



Landscaping with Native Plants to Ward Off Invasives & Benefit Wildlife

A HOMEOWNER'S GUIDE



Preventing Secondary Invasions: NATIVE LANDSCAPING

for residential & commercial sites



Cardinal flower (red), woodland sunflower (yellow), Echinacea (pink), and snakeroot (white), LakeCountyIL.gov

Homeowners play a critical role in the fight against invasive plant species, which spread aggressively and harm the environment, economy, and sometimes human health. This series of informational flyers is intended to help landowners establish attractive native plant landscapes, particularly after or during invasive plant removal.

Public-Private Partnership

Over the last 150 years, conversion of forests, prairies, and wetlands has forever altered these ecosystems. In Illinois, for example, less than .01% of land is undisturbed by people.¹ These changes, together with increased global trade, have allowed invasive plants to proliferate. Collectively, invasive species are considered the second largest threat to biodiversity behind habitat loss.

About 88%² of all land in the Northeast³ is in private ownership, though the amount by state varies from 63–99%. Invasive plants don't respect property lines, so addressing infestations and ecosystem health on public land alone will not get the job done. Private landowners are absolutely critical partners in the work to control and prevent the spread of invasive species and rebuilt habitat for our treasured native species. To facilitate public-private partnerships, the US Forest Service (USFS) and Great Lakes Restoration Initiative support Cooperative Invasive Species Management Areas (CISMAs)⁴ – sometimes called CWMA or PRISMs. CISMAs work with private landowners to support invasive plant treatment.

Why Plant Natives?

To minimize new infestations or secondary invasions. Most invasive plant seeds love naked soil. If soil is left disturbed following invasive plant removal, return of invasives is likely. The solution? Planting desirable, and preferably native, plants in their place.



To plan for success. Removing invasive plants gives property owners a chance to think about their top priorities for their landscape. Should it provide shade? Privacy? Reduced flooding? Low maintenance? Food for birds, bees or butterflies? These goals are achievable with good planning and the right plant selection.



To be part of the solution! Habitat for native birds and wildlife is dwindling. Your garden can provide resources for critters, fight off invasive weeds, and look fabulous all at once!



Native Plants vs. Invasive Species



Native coral honeysuckle. Clair Ryan, MIPN.org

Only a fraction of native species are commonly planted, resulting in misconceptions about their suitability for use in landscaping.

Native plants evolved over thousands of years in a particular region or ecosystem. They are adapted to the local climate and soil conditions, and often require fewer inputs like fertilizer and irrigation compared to non-native plants. Properly selected and installed native plants are highly competitive, ornamental without being weedy, and attract beneficial insects and pollinators.

Dense, native-forward landscaping is the best protection against invasive plants taking hold.

Invasive plants are non-native, able to thrive in a variety of conditions, grow quickly, and spread to the point of disrupting plant communities or ecosystems. When planning your landscaping, if you cannot work entirely with native species, it is critical that you avoid the dozens of invasive plants that are still popular in trade, such as burning bush, Callery pear, and wintercreeper.⁵

Preventing Secondary Invasions: SITE-APPROPRIATE SPECIES

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Every gardener learns that, to succeed, you have to put the right plant in the right location. Matching climate suitability and nutrient, light, and moisture availability relative to the plants' needs are all key starting points. It is also critical to choose plants that are likely to meet your goals for the site.

Plan it out. All plants used for landscaping require soil, water and light - that's a no brainer. However, different plant species have different requirements. For example, some species, like blue-flag iris (*Iris versicolor*) are adapted to life in saturated organic soils. Plant it in a sandy, dry soil and it is not likely to thrive. Conversely, wild lupine (*Lupine perennis*), needs a well drained soil. Plant it in muck or clay, and it will probably die. Therefore, you need a strong understanding of your site characteristics before selecting plant species. Over time, a lot of this can be gleaned through careful observation:

- Is there ever standing water?
- Is the soil dry in peak summer throughout the root zone?
- Is the soil dark, medium, or light in color?
- How many hours of direct sunlight each day?
- What is your USDA hardiness zone?
- How many inches of rain per month are typical?⁸

To investigate the fine details of your soil, like nutrient levels, acidity, density, etc., and for recommendations on how to correct any problems, mail a sample to your state's land grant university soil lab or a private accredited soil lab that accepts samples from the public. Unfortunately, home soil test kits are generally not reliable.

