

GREEN YARDS and HEALTHY HOMES

A GUIDE TO SUSTAINABLE HABITATS
IN NORTHEAST OHIO

*Produced by the Doan Brook
Watershed Partnership*



South branch of the Doan Brook near Woodbury Elementary School. This section of the riparian corridor was restored with native plants in 2006.

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"If you look at a tree and think of it as a design assignment, it would be like asking you to make something that makes oxygen, sequesters carbon, fixes nitrogen, distills water, provides habitat for hundreds of species, accrues solar energy's fuel, makes complex sugars and food, changes colors with the seasons, creates microclimates, and self-replicates."

Bill McDonough, architect



Your Home, Our Planet

Human environments have an enormous impact on the natural world. Lawns account for between 30 and 50 million acres of land use, more than any one crop, including wheat, corn, tobacco and cotton. American homeowners use up to 60% of municipal drinking water on lawns.



When water runs off lawns, pesticides and fertilizers become a top source of nonpoint pollution in our watersheds. Runoff volume is increased in urban landscapes due to impervious surfaces like roads, roofs and parking lots. Storm sewer systems have become strained by this additional volume, which results in erosion, excess sediment build-up, and, in older cities, combined sewer overflows.

We have long known that our region's freshwater is cause for celebration, but haven't always known how to manage it at home. For instance, homeowners can plant more site-appropriate plants, convert more of their lawn to pollinator or rain gardens, and minimize the use of fertilizer, pesticides and water. Collectively, our backyards, can be woven together, like a quilt, to create an extensive habitat that's healthy for humans, aquatic systems and biodiversity. Each of us holds the key to more healthy communities and the planet.

Inside the home, using more sustainable practices can have just as large an impact. Nearly 40% of landfill waste originates from our homes, businesses, industries and schools. Recycling and composting can divert millions of tons of trash away from landfills to be used again more productively.

Let's accept architect Bill McDonough's challenge to 'think like a tree' and create homes that use resources efficiently, recycle and produce a range of benefits for the greater good.

--All statistics are from the U.S. EPA website.

A Green Yard

Yards are at the forefront of local environmental stewardship. Because residential land use is the most dominant land use in urban communities, we have the power to create a healthy landscape with high functioning ecosystems. Our design and plant choices can filter pollutants, supply food to pollinators (and us!), slow floodwaters, save energy...all the while allowing us to have fun and creating spare change in our pocketbooks.



Like soil and water, human health can always be managed better. About 80 million U.S. households dump nearly 90 million pounds of herbicides and pesticides on lawns per year. At times, pesticides are used as a last resort to save crops or homes, but is their use for purely cosmetic pursuits worth the health of children, pets, and our environment?

Everyone loves extending their living room outside in the summer. When you gauge how much lawn you actually need, there are ways to have a healthy lawn without toxic treatments.



Photo courtesy of Mari Keating

A hand-drawn cross-section diagram of a pond. The diagram shows a large, irregularly shaped pond with a wavy, irregular shoreline. Inside the pond, there are several labels: 'POND' at the top, 'POND' in the middle, and 'POND' at the bottom. Below the pond, there is a layer labeled 'SEED LAYIN (SEEDS)'. Below that, there is a layer labeled '6" POND TISSUE'. At the very bottom, there is a layer labeled 'SEED LAYIN (SEEDS)'. The diagram is drawn on a grid background.

Before any landscape program begins, assess the current conditions of your home landscape. This assessment will help you to identify and prioritize future projects and allow you to appreciate all the positive changes you've made. The site analysis is a combination of sketches, plans, and notes. In sketching your yard, you may find that you don't need a lawn as you currently have. The newfound space can become a garden or just a section of ground cover that adds texture and color while eliminating the need for mowing.

Begin by making a sketch of your yard. Identify areas that receive full sunlight or are in full shade. Marking out these areas will help you select site-appropriate plants, as well as identify any areas that might have moist ground.

Where does your water come from? Identify areas that collect rain water. Mark areas that receive water from gutters and roof tops. Look for areas where soil might stay moist.

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SPECIES

What types of wildlife do you want to support and attract? Take an inventory of the wildlife currently attracted or residing in your yard. This can be done over the course of a month, a season or even a year. After analyzing the results, determine which plants will foster a habitat conducive to your desired wildlife or seasonal palate of vegetation. For example, berry bushes provide food for birds; red flowers attract hummingbirds; and trees and bushes provide habitat.

SYNTHETIC CHEMICAL FERTILIZER & PESTICIDE USE

Track what and when you apply chemicals to your yard. Pay attention to active ingredients and NPK (nitrogen, phosphorous and potassium) ratios. Overuse of synthetic chemicals will degrade soils and vegetation over time. Most soils tested in Northeast Ohio require no phosphorous in order to amend the soil. In addition, phosphorous is a serious contributor to dead zones in Lake Erie. We recommend no pesticides and organic fertilizer, as needed.

Long-term use of pesticides and fertilizers will kill the microscopic, beneficial organisms that live in soil. Organisms are critical to the long term health of soil and plant life. Once these populations are destroyed, the soil can no longer support a diversity of plants and animals without additional inputs.

COMMUNITY

Before applying synthetic fertilizers or pesticides, be aware of local codes. A growing number of communities are becoming more conscious of pesticide and fertilizer use, restricting or prohibiting their use.

Soil

KNOW YOUR SOIL TYPE AND HEALTH

Perhaps the most important part of your lawn and garden is the soil. Understanding your soil will help you better prepare your yard for grass and other plants. Healthy soil is critical to solving many problems without using synthetic fertilizers or pesticides.

SOIL TYPES

Sandy soils contain large particles visible to the naked eye. They feel gritty and will not form a ball when squeezed into your hand. Sandy soils are loose and drain easily, but do not store water or nutrients for plants. Any part of Cleveland that resides on remnants of Lake Erie's ancient floor, will have well-draining, sandy soil.

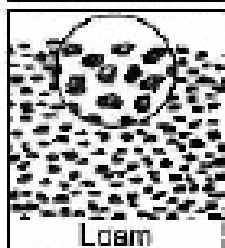
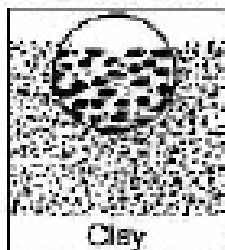
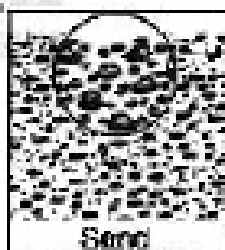
Silt is a type of soil with particles sized between sand and clay. Silt feels smooth and powdery. When wet, silt feels smooth but not sticky.

Clay soils are made up of tiny particles that feel sticky when wet, and dry into dense chunks or fine powder. They hold nutrients and water well, but drain poorly.

Loam is a mixture of sand, silt and clay in proportions that make it a good growing medium for plants. When squeezed in your hand, moist loam forms a ball which crumbles when poked with a finger. Loamy soils are generally loose, well-drained, and able to store moisture and nutrients.

pH LEVELS

Test the pH of your soil to determine what, if anything, is needed and to eliminate wasteful use of chemicals. Soil pH should be between 6.5 and 7.0. Contact the Ohio State Cooperative Extension or your local county soil and water conservation district for information about soil testing.



Air and water are essential to transport nutrients to plants and carry away wastes.

