



LANDSCAPING  
FOR  
WATER QUALITY

Garden Designs  
for  
Homeowners  
3rd Edition



# Landscaping for Water Quality

Garden Designs for Homeowners

3rd Edition



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**DEQ**  
Michigan's  
Nonpoint Source  
Program

[www.michigan.gov/nps](http://www.michigan.gov/nps)



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

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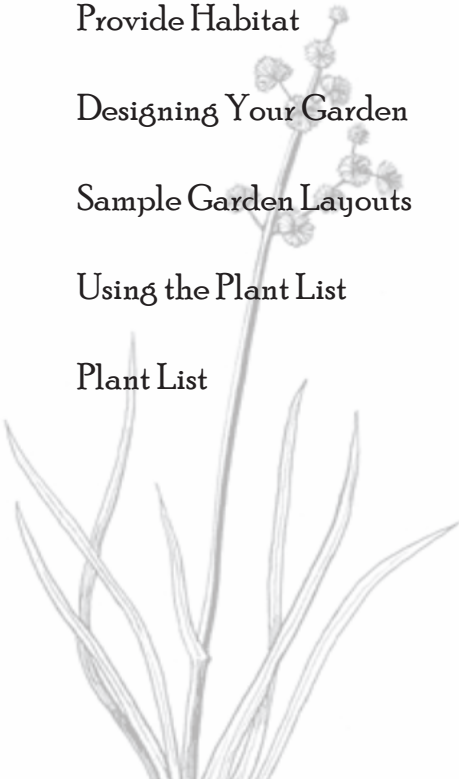
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# Overview

Michigan is fortunate to have an abundance of high quality lakes and streams that everyone can benefit from for swimming, boating, fishing, drinking water or simply enjoying. When rainwater falls on a natural site, the vegetation and soils absorb and collect it. When rainwater falls on a man-made surface like a parking lot or roof top, it quickly runs off of it into storm drains and drainage ditches.

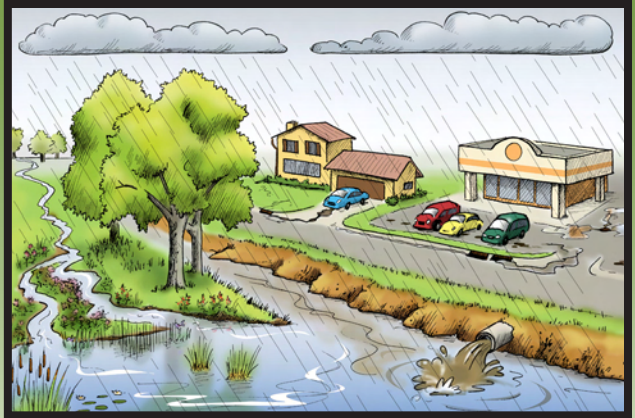


Illustration by Amelia Hansen

While proper drainage is needed to protect your home from water damage, the water picks up fertilizer, sediment, pesticides, and other pollutants, rapidly carrying them into waterways as it runs off of your property. Eventually, these waterways connect to lakes, streams, wetlands, rivers, and other bodies of water that can be harmed by these pollutants.

## Landscaping for Water Quality:

Attractive, low cost landscape techniques that protect the quality of Michigan's lakes and streams

Rainwater run-off collected and filtered by landscape features

Prevents run-off from carrying pollutants into drains and ditches

Water quality in the lakes and streams in your area can be improved by incorporating simple landscape features designed to collect and treat run-off water.

Improve Water Quality  
Prevent Erosion  
Reduce Flooding  
Save Water  
Provide Habitat

## Rain Gardens

A rain garden is an area created to collect run-off water with a coarse or porous soil mixture of sand or gravel beneath a bed of native plants. Run-off water collects in the rain garden, soaks quickly into the soils, or is absorbed by the plants in the garden.



Illustration by Glenn Wolf

- As run-off water soaks into the ground, pollutants like sediment, fertilizer, and oil/grease are filtered out
- When groundwater reaches a lake or stream it is cleaner
- Information on rain gardens: [www.raingardens.org](http://www.raingardens.org)

## Buffers

Buffers are areas of property that are not mowed or gardens of densely planted native species placed between your lawn, house, or driveway, and the location where run-off water leaves your property. Like a rain garden, they are designed to filter sediment, fertilizer, and pollutants from the water before it runs into a lake or stream.



Illustration by Amelia Hansen

- Shade from buffers also cools your yard during hot summer days
- Run-off that passes through a buffer is cleaner



## Did You Know?

One pound of phosphorus fertilizer can produce 500 pounds of algae!

Improve Water Quality  
Prevent Erosion  
Reduce Flooding  
Save Water  
Provide Habitat

Landscape features with native vegetation help prevent erosion from run-off by increasing the infiltration of water into the soils, slowing water flow, and cushioning the force of falling raindrops.

