

Here are a few tips for making a Wild Yard more visually appealing to neighbors:

- Use curving shapes and mowed edges or pavers to clearly define the borders of flowerbeds planted with native wildflowers.
- Instead of a brush pile, consider a brush fence with tree and brush trimmings set between fence posts to define zones of the yard, like a sitting area or vegetable garden.
- Plant multiples of the same species in defined clumps or masses to give a more intentional look to wildflower beds. Especially in a small area this can also allow pollinators to feed more efficiently, increasing the value to wildlife.
- Be mindful of the mature height and width of some species! Plant taller species at the back or center of a flower bed and use shorter species near walkways.
- Use human elements like benches, bird-baths, ornamental statues and other yard decorations to draw the eye and help lend a welcoming, pleasant appearance to your yard.
- Handmade signs, or official signs from the West Virginia Wild Yard program and other 'wild yard' programs like the National Wildlife Federation Certified Backyard Habitat, Homegrown National Park, or Monarch Waystations, can lend some credibility to your wildlife habitat.

## Community Action

Even if you are limited in what you can accomplish around your own home, you can still work together with your community to promote wildlife-friendly landscaping in your area.

- Offer to share your native seeds or plants with other members of your community.
- Talk to your neighbors about the importance of native plants for wildlife and emphasize the many benefits of native plant landscaping to people: reduced maintenance, less yard waste to be processed by municipalities, improved water quality from lower runoff and erosion, reduced household energy costs and reduced noise and air pollution from mowing equipment.
- Get organized! Work with members of your community to talk to local city officials and promote the benefits of native plant landscaping. You may be able to change restrictive weed ordinances and even get your city certified as a Tree City or Bee City USA by promoting the use of native plants in your community.
- Get involved with local habitat restoration projects in your area. Try reaching out to a local chapter of the [West Virginia Master Naturalists](#), [West Virginia University Extension Master Gardeners](#), or find your [Local Watershed Association](#) for a place to start.

## Design Ideas

### **A balcony for bees, butterflies, and birds:**

Wild bergamot, calico aster, and Pennsylvania sedge can fill out a container planting for a sunny patio.

For a shady spot on a balcony or patio, consider a container planting with cardinal flower, alumroot, and river oats.

An elevated water dish secured to the railing provides water for birds and bees.

A tube feeder filled with black oil sunflower seeds draws in songbirds.

A bee hotel made from drilling holes into a block of untreated wood placed so it gets morning sunlight provides a place for native bees to nest and hibernate.

### **A shady backyard forest garden:**

White oak and red maple trees form the overstory. Redbud, serviceberry, and flowering dogwood trees fill out the understory tree layer and provide a privacy screen at the edge of the backyard.

Black raspberry canes trained along a trellis create a living fence around a vegetable garden in one corner of the yard.

Shade-tolerant perennials like black cohosh, thimbleweed, sensitive fern, and white wood aster grow underneath the trees.

A shady and wet spot at the edge of the yard is planted with jewelweed and great blue lobelia.

A small backyard pond planted with water lilies and duckweed provides a place for frogs and dragonflies to breed.

A brush pile in the back corner was created from the cuttings after a Callery pear tree was removed from the front yard and replaced with a common serviceberry.

A bird feeder with black oil sunflower seeds on a pole in the center of a bed of black-eyed susans and gray goldenrod attracts birds and beneficial insects.

### **Sunny and dry backyard meadow:**

Blackhaw viburnum shrubs help shade the patio and provide nectar for pollinators as well as fruit and a place for birds to nest.