Together they make up half the volume of healthy soil.

ORGANIC MATTER

Although organic matter and soil life comprise only a small portion of the soil, they are the glue that holds healthy soil together. Decomposing plant materials, including compost, support a great variety of beneficial organisms ranging from microscopic bacteria to worms. Organic matter and soil life help to:

- Supply balanced nutrients to help growing plants fight diseases and pests.
- Store fertilizers and natural nutrients for gradual release, which allows the plant to absorb food consistently. In addition, this prevents excessive nutrients and chemicals that aren't absorbed from running off to local streams.
- Hold water, which cuts down on irrigation and water consumption.
- Aerate the soil, increasing oxygen and drainage in clay soils—which makes them easier to work.
- Trap and break down pesticide residues and polluted runoff, preventing them from entering our waterways.

Many weeds are indicators of lawn health. Dandelions are an indication of alkaline soil; clover is a sign of low nitrogen. Crabgrass is a result of drought, mowing too low or low pH.

WEEDS AND PESTS

Most of the plants that we identify as weeds evolved to tolerate poor growing conditions. They thrive in conditions that other plants cannot, such as low nutrients or compacted soil. So, before you reach for the weed-killer, take note and allow these pioneer plants to serve their function to aerate and improve poor soils. Organic lawncare professionals can tell you if particular weeds and pests point to a unique soil issue. For example, many fungi (the cause of most lawn diseases) get a foothold when lawns are either over or under watered. Balanced lawns are the most weed resistant.

Sustainable Design



DESIGN WITH NATURE IN MIND

Take cues from nature. Even if you choose not to convert your home habitat to a completely naturalized landscape, such as a prairie or woodland, there are ways to design home landscapes that make spaces more environmentally healthy and family friendly.

Sustainable landscape design should be:

Functional

Allow for ease of movement, work, recreation and leisure that occur in and around the landscape.

Maintainable

Reduce maintenance to a particular level or condition, lowering labor costs and easing maintenance operations. A maintainable landscape also reduces the need for inputs such as fertilizers, pesticides, equipment and water.

Environmentally Sound

A philosophy of “right plant, right place” as well as “right plant, right purpose” should dictate the amount of environmental, disease, and insect stress that a plant can tolerate.

Cost Effective

Cost effectiveness is impacted by the inputs, maintenance, plants and hard goods used in the implementation of the landscape, and by the quality of each.

Visually Pleasing

Beautiful yards are sustainable yards because we are inspired to care for them year after year!

INCLUDE MORE GROUND COVER, LIMIT GRASS/TURF

Minimize time spent mowing. Ground cover does more to capture rain water and runoff. It shades the ground, cools soil, promotes growth, and improves soil quality. Environmental standards for homes encourages homeowners to reduce lawn cover to less than 50% of landscape in a region with rainfall like Northern Ohio.

Incorporate Shade Trees

Urban trees limit the stress placed on stormwater management systems, provide cooling shade (which limits the need for air conditioning), provide a buffer between the street and lawn, absorb urban pollution, lower ozone, reduce blood pressure, add value to homes and provide homes to wildlife.

Think about Rain Gardens

Do you have areas where water accumulates in your yard? Consider making the spot more useful by incorporating a rain garden. Rain gardens capture water before it can collect in low places. Rain is collected and filtered before it enters the stormwater system.

Attract Wildlife

Most homeowners enjoy some wildlife. Consider what types of birds, animals or insects you might want to attract, and choose the types of plants that will provide food and shelter for those species. For example, cardinal flower does well in wet soils and attracts ruby-throated hummingbirds.

Plant one tree or four 5-gallon shrubs per 500 square feet of land disturbed by construction (including the area of the home footprint).

Native Plantings



Native trees, shrubs, bushes, grasses, and flowers can make your garden easier to maintain and beautiful. Unlike many exotic species, natives require less fertilizer and water, are more drought-resistant, and are less prone to disease. Because natives are adapted to local environmental conditions, they maintain or improve soil fertility and reduce erosion. Functionally healthy and established natural communities are better able to resist invasions by alien plant species.

Before you select plant material, know your site, including exposure, soil texture, pH, fertility, moisture conditions, weed problems, and the history of use. Unsure of where to start? Check out <http://nativespec.com/nativebrowser>, a tool that suggests native plants based on your site conditions.

A BRIEF LIST OF NATIVE OHIO TREES

Large Trees 50-100'+

Maples

Acer nigrum, rubrum, saccharinum, saccharum

Common

Persimmon

Diospyros virginiana

Hickories

Carya ovata, tomentosa, cordifomis

American Beech

Fagus grandifolia

Common Hackberry

Celtis occidentalis

Yellow Buckeye

Aesculus flava

Birches

Betula lutea and nigra

Ashes

Fraxinus americana, pennsylvanica, quadrangulata

Common Thornless

Honeylocust

Gleditsia triacanthos

Walnuts

Juglans cinerea, nigra

Cucumbertree Magnolia

Magnolia acuminata

Red Mulberry

Morus rubra

Sycamore

Platanus occidentalis

Eastern

Cottonwood

Populus deltoides

Sweetgum

Liquidambar styraciflua

Tuliptree

Liriodendron tulipifera

Bigtooth Aspen

Populus grandidentata

Wild Black Cherry

Prunus serotina

Oaks

Quercus alba, bicolor, coccinea, macrocarpa, muehlenbergii, palustris, rubrum, shumardii, veluntina

Black Locust

Robinia psuedoacacia

American Linden

Tilia Americana

A BRIEF LIST OF NATIVE OHIO TREES AND SHRUBS

Medium Trees 30-50'

Boxelder
Acer negundo
Ohio Buckeye
Aesculus glabra
Bigleaf Magolia
Magnolia macrophylla
Black Tupelo
Nyssa sylvatica
Quaking Aspens
Populus tremuloides
Shingle Oak
Quercus imbricaria
Black Willow
Salix nigra

Small Trees & Large Shrubs 15-40'

Mountain Maple
Acer spicatum
Downy Serviceberry
Amelanchier arboea
Allegheny Serviceberry
Amelanchier laevis
Common Pawpaw
Asimina triloba
Dogwoods
Cornus dogwood, florida, alternifolia
Cockspur Hawthorn
Crateagus crusgalli
American Hornbeam
Carpinus caroliniana
Eastern Redbud
Cercis canadensis
Fringe Tree
Chionanthus virginicus
Hawthorns
Crataegus phaenopyrum, punctata
Eastern Wahoo
Euonymus atropurpureus
Hop Tree
Ptelea trifoliata

American Hophorn-beam
(ironwood)
Ostrya virginiana
Sourwood (sorrel tree)
Oxydendrum arboretum
Common Chokecherry
Prunus virginiana
Pussy Willow
Salix discolor
Elders
Sambucus canadensis
Viburnums
Viburnum acerifolium, alnifolium, dentatum, lentago, prunifolium
Sumacs
Rhus copallina, Rhus glabra, Rhus typhina
American Cranberry
Viburnum trilobum

Shrubs 1-25"