## Buffers & Rain Gardens

- Collect and hold run-off water
- Spread out run-off water
- Slow the speed of the water flow



Photo by Jim Brueck

As water flows over your property, these landscape features are designed to decrease the speed of water flow and reduce its ability to erode soil and sediment. They either collect and stop the water flow, or the leaves and stems spread run-off out over a larger area to slow it down and reduce its scouring capacity.

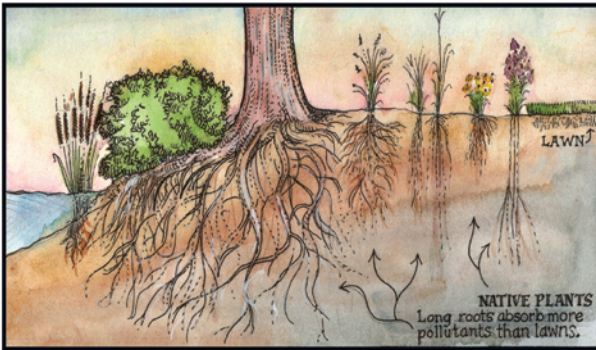


Illustration by Glenn Wolf

## Native Vegetation

- Leaves and branches cushion falling rain
- Deep roots hold the soil in place
- Root channels allow water to soak into soil

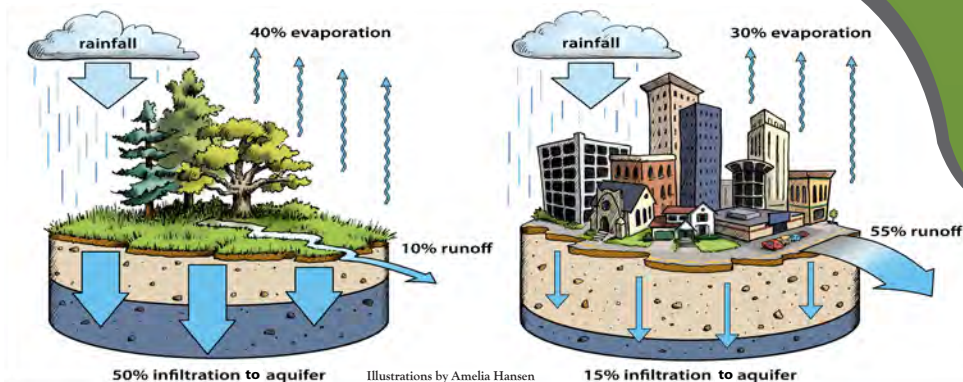
## Do You Own Waterfront Property?

If you own property along the shoreline of a lake or river, buffer strips with native vegetation can prevent loss of valuable property. Native vegetation along the shoreline absorbs the energy of waves and wind to prevent shoreline erosion. Lawn at the water's edge is a common cause of property loss, because the roots are too shallow to hold the soil when water splashes on the shore.

As a Great Lakes state, Michigan receives a large amount of precipitation. We have over 36,000 miles of streams, 11,000 lakes, and more Great Lakes coastline than any other state in the US. Michigan's waterbodies make our state a great place to live, but also make our homes frequently near water, and subject to flooding.

Improve Water Quality  
Prevent Erosion  
Reduce Flooding  
Save Water  
Provide Habitat

## Vegetation



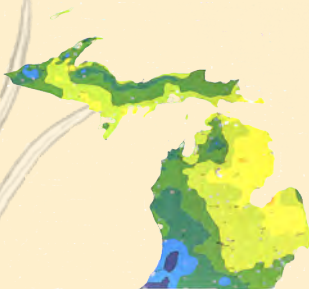
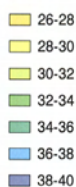
On a half acre property, 13,500 gallons of water - enough to fill an Olympic pool - falls in a 1 inch rainstorm. Most of the rain that falls on driveways, roofs, decks, and lawns runs off of your property into streams, ditches, and storm sewers. A fully vegetated lot discharges only about  $\frac{1}{4}$  of the run-off of the typical residential property.



## Rivers and Streams

Landscape features, like buffers and gardens, can lessen run-off from your property, and reduce water levels in rivers and streams during flood events.

Average Annual Precipitation  
1961-1990  
inches per year



## Did You Know?

We receive between 2 and 3 feet of precipitation each year in Michigan!

Improve Water Quality  
Prevent Erosion  
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Provide Habitat



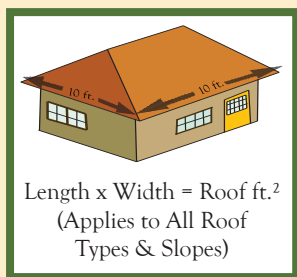
Like rain gardens and buffers, rain barrels can also reduce run-off from your property. They collect run-off from your roof and store it. This water can be used for watering during dry periods, reducing your water usage.