Getting started on a species list:

If you have a local native plant nursery or native plant society, that's a great place to begin learning from others and developing your vision.

It may also be worth getting in touch with your state botanist (usually employed by the department of natural resources or natural history survey) or a land-grant university extension specialist. Some state agencies and extension programs have guides and plant lists online to help citizens with native landscaping.

"Chances are you never thought of your garden – indeed, all of your property – as a wildlife preserve that presents the last chance we have for sustaining plants and animals that were once common throughout the U.S. But that is exactly the role our suburban landscapes are playing."

- *Principles of Ecological Landscape Design*⁶

Know your wants and needs. Beyond what they need to survive, native plant species vary dramatically in terms of mature height and spread, maintenance requirements, rate of growth, bloom period, flower color, fragrance, and wildlife benefits. If one of your primary goals is to prevent regrowth of invasive plants or weeds, you may want to look for native species with a fast rate of growth that will form dense cover relatively quickly.

However, if you have a small space or prefer a refined garden look, plants with large expected height or spread may not be the right choices. Thoughtful plant grouping, massing, and placement also contribute to a tidy look. If you want color year-round, it will be important to choose a mixture of spring, summer, and fall blooming species.

Variety is the spice of your garden. There are a few species that have become ubiquitous in native plant landscaping. These species typically have attractive flowers and grow under a broad range of conditions. It's okay to grow these species, especially if they are historically native to your location and native ecotype material is available (see next page), but also try to include species that are less common to add diversity and conservation benefits.

Maintenance matters. Gardeners sometimes think that native plant gardens look untidy or unkempt. In reality, a native planting can look as manicured as you want it to if you're willing to put in the work deadheading, weeding, pruning, providing support to plants with a tendency to bow over, dividing plants, mulching, and replacing dead or diseased plants. No garden looks like a calendar page without a lot of work! If you don't mind a more natural look, insects and other critters utilize dead standing plant material during the fall and winter.



Butterfly milkweed with a milkweed beetle, Martin LaBar via flickr.com
Above: Goldenrods and asters bloom in fall, Clair Ryan, MIPN.org

Preventing Secondary Invasions: NATIVE PLANT SOURCES

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False blue indigo in pots, Audubon Society of Western Pennsylvania

Researcher Dr. Douglas Tallamy challenges the notion that human and natural habitats are fundamentally separate.⁹ When we garden with plants that are historically native to the places we live, our gardens can provide food and shelter for native birds, butterflies, and other wildlife. Native plant gardens can provide vital way stations and corridors between distant nature preserves. This flyer is intended to help landowners find sources of native plant material to be incorporated in their landscapes, particularly after invasive plant removal, to prevent re-invasion.

Choose Vendors Wisely A reputable vendor will provide appropriate native plants for your landscape AND the information needed to succeed. Vendors dealing exclusively with native plants and locally owned and operated nurseries are more apt to carry a wide variety of properly labeled native stock. Local nature preserves, botanical gardens, and soil & water conservation organizations may host annual native plant sale events that are great for stocking up. Big box stores and online retailers may offer stock from outside your region or worse, may sell known invasive species. However, in some cases, buying online may be the only viable option. Look for a reputable nursery closest to your physical location that will ship to you, and avoid large, generally un-vetted online marketplaces (eBay, Etsy, Amazon Marketplace, Facebook, etc.).



Many state agencies and conservation organizations maintain lists of native plant nurseries and vendors. To help centralize these resources for the Midwest, USFS funded the development of a regional directory that can be accessed here: www.mipn.org/cwma-resources/site-revegetation/. County extension offices and native plant societies may have additional sources.