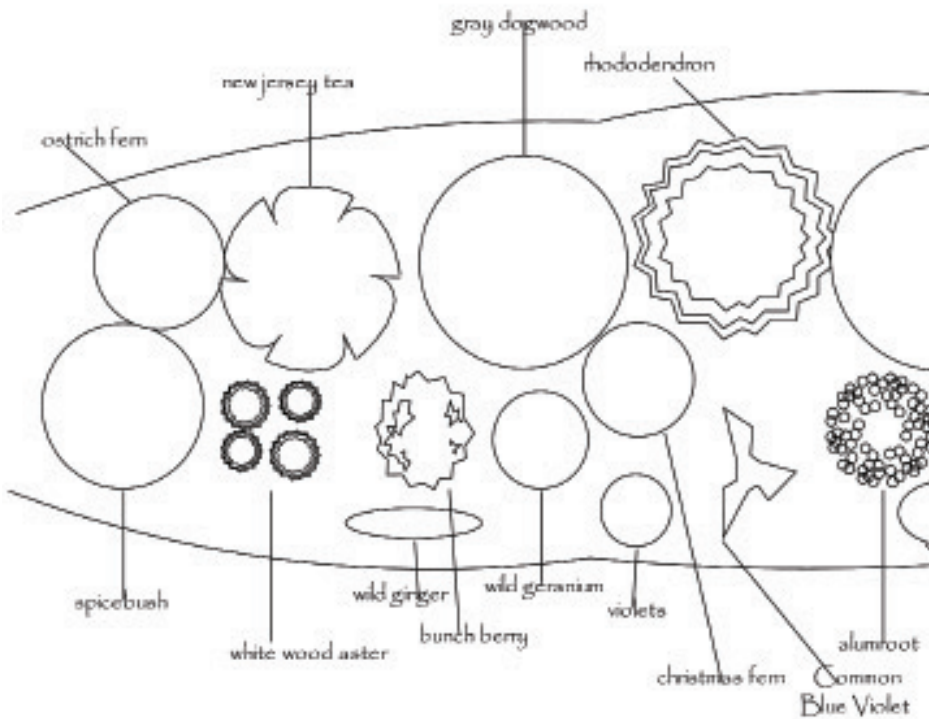
Devils Walkingstick
Aralia spinosa
Black Chokeberry
Aronia melanocarpa
New Jersey Tea
Ceanothus americanus
Buttonbush
Cephalanthus occidentalis
Dogwoods
Cornus racemosa, sericea
American Filbert
Corylus americana
Sweet Pepperbush
Clethra alnifolia
Sweetfern
Comptonia peregrina
Silky Dogwood
Cornus amomum
Dwarf Bush Honeysuckle
Diervilla lonicera

Leatherwood
Dirca palustris
Huckleberry
Gaylussacia baccata
Smooth Hydrangea
Hydrangea arborescens
Common Winterberry
Ilex verticillata
Spicebush
Lindera benzoin
Northern Bayberry
Myrica pensylvanica
Prairie Rose
Rosa setigera
Flowering Raspberry
Rubus odoratus
Steeplebush
Spiraea tomentosa
Common Snowberry
Symphoricarpos albus
Carolina Rose
Rosa carolina
Swamp Rose
Rosa palustris
Blueberries
Vaccinium angustifolium, cassinoides

Conifers

Common Juniper
Juniperus communis
Eastern Red Cedar
Juniperus virginiana
Eastern Larch
Larix laricina
White Pine
Pinus strobus
Canadian Yew
Taxus canadensis
Eastern Arborvitae
Thuja occidentalis
Canada Hemlock
Tsuga canadensis

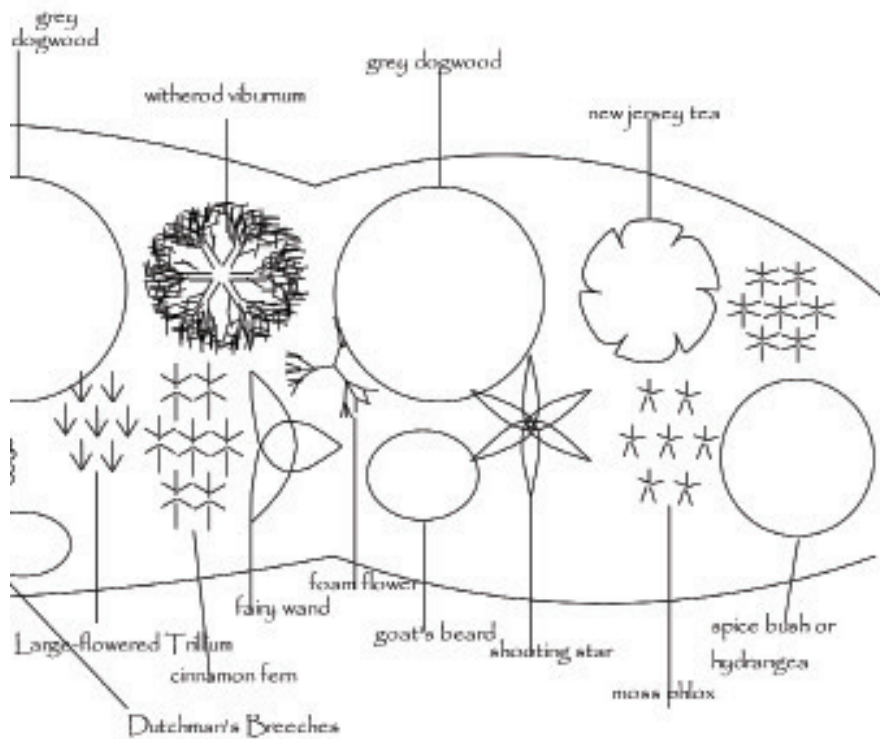
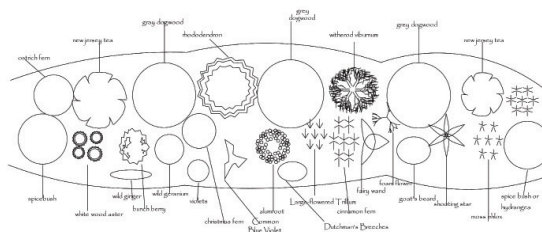
Sample Native Perennial Shade Garden



NATIVE PERENNIALS FOR WOODLAND-EDGE GARDENS

Common Milkweed
Asclepias syriaca
 River Oats
Chasmanthium latifolium
 Nodding Wild Rye
Elymus canadensis
 Virginia Wild Rye
Elymus virginicus

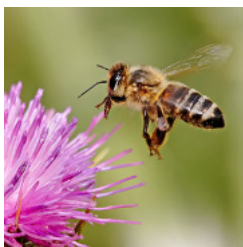
Common Milkweed
Asclepias syriaca
 River Oats
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 Nodding Wild Rye
Elymus canadensis
 Virginia Wild Rye
Elymus virginicus



Pollinator Gardens

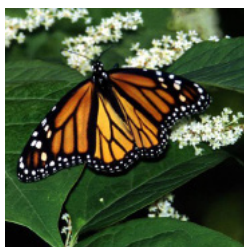
Though we may not notice hummingbirds, bats, bees, beetles, butterflies, and flies carrying pollen from one plant to another, these pollinators are responsible for nearly everything we eat—from chocolate and coffee to fruits and vegetables. They also maintain the beautifully diverse flower species. Despite these benefits, pollinators are disappearing at alarming rates.

You can help these beneficial creatures by creating a pollinator-friendly habitat in your backyard. A small yard landscaped with a variety of plants can attract great diversity. Ask your neighbors whether, together, you all can create a pollinator corridor on your street.