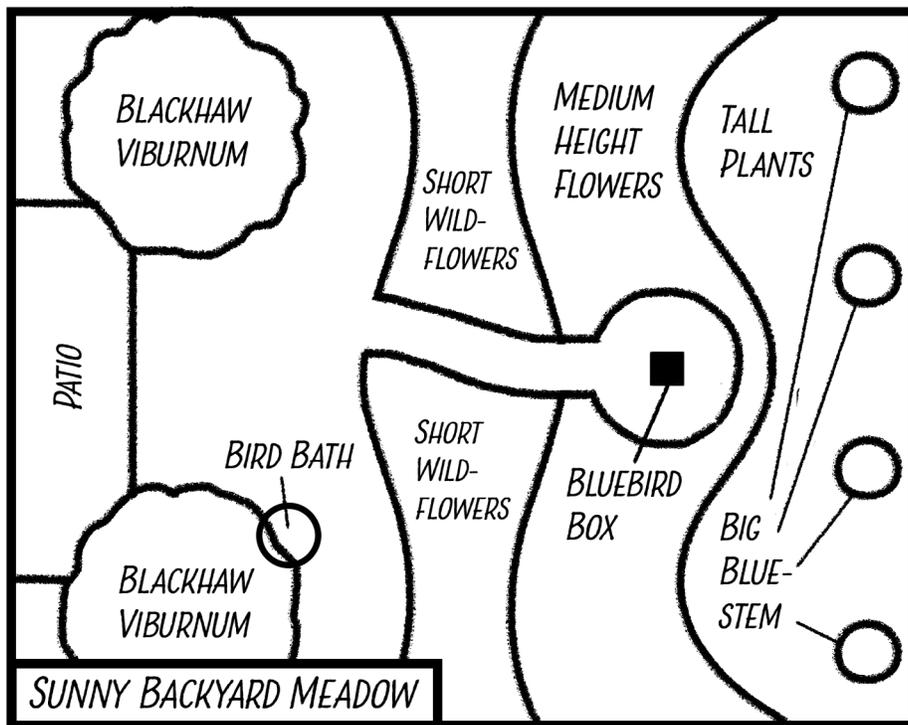
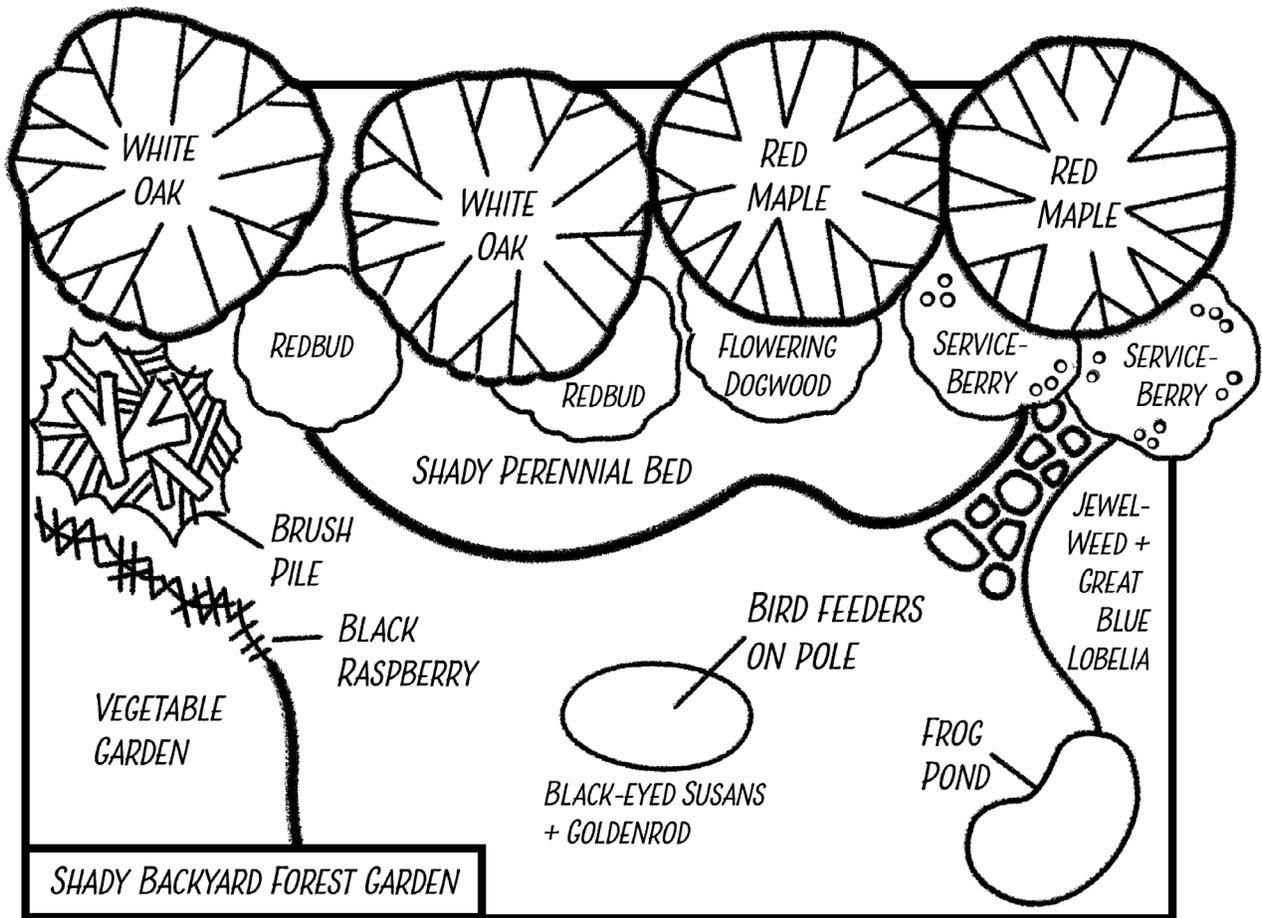
Most of the turf grass has been replaced with a wildflower meadow. Use a wildflower seed mix for a more natural, 'wild' look, or create a more organized, tiered look by planting plugs of shorter flowers at the front and taller plants towards the back of the yard or fence line.