Choose Seeds/Stock Wisely

Insist on quality control/contamination testing. Invasive plant seeds can be really tiny and can be spread from place to place as a contaminant in seed mixes. When buying native plant seeds, ask vendors how they test for contaminants. Also, beware of generic wildflower and pollinator mixes, which often include invasive species.

Untangling cultivars. Native plant cultivars (“nativars”) have been purposefully bred, usually to enhance an aesthetic feature such as flower color, leaf color, plant size, etc. The issue is that cultivars are almost never studied to see if they provide the same wildlife benefits as the original species. That said, some cultivars are bred specifically to resist disease, which is beneficial. Nursery staff should be able to tell you why a cultivar is being offered.

Give preference to local ecotype plant stock. Wild growing plants adapt to their environment over time and develop a unique genetic profile known as a local ecotype.¹⁰ If you can buy local ecotype plants, they will likely thrive where you are and will provide optimal benefits to locally co-adapted pollinators and wildlife. Local ecotype planting also helps preserve genetic diversity among native species.

**Where is this seed from?
How was it tested for
contaminants?**



A pure live seed rating is a useful indicator that a seed mix has been quality-tested.

**What are the features of
this cultivar?**



Cultivars are indicated by a name in single quotes on a plant tag (e.g. Coreopsis 'Moonbeam').

**Where do you obtain
propagation stock?**



*Buy as local as possible!
If locally adapted material is not available, look for plants grown south of your location.*

***If a vendor cannot or will not answer these questions,
or sells known invasive species, consider purchasing elsewhere.***

Preventing Secondary Invasions: INSTALLATION

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Bee balm (left), pale Echinacea (front) and queen-of-the-prairie (back), Karen Hartlep, indiananativeplants.org

If you've painted your home before, you know that preparation work far exceeds painting time, but is necessary to achieve quality results. It is much the same with installing native plants or seeds. If you follow the steps below, you will have a greater chance of establishing healthy native plants and warding off invasive species (re-)infestations.

Correcting Soil Problems

The ideal soil for the greatest number of native plant species is non-compacted, well drained with organic material and a neutral to slightly alkaline pH. If your soil is not like this, you will need to think about either carefully selecting plant species well-suited for the soil you have or correcting problems.

Unfortunately, the process of building residential and commercial developments often leaves soils compacted and stripped of topsoil. If this is the case at your site, consider using a tiller or hand equipment to break up compacted soil, and either adding a layer of organic-rich topsoil or mixing compost or composted manure into heavy clay soils. However, make sure your source for soil and compost has processes in place to prevent weed seed contamination! Tilling is not recommended for relatively healthy soil as it can encourage weed growth.



University of Minnesota Extension

Timing is Everything

If you are working with live plants, your planting windows are limited to mid-to-late spring (after last risk of frost), and early fall (before first risk of frost). If seeding, you will have more flexibility as high summer (July and August) is the only time generally considered off-limits. Seeding in fall or even into the winter before snow cover is called a dormant seeding. Here, the seed is not expected to germinate until the following spring. Seeds used for spring planting should be stratified as necessary for germination in the same season as planting (see below).



Purdue University Extension

Stratifying Seeds

Most native plant seeds go through a dormant period after they are shed from their parent plant. Exposure to weather and soil conditions, particularly freeze-thaw cycles and dry-moist cycles, typically breaks this dormancy, though some species require fire or animal action to germinate. The preparation of seeds for germination, either outdoors or purposefully in a controlled environment is called stratification.

Dormant season planting will typically allow seeds to stratify outdoors. If planning spring seeding, you will need to stratify the seeds indoors through a combination of dry and moist storage. Some vendors sell pre-stratified seed and all native seed vendors should provide species-specific stratification guidance. Seeding species with multi-year stratification periods is not a good strategy in locations where re-establishment of invasive plants or weeds is a strong concern. Use of nursery-grown plants may be a better choice for species that are difficult to grow from seed.