Who are the pollinators?

Honey bees are responsible for 80% of all pollination in the United States. Bee habitats in your yard can increase the quality and quantity of your fruits and vegetables while assisting in the survival of these threatened pollinators. Plant species that bloom in the spring, summer and fall. Bees are especially attracted to blue and yellow flowers.



Butterflies prefer different varieties of nectar, in both color and taste. Make sure to plant a wide variety of plants for nectar and hosting caterpillars. Plant flowers in sunny spots—butterflies love to be warm and soak up the sun!



To attract **hummingbirds**, plant bright red flowers that have cones or trumpet shapes. Native wildflowers for hummingbirds include the beardtongue (early summer), New Jersey tea (mid-summer) and Bergamot (late summer). These wildflowers are native to the Midwest and eastern Great Plains and thrive on well-drained, sandy to sandy-loam soils.

NATIVE PERENNIALS FOR POLLINATOR GARDENS

Vines and

Groundcovers

Trumpet Creeper
Campsis radicans

Herbaceous Vines and Creepers

Creeping Phlox
Phlox stolonifera
Moss Phlox
Phlox subulata s.d.f.

Tall Perennials up to 6'

Goat's Beard
Aruncus dioicus
Common Milkweed
*Asclepias syriaca**
Smooth Aster
Aster laevis
Calico Aster
Aster lateriflorus
Hollow Joe-Pye Weed
Eupatorium fistulosum
Spotted Joe-Pye Weed
Eupatorium maculatum
Common Boneset
Eupatorium perfoliatum
Sweet Joe-Pye Weed
Eupatorium purpureum
Beebalm
Monarda didyma
Wild Bergamot
Monarda fistulosa
Rough Blazing Star
Liatris aspera
Dense Blazing Star
Liatris spicata
Turk's Cap Lily
Lilium superbum
Ohio Goldenrod
Solidago ohioensis
Stiff Goldenrod
Solidago rigida
Showy Goldenrod
Solidago speciosa

Shrubs 1-25"

New Jersey Tea
Ceanothus americanus
Buttonbush
Cephalanthus occidentalis
Sweet Pepperbush
Clethra alnifolia
Spicebush
Lindera benzoin
Flowering Raspberry
Rubus odoratus
Steeplebush
*Spiraea tomentosa**
Pinxter Flower
Rhododendron nudiflorum

Low Growing Perennial Plants 3-12"

Sweet White Violet
*Viola blanda**
Marsh Blue Violet
*Viola cucullata**
Common Yellow Violet
*Viola pubescens**
Common Blue Violet
*Viola sororio**
Common White Violet
*Viola striata**

Very Tall Plants 6"+

New England Aster
Aster novae-angliae
Flat-topped White Aster
Aster umbellatus
Wild Senna
*Cassia hebecarpa**
Maximilian's Sunflower
Helianthus maximiliani
Woodland Sunflower
Helianthus strumosus
Jerusalem Artichoke
Helianthus tuberosus
Cup-plant
Silphium perfoliatum

Medium Height Perennials 4-36"

Pearly Everlasting
Anaphalis margaritacea
Swamp Milkweed
*Asclepias incarnata**
Butterfly Weed
*Asclepias tuberosa**
Sky Blue Aster
Aster azureus
White Wood Aster
Aster divaricatus
White Heath Aster
Aster ericoides
Fairy Wand
Chamaelirium luteum
Turtlehead
*Chelone glabra**
Wild Lupine
*Lupinus perennis**
Wild Blue Phlox
Phlox divaricata
Hoary Mountain Mint
Pycnanthemum incanum
Grey Goldenrod
Solidago nemoralis
Black-eyed Susan
Rudbeckia hirta
Starry Campion
Silene stellata

Small Trees/Large Shrubs 15-40'

Common Pawpaw
*Asimina triloba**
Pagoda Dogwood
*Cornus alternifolia**
Flowering Dogwood
*Cornus florida**
Pussy Willow
*Salix discolor**

* Good for butterfly larvae

Sample Pollinator Garden with Native and Naturalized Plants



Prairie Gardens



AN ATTRACTIVE SOLUTION FOR SUNNY AREAS

A residential prairie is a site in full sun that has been planted with native plants, sedges and wildflowers. Prairie gardens reflect some sections of the Midwest’s pre-settlement landscape. Northeast Ohio was originally predominantly diverse deciduous forest.

Once established, prairies are relatively low-maintenance and drought-tolerant. A mowed border around your prairie creates an intentional appearance for dense neighborhoods with traditional landscapes.

How to create a prairie landscape

- Best to begin between late May to early June.
- Identify a site, ¼ acre or more, located in full sun. The site should be relatively clear of invasive species and weeds; existing plants can crowd out new prairie seedlings.
- Prairies consist of 80% grass and 20% wildflowers. Select a variety of plants that are suitable for different temperatures, or have a variety of bloom times. Avoid pre-canned wildflower mixes—these will often lack site-appropriate plants. Instead, contact local prairie seed companies for advice on seed mixes.

SELECTED NATIVE PRAIRIE GRASSES

Big Blue Stem

Andropogon gerardii

Sideoats Gramagrass

Bouteloua curtipendula

Switchgrass

Panicum virgatum

Little Bluestem

Schizachyrium scoparius

Indian Grass

Sorghastrum

Prairie Cordgrass

Spartina pectinata

- Distribute the seed; ensure there is good seed-soil contact by using a slightly damp carrier, such as peat or sawdust.
- Wildflowers can be added later, after the grasses are established. Usually, it is good to establish the grasses for two years, then add wildflower plants.
- Maintain the prairie by cutting grass to a height of 4 to 8 inches. In the first two seasons, monitor the prairie and remove undesirable weeds and invasives. Once the prairie is established, mowing once a year is all that is required.
- Prairies are about one quarter the maintenance cost of traditional turf.

SELECTED NATIVE OHIO PRAIRIE PLANTS

Canada Anemone

Anemone canadensis

Sullivant's Milkweed

Asclepias sullivantii

Butterfly Milkweed

Asclepias tuberosa

Whorled Milkweed

Asclepias verticillata

Spider Milkweed

Asclepias viridis

Prairie False Indigo

Baptisia lactea

White Lady's-slipper

Cypripedium candidum

Tall Larkspur

Delphinium exaltatum

Shooting star

Dodecatheon meadia

Purple Cone Flower

Echinacea purpurea

Kalm's St. John's-wort

Hypericum kalmianum

Rough Blazing-star

Liatris aspera

Slender Blazing-star

Liatris cylindracea

Spiked Blazing-star

Liatris spicata

Rattlesnake Master

Eryngium yuccifolium

Queen-of-the-Prairie

Filipendula rubra

Prairie Fringed Orchid

Platanthera leucophaea

Shrubby Cinquefoil

Potentilla fruticosa

Gray-headed Coneflower

Ratibida pinnata

Black-eyed Susan

Rudbeckia hirta

Hoary Puccoon

Lithospermum canescens

Wild Bergamot

Monarda fistulosa

Hairy Beardtongue

Penstemon hirsutus

Spotted Phlox

Phlox maculata

False Dragonhead

Physostegia virginiana

Wild Senna

Senna hebecarpa

Royal Catchfly

Silene regia

Compass Plant

Silphium laciniatum

Prairie Dock

Silphium terebinthinaceum

Starry False Solomon's Seal

Smilacina stellata

Stiff Goldenrod

Solidago rigida

This list provided by Ohio Prairie Nursery

Rain Gardens



COLLECT RAIN WATER AND SNOW MELT

Rain gardens are depressions in the landscape that capture precipitation, filter and absorb it through soil. They can be used to capture up to 40% of water that would otherwise runoff.