At the front are low-growing plants like moss phlox, violets and golden ragwort.

The middle section includes various goldenrods, butterfly weed, foxglove beardtongue and hoary mountain mint with a bluebird box set on a pole in the middle of the yard.

The back row includes the tallest wildflowers like wingstem, New York ironweed and Joe-Pye weed.

Big bluestem planted at the corners of the yard provides an accent to the wildflowers.



Illustrations by  
Michelle Fonda

# REFERENCES, RESOURCES AND PRINTED MATERIALS

Check out the WVDNR website [wvdnr.gov](http://wvdnr.gov) to learn more. Contact the WVDNR Wildlife Diversity Program in Elkins, WV for the following brochures and other printed materials:

- Bats of West Virginia
- Build a Bluebird Box: Construction and Placement
- Butterfly Gardening in West Virginia
- For the Birds: Feeding Birds in Your Backyard
- Invasive Plants of West Virginia
- Living with Rattlesnakes
- WV Bird Checklist
- WV Butterfly Checklist
- WV Mammal Checklist
- WV Reptile and Amphibian Checklist
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- WV Turtles & Lizards
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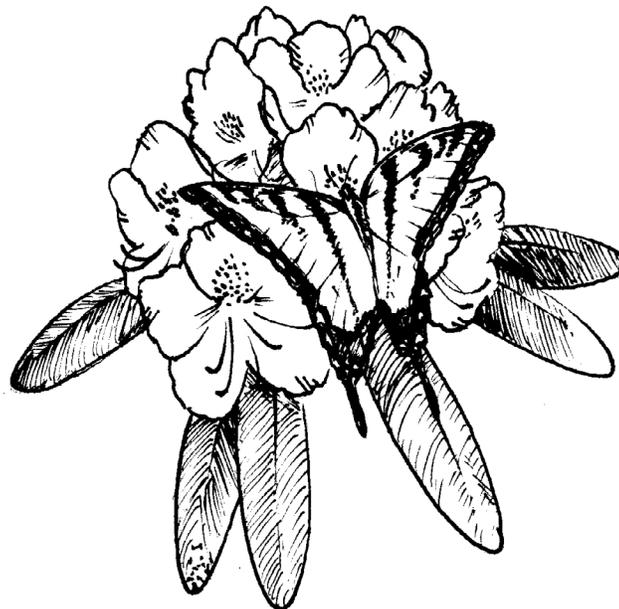
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- WV Division of Environmental Protection. (2022). *West Virginia Planting Tool*. <https://tagis.dep.wv.gov/seeds/>
- WV Division of Forestry Urban & Community Forestry, & WV State University Agriculture & Natural Resources Extension Service. (2020). *Trees for Urban Landscapes* (2nd ed.). WV Division of Forestry Urban & Community Forestry. [https://wvforestry.com/pdf/Trees\\_for\\_Urban\\_Landscapes\\_-\\_2020.pdf](https://wvforestry.com/pdf/Trees_for_Urban_Landscapes_-_2020.pdf)
- WV NRCS Ecological Sciences, WV Division of Natural Resources, & Xerces Society for Invertebrate Conservation. (2011). *West Virginia Pollinator Handbook: A Field Office Technical Guide Reference to management of pollinators and their habitats*. <https://xerces.org/sites/default/files/publications/12-049.pdf>
- WVU Extension. *Wildlife*. <https://extension.wvu.edu/natural-resources/wildlife#guide>



# WEST VIRGINIA WILD YARDS APPLICATION

Fill out the application on the following pages to have your yard considered for the WV Wild Yards Program. Send the completed application and any supplementary materials (species lists, photos of plantings or other habitat features, etc.) to:

WV Wild Yards  
WVDNR  
P.O. Box 67  
Elkins, WV 26241  
DNRWildYards@wv.gov

**Name**  
**Property**  
**Address**

**City**

**County**

**ZIP**

**Telephone**

**Email**

**Property size (approximate square feet or acreage):**

**This property is best described as:**

private residence	farm
corporate land	school
park/recreation facility	other:

## Target Species

What wildlife species or groups of species would you like to attract?  
(List the top 5) For example: cardinals, flying squirrels, butterflies, woodpeckers, songbirds, small mammals, amphibians, pollinators, etc.

## Vegetation Structure

Different layers and types of vegetation provide diverse ecological functions and visual interest to a backyard landscape. Select all that are present.