USDA Forest Service



Planting Practices



Sedge plugs, alanciane.blogspot.com/2018/08/chfm-slope-planting-july-2018.html



Hench via Morguefile.com

Whether sowing seed or installing live plants, maximizing seed or root contact with the soil is the name of the game. Once seeds or plants are installed, water thoroughly and keep moist during the next several weeks.

Seeding In general, seed should be covered no deeper than its own diameter, as planting too deeply can inhibit germination. Most native perennial plant seeds do best at about ½-inch depth of planting, while grass seeds do better at about ¼-inch. Generally, scattering the seeds on the soil surface and using a hand-rake to incorporate them does the trick. If the soil is very loose before planting (e.g., if you sink more than ½-inch when you step on it), you may want to pack the soil down with your feet, a garden roller or other tamping equipment both before and immediately after seeding.¹¹

Transplanting If using nursery-grown plants, the key is to make sure the transplants establish a strong root-soil connection before they encounter stress from summer heat or autumn frost. Before you start, make sure the plants awaiting transplant are moist in their pots. Then, dig the planting holes to just slightly deeper and about twice as wide than the size of your plant plugs or pots. Make sure the soil at the bottom of the holes is loose, and add some loose compost to the bottom of the holes if working with plant species that thrive in organic-rich soils.

Remove plants from containers by squeezing the container sides and easing the root ball out from the bottom, not by pulling the stem. If plants are rootbound (i.e., the roots conform to the shape of the container), carefully tease the smallest roots that were at the bottom of the plug out of formation. Put the plants in the holes and backfill so that the roots are fully covered and the base of the stem/root crown is just under the soil surface. Press the transplants in by treading the soil down carefully on all sides of the stems and then water thoroughly.

In a Tough Spot Certain situations will make establishing native landscaping more difficult. These include deep shade, steep slopes, large populations of herbivores (usually deer and rabbits), and presence of allelopathic trees (most notably black walnut). Many of these problems can be overcome with careful species selection and experimentation. Steep slopes become more stable in the long term when a variety of plants with different rooting depths (grasses, forbs, shrubs) are used.¹² Temporary netting can keep small herbivores away during establishment.

Be careful not to damage or remove the strongest root material during installation. Native plants often have long tap roots that reduce the need for watering once established.



Echinacea (pink), prairie coneflower (yellow), and northern blazing star (magenta) give this prairie garden lots of color, Anna Klarck via AK Homes

Preventing Secondary Invasions: EXPECTATIONS & MAINTENANCE

for residential & commercial sites



Native plants can help filter pollutants from suburban roads, indiananativeplants.org



False blue indigo, Dow Gardens, Bugwood.org

Sleep...Creep...Leap! If you're an experienced gardener, you know what this means! This saying describes the first three years of life for most perennial plants, including shrubs and trees. The first year, whether establishing from seed or transplant, the plant tends to not do much at all (sleep). And the second year, they tend to grow slowly (creep). What is actually happening is that the plants are putting all their resources into establishing deep and robust roots for a couple of years. By year three, the roots are usually strong and the plant "leaps," growing to meet its expected size in terms of height and spread. It may take native woody plants several years or even decades to reach full height. This pattern can leave brand new native plant gardens looking a little sparse, and vulnerable to encroachment by invasive plants.

Nurture the Nature Just like humans and pets, native plantings need the most intensive care during their first years. Mulch can be applied to keep the soil moist and to keep weed seeds from germinating as readily. And, let's be honest, on many landscapes use of mulch is synonymous with neat and tidy! Be sure to look for mulch from a source using procedures to prevent weed seed contamination. Also, be careful how you arrange the mulch around the new plantings. Please, no mounds of "volcano mulch!" You actually want to make a shallow "mulch bowl" around the base of each plant so that water will drip down toward the plant root zone.¹³ During the first two years, it is advisable to water native plantings periodically for the weeks immediately following planting and during any sustained drought.