Rain gardens have been recognized by the U.S. Green Building Coalition LEED certification as effective aids in managing stormwater.

Tips for Site Location

a. Avoid sites too close to foundations. Sites close to buildings may leak into your home's foundation. A ten-foot buffer is usually recommended.

b. Redirect rain water toward a distant rain garden. Create underground piping to direct water to the site or create channels and/or swales. These types of features can become attractive parts of landscaping and increase water drained at the rain garden. Consider having a garden for both your front and back yard.

c. Avoid excavating near large trees. Excavation can damage tree roots. Also, some trees produce chemicals that are toxic to certain plants.

d. Be aware of property lines, right of ways and underground utilities. Call utility companies first to identify lines before you dig.

Creating a Rain Garden

Siting – Take advantage of locations that have good drainage and lie within existing drainage patterns. Low spots aren't ideal because they often have poor drainage, possibly leading to standing water. Rain gardens should be placed to intercept water before it gets to the lowest areas of a yard. Locations with poor draining soil necessitate excavation to correct the drainage. If your lawn slopes, consider creating a small terrace for your garden.

Evaluate the soil. The most important aspect of a functioning rain garden is its ability to absorb water. Some soils that are compacted and have poor drainage may need to be excavated in order to create favorable soil conditions. Compact soils may need to be excavated up to two feet to create adequate conditions.

Create an effective design. Any size rain garden will have a positive impact on water drainage. Ideally, a rain garden would absorb all the rain that is otherwise runoff from your yard. Estimate the size of the garden by considering the area of roof and pavement from which the garden will capture runoff. Depending on how absorbent your soil is, the area of the garden should be between 20 and 60 percent of total drainage area. Home rain gardens are usually between 150 and 400 square feet.

Prepare the site. Excavate a spot to create the garden. Some locations and soil conditions might require more excavation than other sites. When creating the basin, dig a saucer shape so water can be spread and absorbed over a wider area. For compacted or poor soil conditions, consider amending the poor soil with better soil.

Select the plants. Select plants that are suitable to the site's pH, light and water conditions. Be aware that some areas of the rain garden will be more wet than other areas. Plants should be able to survive in both wet environments, when the garden acts as a pool, and in dry environments between rain falls. Some examples include New England Aster, Switchgrass, Sweet Joe-Pye Weed, Maidenhair Fern and Wild Columbine.

Worried that your rain garden might attract unwanted pests, such as mosquitoes? Rain gardens are not ponds: A properly designed rain garden will only hold water for less than 48 hours, which is not enough time for mosquitoes or other pesky insects to breed.

Plant and Maintain the Garden!

Know Your Grass



GROWING HEALTHY TURF GRASS

Most common and popular grass types are not meant to live in the climate where they are found. Furthermore, lawns usually promote a monoculture and limit diversity of both plant and animal species. Promoting healthy turf growth, however, can make your lawn attractive and environmentally-friendly.

Choose a hearty native species

Locally appropriate grasses, such as turf-type tall fescue, require low maintenance, germinate quickly, and are able to survive Ohio’s droughts. If you have a larger lawn, consider dedicating a portion of it to a no-mow lawn, ground cover or gardens.

Set a threshold for the number of non-grasses that you are willing to accept. Commonly found in seed mixes before the introduction of broadleaf herbicides, Dutch (or white) clover benefits your lawn by fixing nitrogen in the soil, thrives in clay soil, and acts as a deterrent to common soil pests.

NATIVE GRASSES AND SEDGES

Big Bluestem

Andropogon gerardii

Side-oats Gramagrass

Bouteloua curtipendula

Gray’s Sedge

Carex grayi

Palm Sedge

Carex muskingumensis

Purple Love Grass

Eragrostis spectabilis

Virginia Wild Rye

Elymus virgatum

Soft Rush

Juncus effuses

Golden Wood Millet

Milium effusum

Deer Tongue Grass

Panicum clandestinum

Wide Leaf Sedge

Carex plantaginea

Canada Wild Rye

Elymus canadensis

Switchgrass

Panicum virgatum

Little Bluestem

Schizachyrium scoparius

Indian Grass

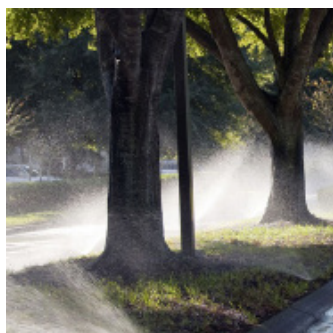
Sorghastrum nutans

Prairie Cord-grass

Spartina pectinata

WATER APPROPRIATELY

Light, frequent watering can actually hurt grass. Over watering and/or frequent watering will stimulate excessive top-growth and increase the need for mowing. Lawns watered too frequently also tend to develop shallow roots, which may make them more susceptible to pests and heat-drought stress. Water deeply and infrequently. Your lawn only needs approximately 1 inch of water per week, factoring in both rain and irrigation.



Northeast Ohio usually receives enough rain during the summer to eliminate the need for watering. Watering should be done no more than once every five days and should saturate the soil to 6 to 8 inches. The best time to water is before 9 A.M., after which time evaporation begins to affect water

absorption. If using a sprinkler system, test to see how long you'll need to run it. Set a tuna can in the watering zone and see how long it takes to fill the one inch can.

Use rain water. Plants prefer rain water because of its neutral pH and the absence of salt, chlorine and fluoride. Rain barrels are an easy way to collect rain water from roofs and prevent runoff from rushing straight into municipal stormwater management systems. Many local watershed and environmental organizations host workshops on how to build your own rain barrels.

Re-seed to prevent invaders. Re-seeding your lawn in early fall is a good way to re-propagate bare spots and prevent weeds from taking over. Early fall is a good time for this because the ground is still moist and warm, and there is enough time for the grass to develop before the winter weather.

Grass grows best in 4-6" of topsoil that is well-drained and filled with organic matter. You can add organic matter with compost.

Turf Grass Care



MOW YOUR WAY TO BEAUTIFUL TURF GRASS

Maintain your mower. Sharpen your cutting blades. Unsharpened blades can leave grass stems frayed and cause lawns to look brown.

Mow appropriately. Lawns should be kept high, between 3" and 4". Never cut more than 1/3" off of a blade. At the appropriate height, grass blades keep the soil cool, reduce water loss, and promote deeper roots and dense grass cover—all of which discourages new weed seedings. Grass height and root depth are mirrors of one another—the taller the grass, the deeper the root system, the stronger the crop!

Mulch grass clippings. Leave grass clippings on your lawn for an easy source of non-toxic plant food. Grass clippings contain the three main fertilizer ingredients: nitrogen, phosphorus and potassium. Clippings decompose in one or two days (thanks to earthworms and soil microorganisms) and do not contribute to thatch accumulation.