Overstory trees (>20 ft tall)

Understory trees and shrubs (<20 ft tall)

Grasses, Wildflowers, and Other Herbaceous Plants

**Native Plant Species Richness:**

List the species of native plants that are present on the property. Feel free to provide a complete species list along with any other supplemental materials.

**Large Trees (>20 ft tall)**

e.g., Red Oak, White Pine, Black Cherry, Sugar Maple

**Small Trees/Saplings (5-20 ft tall)**

e.g., Flowering Dogwood, Eastern Redbud, Pawpaw

**Shrubs**

e.g., Spicebush, Rhododendron, Allegheny Blackberry

**Forbs**

e.g., Wrinkleleaf Goldenrod, Sensitive Fern, Butterflyweed

**Grasses and Graminoids**

e.g., Little Bluestem, River Oats, Pennsylvania Sedge

**Vines**

e.g., Greenbrier, Trumpet Creeper, Virgin's Bower

**Natural Food Sources**

What types of native food plants are present on the property? See the section on "Food" on page 11 for more information on what we're looking for.

- Hard mast producing trees and shrubs
- Soft mast producing trees, shrubs, and vines
- Nectar-producing flowers for hummingbirds
- Native prairie patches, rain gardens, or other native wildflower plantings (min 100 sq. ft)
- Wooded or shrubby areas with a variety of *native* flowering species (min 100 sq. ft)
- 'Bee lawn' with flowers (e.g., clover, violets, dandelions) that bloom when mown at standard heights
- Bee-pollinated ornamental plants or vegetable gardens that are allowed to bolt
- Non-native (but not invasive) flowering/fruiting trees and shrubs

Other:

**Supplemental Food Sources:**

See the section on "Supplemental Bird Feeding" on page 29 for information on types of food to offer.

- Supplemental bird feeding in fall/winter
- Supplemental bird feeding in spring/summer

Other:

**Cover**

What types of cover resources are available for animals to seek shelter? See the section on "Cover" on page 16 for more information.

- Unmowed areas of grasses, wildflowers, or other herbaceous vegetation
- Dense shrub thickets
- Areas with patchy vegetation or bare ground
- Native bunchgrasses
- Leaf litter left on site in fall and through the spring
- Brush piles, log piles, or other coarse woody debris
- Rock piles, rock walls, or rock garden edging
- Bee hotel or other structure for nesting/overwintering solitary bees

Other:

**Water**

Water is provided:

- seasonally
- year-round

Water is provided in the following ways

- Permanent natural water source on or adjacent to site (stream, river, pond, lake, or wetland)
- Open water feature at least 10 sq. ft
- Bird Bath

Other:

### Reproductive Resources

See the section on “Reproductive Resources” on page 17 for more information.

Host plants for butterfly and moth caterpillars (which plants?)

Snags/standing dead trees

Large trees for nesting

Small trees for nesting

Bat boxes

Fish-free pools or ponds

Nest boxes for cavity-nesting birds (which types?)

Other:

### Conservation Practices

What other practices do you engage in to protect natural resources like soil, water, and wildlife?

Cats/other pets kept indoors unless restrained or supervised in designated area(s)

Pesticides/herbicides not used on site EXCEPT for control of invasive species

All new landscaping and garden plants purchased are neonic-free

Chemical fertilizers not used

Rain collection

Compost

Rain garden

Limit nighttime outdoor lighting

Other:

### Invasive Species

See the section on “Invasive Plants” on page 8 for more information. Priority 1 and 2 refers to high and moderate priority invasive species according to the WVDNR Natural Heritage Program.

Invasive Species Presence (pick one):

No priority 1 or 2 invasive species present on site.

Invasive species cover <5% of site

Invasive species cover 5-10% of site

Four or more priority 1 or 2 species present OR invasive species cover >10% of site

Invasive Species Control (pick one):

Control is planned for all invasive species present

A portion of the invasive species will be addressed

Invasive species will NOT be controlled

Invasive species not present at site

### Community Action

How are you getting involved with your community around native plants and wildlife habitat?

Share native plants/seeds with neighbors

Talk to city officials/local organizations about landscaping with native plants

Work with community to change ‘weed’ ordinances to promote native plant landscaping

Talk about the importance of pollinators, native plants, and wildlife habitat with friends, family, and community

Participate in community science or habitat restoration efforts in your area

Other:

**Future habitat improvements**

Give the who, what, where and why. (What are you doing, where are you putting it, what is it providing, and which animals are going to benefit?) Examples: 4-5 brush piles along perimeter of yard to provide cover for cottontail rabbits; 2 nest boxes in mowed area of yard to provide nesting sites for bluebirds; 1 suet feeder on pole with bird feeders to provide food in winter for woodpeckers. Continue on a separate sheet of paper if necessary.