Japanese knotweed seedlings, Leslie J. Mehrhoff, UConn, Bugwood.org

Weed Away Although mulch can deter some weeds, it doesn't prevent them completely. Non-biodegradable barriers like landscape fabric are not recommended for native gardens as they disrupt natural soil processes and are not effective at suppressing weeds long-term.¹⁴ During the first two years, it will be very important to watch for weed establishment and pull the weeds as seedlings, if possible. It may even be worth looking at online resources that help with identification of common weeds and invasives in your area during the seedling stage. This is especially important for woody invasives and species like Japanese knotweed or bamboo, which spread through an aggressive root system. Once these are established, you can't just pull them out! Think of weeding like free therapy – when else can you simply destroy anything making you mad?

Keeping up Appearances If you are concerned that your new native planting looks too sparse, interplant some low-growing annuals to give your garden some color during the first two years. Be careful not to place the annuals too close to the native plants to avoid competition for space and resources. Also make sure you avoid species that tend to self-seed, especially if you're going with non-native annuals. Remember, by year three, your native plantings should be taking off, providing your garden with all the color and interest it needs. You can largely stop watering and mulching after three years, though using mulch to keep plant groupings separate can help the garden's appearance remain intentional. Promptly removing dead foliage and flower heads can also help keep things looking tidy. With some perennial species, deadheading and cutting back foliage after the first flowering will prompt a second flowering later in the season. However, keep in mind that dead plant parts are free fertilizer and habitat!

Footnotes

Front Cover Image: wild geraniums (pink, foreground) and columbine (red, background) flower among ferns, mayapples, and other shade-loving spring natives, JR P, under creative commons license via Flickr.com

- ¹ Illinois Humanities: www.ilhumanities.org/program/immigrant-landscape
- ² Calculated from table supplied by Natural Resources Council of Maine: www.nrcm.org/documents/publiclandownership.pdf
- ³ For these calculations, “Northeastern” is USFS Region 9: www.fs.usda.gov/r9
- ⁴ Find contact information for Northeastern CISMAs here: www.greatlakesphragmites.net/resources/organizations/
- ⁵ The Midwest Invasive Plant Network has a mobile app to help you avoid invasive landscape plants and pick out suitable alternatives. Simply search your app store for “Landscape Alternatives” (publisher is bugwood.org)
- ⁶ Beck, Travis. (2013) *Principles of Ecological Landscape Design*. Island Press.
- ⁷ USDA Hardiness Zone Map Online: planthardiness.ars.usda.gov/
- ⁸ NOAA’s National Climate Data Center’s tool for monthly normals: www.ncdc.noaa.gov/cdo-web/datatools/normals
- ⁹ See the linked Smithsonian Magazine profile and Dr. Tallamy’s influential books *Bringing Nature Home* and *Nature’s Best Hope*. www.smithsonianmag.com/science-nature/meet-ecologist-who-wants-unleash-wild-backyard-180974372/
- ¹⁰ For more information on local ecotypes: www.fs.fed.us/wildflowers/Native_Plant_Materials/Native_Gardening/genetics.shtml
- ¹¹ Native Connections (Michigan) provides a very helpful seeding guide here: nativeconnections.net/blog/wp-content/uploads/2018/04/NatConnCatalog17_PlantingGuidelines.pdf
- ¹² Advice on plant selection for slopes from North Central Conservation District (Connecticut): conservect.org/northcentral/wp-content/uploads/2020/01/planting_on_slopes.pdf
- ¹³ Ohio State University’s Buckeye Yard & Garden Online blog takes a humorous look at “volcano mulch.” Although it is most evident on trees, incorrect application of mulch is bad for all plants. bygl.osu.edu/node/1006
- ¹⁴ University of New Hampshire Extension’s blog tackles a question about weed control with landscape fabric: extension.unh.edu/blog/should-i-use-landscape-fabric-keep-weeds-out-my-perennial-garden



Swamp rose mallow thrives in a suburban Chicago-area garden, Clair Ryan, mipn.org



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