Prevent thatch. ½ to 1 inch of plant mat debris can create a thatch layer on your turf. Solve the problem by balancing the pH (acidic soil slows decomposition). Ideally, soil pH should be neutral, 6.5 to 7.0. Aerate in the fall to de-thatch.

Reduce your carbon footprint. Consider eliminating fuel-powered lawn mowers! Push reel mowers are an easy and environmentally-friendly way to cut grass on small lots. Be sure that the mower has a mow height of at least 3 inches.



Fertilizers

GET YOUR YARD OFF DRUGS

Traditional lawns often need extra care. If a problem in your yard necessitates the use of inputs, then choose organic products. Organic products are becoming increasingly available in supply stores. Organic fertilizers may take slightly longer to take affect, but the results are usually much longer lasting. If you are planning on treating your lawn, consider the following:



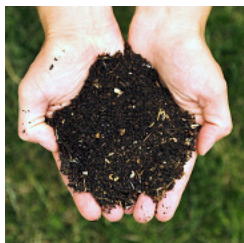
A well-tended lawn with good soil needs approximately 1 to 2 kg of nitrogen per 100 sq meters. Leaving grass clippings after mowing will return approximately 1 kg of nitrogen per 100 sq meters to your lawn.

Limit fertilization to once a year—and use organic fertilizers! Organic fertilizers, such as cottonseed meal, blood meal, fish emulsion, manures, and sewage sludge, help your soil by promoting the growth of microorganisms. Also, they are not harmful to your family and pets. The best time to apply is in the early spring and fall. Be sure to read the label directions and warnings. Over-application of fertilizers can harm your lawn by affecting long-term plant health and causing burning.

Organic fertilizers can have some specific results that could be more appropriate for specific situations. For example, cottonseed meal produces a somewhat acidic reaction; consequently, it is often used for acid-loving plants. Other fertilizers might be rich in nitrogen, requiring careful attention to avoid burning plants after application.

Other weed prevention methods may be more effective and longer-lasting. **A healthy, thick lawn cover that is mowed and watered appropriately will naturally prevent weeds and unwanted pests.** For areas closer to foundations, mulching provides a natural alternative to herbicide.

Composting



A RECIPE FOR A HEALTHIER YARD

Composting is an easy way to create organic fertilizer for your lawn and garden. A backyard compost pile is made by mixing grass clippings and kitchen waste (green, high-nitrogen material) with dry leaves (brown, high-carbon material), soil and water. Mix periodically to add air. Chopping or shredding the materials with a hatchet, mower, or shredder speeds the composting process.

This recipe sets up an ideal environment for nature's decomposers to work. Not only does composting conserve natural resources and reduce solid waste by recycling otherwise wasted nutrients, but it also yields faster-growing, sturdy and disease-resistant plants and encourages beneficial organisms to stay in the soil, further benefiting soil and plant life.

1. Layer one part green materials with two parts brown materials:

Green Materials with High-Nitrogen Content

- Grass, weeds and non-woody garden prunings
- Spent flowers, bouquets
- Farm animal manure (cow, horse, chicken, sheep)
- Fruit & vegetable kitchen and garden scraps
- Sprinkling of blood meal or cottonseed meal
- Coffee grounds

Brown Materials with High-Carbon Content

- Dry leaves
- Dead brown plants or potted plants
- Straw, sawdust
- Pine needles
- Finely-chopped woody brush, corncobs

Every year, each American creates 360 pounds of food and yard waste. 11% of total refuse is food waste, and 9% is compostable.

2. Sprinkle a half inch of compost every few layers.

Compost will help inoculate the soil with the microorganisms necessary for the decomposition process.

3. Add water to keep the pile as damp as a wrung-out sponge.

4. Mix or turn periodically with a garden fork.

Microorganisms need oxygen and small particle size. The more often you turn the pile, the quicker it breaks down.



Notes: Do not add meat, dairy products, diseased or invasive plant material, or dog and cat wastes to a backyard compost pile. Rabbit and bird waste is fine.

A compost pile composed of predominantly green materials (i.e., grass) may become soggy and release unpleasant odors. If this happens, break the heap apart and rebuild it, adding layers of brown materials and turn more often to dry out the pile.

Vermicomposting



BASIC INSTRUCTIONS

Create and maintain an environment that helps worms make rich humus. Vermicomposting is perfect for living areas without sufficient back yards for traditional composting.

1. Container

- Plastic storage box or a wooden bin (with lid) - 8" to 12" deep. Find instructions to make the wooden box in *Worms Eat My Garbage*, by Mary Appelhop.
- Drill 1/4" holes 4" to 5" apart in bottom and a few holes near top of box.
- One square foot of surface area will accommodate one pound of food scraps per week.
- A 1.5' x 2' container will house one pound of worms.

2. Bedding

- Tear newspaper into one-inch strips. Moisten newspaper strips in a tub of water. Lift out and allow to drip before placing in bin.
- Fill bin 3/4 full with bedding. Keep bedding fluffed. Add 1 or 2 handfuls of loose soil. The soil provides grit that worms need to digest food.
- Raise bin on bricks or blocks with paper or plastic underneath to catch excess water.

3. Worms

- Use red worms (*Eisenia foetida*) commonly known as red wigglers or manure worms. Other kinds of worms will not survive in a closed environment. These worms are not cold-hardy and therefore don't pose an issue as an invasive species.
- One pound of worms will process 3 to 4 pounds of food waste per week.
- Worms do well in temperatures between 40 -80 degrees.

4. Bin Placement

Keep anywhere inside that is convenient. If bin is outside, keep out of sun and protect from rain. The lowest temperature for survival is 40F.

5. Worm Food

Feed worms fruit and vegetable scraps, coffee grounds, tea leaves, breads and cereals, small amounts of pulverized eggshells. **Do not feed meats or dairy products.** Always bury food under bedding. Breaking up food helps worms digest it more quickly. Bury food in different locations starting in one corner. Do not overload the bin.

Earthworms are not native to the Great Lakes region. While they are beneficial for gardeners, they can cause drastic changes in forest ecosystems. For more information and for tips about preventing the spread of invasive earthworms, see www.greatlakeswormwatch.org.

6. Harvesting

When dark humus starts to build up in the bin, move it to half the box and add new bedding to the other half.

Start feeding under the new bedding and worms will move to the food side. After several weeks, remove humus. Handpick remaining worms and worm cocoons (tiny red/brown eggs 1/8" long).

7. Other Decomposers

Many other critters may turn up in your compost bin, such as tiny white/pot worms, mites, springtail, sowbugs, etc. These good bugs also help break down food.

8. Worm Problems

If worms are dying or crawling up inside of the box, the bedding may be too wet or too dry or too much citrus was added. The worms may also need oxygen, so leave the lid ajar. Bad smells are usually caused by too much food, too much moisture or not enough air.

9. Uses for Worm Humus

Top dress indoor and outdoor plants. Pot houseplants with 1/3 humus and 2/3 potting soil.

Integrated Pest Management



Many of the problems that develop with turf grass can be managed in a healthy environment. Often, beneficial organisms native to the soil and grass are able to maintain turf health by competing with damaging parasites. A non-chemical approach to pest control supports a population of beneficial organisms that make loose, fertile soil and return nutrients to grass.

Checklist:

- Plant and over-seed with natural and pest-resistant grass varieties in the fall; focus on bare spots to prevent weed growth.
- Aerate 2 to 4 times per year to reduce soil compaction and to improve soil drainage.
- Mow high to encourage deep roots and strong grass—shade improves soil.
- Water appropriately for the site and the season; water deeply and infrequently during the summer.
- Minimize thatch; factors which slow decomposition include excessive soil acidity, heavy clay soils with poor drainage, reduced soil insect activity and reduced levels of soil microflora (fungi and bacteria).
- Maintain proper soil pH.
- Seal sidewalk and stone cracks.
- Grow plants that attract and foster natural pest predators.
- Remove or drain objects that hold standing water.
- Improve drainage through core aeration.
- Cut tall grass, weeds and brush.
- Glean/dispose of fallen fruit.
- Maintain your compost bin to eliminate pests and odors.

Selecting a Lawn Care Pro

A more sustainable lawn care program is an easy way for homeowners to implement sustainable conservation practices around their homes. However, the professional lawn care industry is becoming more receptive to natural, chemical-free and native landscaping services. With more individuals relying on professionals to maintain their healthy lawn, landscapers are at the front line of making our homes more sustainable.



When selecting a professional service, being knowledgeable about sustainable lawn care will help you ensure that your lawn is being properly maintained.

Questions to ask before choosing a lawn care pro:

- Are your treatments chemical-free?
- If not, in which situations do you use chemicals?
- What threshold do you use to gauge pest and weed growth?
- What types of products do you use, and how often will they be applied?
- What active ingredients do your products have?
- Do you monitor the lawn regularly for pests, or do you treat for pests on a scheduled basis?
- What types of plants will be chosen for the landscape?
- Is the company certified by a trustworthy organization to offer a natural lawn care program?
- How do you monitor results?
- Do you use spot treatments for certain infestations?
- Do you test soils?

A Healthy Home

INTRODUCTION

Over the past 50 years, the ecological footprint of the American home has grown. The average size of the American home has increased from 1,000 square feet to over 2,000 square feet. The built environment consumes 40% of the world's total energy, 30% of its raw materials, 25% of its timber harvest, 35% of the world's CO₂ emissions, 16% of its fresh water, 40% of municipal solid waste destined for local landfills and 50% of ozone-depleting CFCs still in use.

The sustainable and green building movements, such as the Green Building Alliance, have begun to address how to make our homes both functional for modern life and ecologically-friendly. Implementing sustainable practices within your home can help improve the environment. By using more ecologically-friendly building techniques and community design principles, we can build a more resilient community.

The three Doan Brook communities of Cleveland, Cleveland Heights and Shaker Heights have ordinances and incentives for green homes, landscapes and community designs.



The Nature Center at Shaker Lakes encourages alternatives to traditional home building and consumer habits.

WHY HOME HABITATS?

What could be more important to keep healthy and sustainable than the places that we live? How we design and construct our built habitats can affect the environment and our health. Large homes in sprawling communities waste energy, consume resources, decrease natural areas and negatively-affect health.

The green building movement has grown stronger, as LEED-certification is achieved in new commercial and industrial constructions and renovations, and also in home and neighborhood design. Our dense city neighborhoods and garden suburbs connect us with nature. There is an array of choices that we can make in our homes to safeguard that environment.



Energy efficient appliances and environmental energy help reduce energy bills and negative impacts on the environment. Recycling programs have become cheaper and easier to use; they have become the cornerstone of many municipal waste management programs. Recycling can make money for the city, create jobs, and eliminate the amount of waste sent to landfills. Furthermore, nearly 30% of all newly constructed and remodeled buildings suffer from poor air quality, or “sick building syndrome.” This can be corrected easily by using more indoor plants and better building systems.

Where and how we live has never before been such a central piece of the sustainability puzzle.

Building Greener

GREENING OUR HOMES AND COMMUNITIES

The green building movement is committed to more sustainable homescapes that respect the site, reduce material consumption, reduce water and energy usage, create healthy homes and communities and maximize design longevity.

The green building process examines the built structure and also the total cycle and impact of the building . This includes the planning, design, construction, operation and maintenance phases in addition to the demolition or disassembly and environmental, economic and social impacts. When buildings are considered within an ecological system, negative effects from traditional building practices can be minimized.

Former rust belt cities such as Cleveland and Pittsburgh have become national leaders in construction technology for the greening of historic buildings. We have also been recognized for urban design that creates more green space and energy efficient buildings. Cleveland's two largest foundations, the Cleveland Foundation and Gund Foundation, are regional leaders with a policy to only fund construction or renovation projects that seek U.S. Green Building Council LEED certification.

Respect Your Site



When designing a site, respect the existing place. The plan of a home, an addition or a landscape should protect what already exists. Urban trees are one of the most important, but most rapidly disappearing, landscape features. Furthermore, larger

built environments consume extra resources and require more energy and inputs to maintain. All this increases the amount of emissions released into the air, which eventually decreases air, soil and water quality.

Restore the landscape

What impact does your house have on local wildlife habitats? Large lawns, distant lots and oversized buildings disturb more natural habitat than buildings built to work with natural patterns of sun, shade, wind and water.

LEED home certification awards points to homes that have smaller square footage; for example, a 3-bedroom home would be awarded points for having a square footage under 1900 square feet (approximately 25% smaller than the average American home).

Landscaping that incorporates native species, rain gardens and trees reduces the need for irrigation and the impact of storm water runoff. The use of pervious pavements also reduces water normally running off driveways and sidewalks. Green homes minimize turf and use alternatives, such as IPM, for pest control.

Environment and Community

Gain LEED green points by avoiding environmentally-sensitive sites and farmland. Commuting in cars is one of the largest causes of pollution in the U.S. If you choose to build or buy a new home, consider its location relative to services, commerce, schools, libraries, public transportation and other daily activities and infrastructure. Biking and walking to do errands is healthy for both you and the environment.

Save Materials

One of the best ways to make a building more environmentally-friendly is to reduce the materials consumed during construction and during its lifespan. First and

foremost, recycle old buildings before building anew; then, reduce, reuse and recycle materials during construction. Local organizations, such as Rustbelt Reclamation and Habitat for Humanity, can help you repurpose building materials and fixtures.

Choose Low-Impact Materials

When choosing materials, consider the environmental impact of the manufacturing process. Are the materials made from recycled goods, rather than extracted as a raw material or from an old growth forest? Is the manufacturing process reducing waste, energy and natural resources consumed?



Ask whether the product will be safe for occupants. Choose paints, solvents, and other materials that emit no or low VOCs, or volatile organic chemicals. Always follow the manufacturer's directions; have good ventilation and dispose of these products at a household hazardous waste collection event, hosted by local municipalities or the Cuyahoga Solid Waste District.

Maximize Longevity

Be concerned with durability. Durable homes and products reduce the long-term impacts a building has by reducing the need for maintenance and replacement. Sustainable building practices and durable materials may be initially costly; however, they create long-lasting buildings that are more efficient and cost effective in the long-term.

Older Homes

Most reading this guide will not build a new home. Many houses in our "built-out" communities have the right orientation (south or west) to be retrofitted with solar panels. But for those that do not, uninsulated walls and hundred year old windows can be upgraded or, at least, better weatherized with caulk, insulation, and more caulk.

HOME EFFICIENT ENERGY

Natural Heating and Cooling

A home on a lot with large trees and shade will require less cooling than a home on a clear-cut lot – saving upwards of 30% on energy bills. In addition, fans help ventilate, heat, and cool our homes.

Low-E Windows

Windows coated with a low-e, or low-emittance, coating reduce the amount of heat lost through the glass. The low-e coating is an invisible coating that lowers the radiant heat transfer. In Cleveland's climate, a triple-glazed window with a low to moderate solar gain low-e coating or a double-glazed window with a high solar gain low-e coating will perform most efficiently.

Ductwork

When installing or replacing heating and cooling systems, place ductwork along interior walls. Joints between sections of ductwork are rarely air tight, and outdoor air can significantly affect how effective and efficient your heating and cooling system is.

Insulation

Insulation with an R-value (resistance to heat loss) of 38 is considered ideal for a Northeast Ohio climate.

Green Roof

Planning an addition or building a new home? Consider installing a green roof with appropriate plants. A green roof helps cool and heat homes by providing additional insulation, reducing temperatures by 3 to 4 degrees. Due to their weight, green roofs are not recommended as a retrofit option for older homes, unless additional load-bearing elements are also added.

Daylighting

Instead of sky lights, consider suntubes. Suntubes are long, reflective tubes installed in a ceiling and roof that allow daylight to diffuse into your home. They are completely enclosed, creating a pocket of air that insulates far better than panes of a skylight. They are also much less likely to leak than skylights.

Time to Change the Light Bulbs

Compact Fluorescent Lights (CFLs) use 1/3 less energy and last 10 times longer than traditional incandescent bulbs. LED (light-emitting diode) light bulbs are reliable, instantaneous, and able to be dimmed.

LED costs have dropped to about \$8 dollars per bulb or less. They last 6-8 years (longer than any on the market), so ultimately are the better buy. If you replace 20 incandescent bulbs with LED light bulbs throughout your home, saving amount to \$3,260 over their 23-year lifespan (and that's assuming utility rates don't rise).

Energy Star Appliances

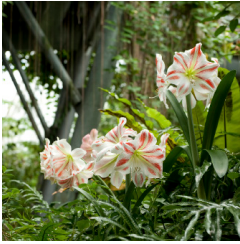
Buying EnergyStar electronics and appliances can cut energy use by 20 to 30 percent, without sacrificing features, style or comfort.

Because much of our electricity comes from burning fossil fuels, using efficient equipment reduces air, water and soil pollution significantly.

LEED CERTIFICATION

The LEED certification process was established to define "green building," define standards for measuring green building, promote integrated whole- building practice, recognize environmental leadership in the building industry, stimulate green competition, raise awareness of green building practices and, change how buildings are constructed. Standards have been developed for both new and old construction, as well as standards for homes and community design. For more information, visit the Green Building Coalition at www.usgbc.com.

Bring Nature Indoors



Although we spend 80% of our time indoors, the air quality is 2 to 5 times worse than outside (U.S. E.P.A.). Nearly 30% of newly constructed and renovated buildings suffer from poor air quality due to high levels of VOCs, or volatile organic compounds, which are toxic to humans. Many of these contaminants could be corrected by installing appropriate home ventilation and air cleaning systems.

For a healthy indoor environment, outdoor air ventilation should meet ASHRAW Std 62.2, as well as use a minimum 8 MERV air flow filter (LEED for Home). Clean air ducts regularly.

For an effective program, attempt to implement the Energy-Star Indoor Air Package. Indoor air should be as important as the air outside – the American Lung Association has become an advocate for healthy homes, and has created Home Health Guidelines.

Benefits of Indoor Habitats

Indoor habitats, filled with a variety of plants, are not only beneficial for aesthetics. Indoor plants help improve air quality and our health. While house plants will never provide a completely healthy indoor environment, they definitely compliment an effective home ventilation system.

Researchers from NASA discovered that nearly 100 % of toxic compounds in a closed environment can be eliminated by potted plants. Approximately 15 plants can clean the air of a 1,800 square foot house.

Indoor plants also have a positive effect on human health. Studies show that plants improve worker productivity, reduce blood pressure, lower stress levels and reduce complaints of

According to the American Lung Association, building a healthy house can cost 3-5% more than traditional building but can save nearly 40% in reduced utility bills.

minor ailments. While green building and LEED certification lack a point for indoor greening, indoor plantings are often recognized as a contributing element in new green building design.

Creating the Habitat

Select hearty plants. Plants should be suited to the light conditions. Most indoor varieties prefer indirect light, as opposed to full sun. Place plants in fluorescent environments 10-14 " from the source. Fluorescent light maintains plants; it does not help them grow.

The NASA study found that Peace Lilies are excellent at converting air toxins to harmless compounds.

Other species include Dracaena species, Chinese evergreen, bromeliads, grape ivy, spider plants, hoya and philodendron.

Watering

Indoor plants usually require less water than outdoor varieties. Plants should not stand in water. If soil is moist to touch, hold off a day or two before you water again. Beware, high levels of softened water could be toxic for plants. Hard water contains calcium and magnesium, both of which are plant nutrients. When water is softened, these minerals are replaced with sodium. To protect your plants consider...



- **Harvested Rain water.** Use rain water or unsoftened water.
- **Elevation.** Place plants on gravel or other similar material to reduce the chance that the plant is in standing water.
- **Re-potting.** Replace the soil to improve the nutrient composition of the soil.

Recycle



REDUCE, REUSE, CONSERVE

By far the most common way to make our homes more sustainable is to recycle and to use recycled goods. In 2000, recycling diverted nearly 70 million tons of refuse away from landfills. To manufacture recycled goods takes 95% less energy for aluminum, 70% less for plastic, 40% less for newspaper and 40% less for glass than it does to make new products.

This energy savings is equivalent to the energy needed by 6 million homes.

Furthermore, the national recycling rate (~30%) reduces air pollution as much as taking 25 million cars off the road. These facts aside, recycling conserves our natural resources like timber, water and minerals. For example, glass can always be perennially recycled.

Recycling for our future

Recycling costs less than traditional waste management, and it can actually save families and municipalities money. After spending nearly \$40 million on a recycling program thought to be a failure, New York City officials turned this drain into a profit pool of over \$20 million.

Recycling also creates over 1 million jobs per year, in both the public and private sector. For every job collecting recycling, 26 jobs are created in the private industries that process the material into new products. Recycling does more than just help the environment, it helps our communities run more efficiently and cost-effectively and create jobs for future residents.

LEARN THE REGULATIONS

Many communities in Northeast Ohio have implemented recycling programs. Paper, plastic (#1 through 7), glass and styrofoam are the most widely recycled items. Single-stream recycling has become more common across Northeast Ohio, although it is not everywhere. Contact your local municipality for more specific guidelines on recyclable goods and container and co-mingling requirements.

Note: Most communities have weekly, curbside pick up for recyclables. Other communities might have a recycling center.

CREATE HOME RECYCLING CENTERS

Make recycling an easy habit. If your community requires sorting, sort out recyclables in the kitchen, a hall closet, basement or garage.

Easy Collecting and Sorting

- A laundry bag on the back of a door creates an easy sack to collect plastics
- Recycle larger containers as collection bins – Milk crates or storage boxes can be collected and used as bins
- Paper bags are perfect for newspapers and all paper recycling

[illegible]