Rain barrels are connected to the downspout from your roof. They have an overflow hose connected near the top. They also have a soaker hose connected to a valve near the base to release water slowly to irrigate your landscaping or water quality garden.

## Rain Barrels

- Store run-off from your roof
- Prevent erosion from gutter downspouts
- Reduce your water bill during dry periods
- Irrigate your gardens with minimal effort

## How Big Does My Rain Barrel Need To Be?



The size of your roof determines the size of the rain barrel needed. One inch of rainfall on 100 ft<sup>2</sup> (10 ft x 10 ft) roof yields 60 gallons of water. In Michigan, you can expect approx. 5-7 rainfalls of 1 inch in a year with average rainfall.

Roof Square Footage x 0.6 = Rain Barrel Size in Gallons



Recent studies by the Michigan DNR and the US EPA have identified development of shoreline property as the most critical threat to wildlife and water quality of lakes in Michigan. Using native plants in buffers and gardens can provide habitat for wildlife.

Improve Water Quality  
Prevent Erosion  
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Provide Habitat

## Songbirds

Planting trees and shrubs can provide food, shelter, and nesting habitat for songbirds.

## Butterflies and Hummingbirds

Nectar gardens for butterflies and hummingbirds can be created by planting native species from which these animals feed. The first Sunny Garden Layout provided in the “Designing Your Garden” section on page 15 can also be used to attract butterflies.

## Frogs and Dragonflies

Wet gardens that use native plants can provide breeding and nursery habitats for wetland wildlife like frogs and dragonflies. Since dragonflies eat mosquito larvae, they can help control pests.

## Fish

Riparian buffers along lakeshores and streams provide spawning and nursery habitats for fish. Sixty-five native species of fish are known to use near shore areas in Michigan.



Photo by Amy Peterson



Photo by Amy Peterson



Photo by Amy Peterson



Photo by In Fisherman



## Want to Know More?

Check out the Minnesota DNR guidebook *Lakescaping for Wildlife and Water Quality* at:

[www.dnr.state.mn.us/publications](http://www.dnr.state.mn.us/publications)

Section 2:  
Designing Your Garden  
Sample Designs



# Getting Started

This section is designed to help you plan a simple and effective water quality garden. These steps can help you to rethink the landscaping on your entire property, or just incorporate a garden into the existing landscape.

## Planning Your Garden

- Assess your property to determine the existing conditions and how water flows over it.
- Draw a base map to assist with identifying an appropriate location for a water quality garden.
- Consider alternative designs and materials to encourage rain water infiltration and reduce run-off.
- Design your garden with plants that are appropriate for the conditions on your property.

A few simple concepts are central to all water quality gardens. Actively encourage filtration, storage, or infiltration of water into the ground. Water quality gardens can include prairie areas, wetland areas, and very wet areas depending on the amount of surface water available on your property. They can also incorporate rock gardens, patios, pathways and other landscape features provided the run-off that comes from them is captured.

## Ideas to Consider

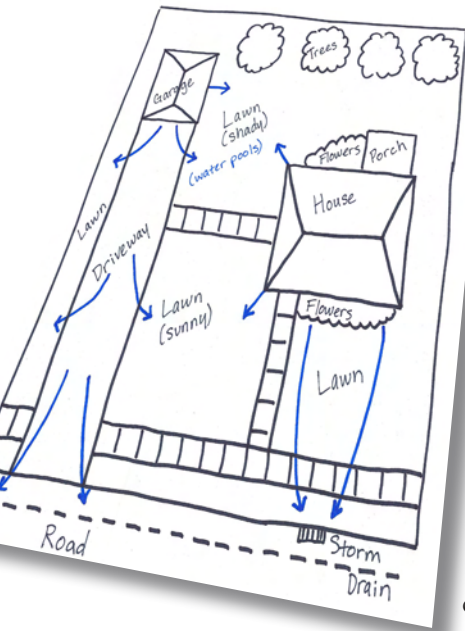
- If you are starting from scratch with new construction, incorporate water quality gardens in low areas where water ponds or accumulates.
- Minimize hard surfaces, use porous materials, or use water quality gardens to capture water from these surfaces.
- Replace turf grass with trees, shrubs, and ground cover to intercept and disperse rainfall, and create shade.

# Assess Your Property

Review your property to identify existing structures, landscaping, water flow patterns, and sun and shade areas. Identify hard surfaces that will encourage run-off, and landscape features that will disperse or direct the flow of rainfall.

## Identifying Water Flow Patterns

- Go outside immediately after a big rainstorm and follow the path of water flow.



- Look for leaves, pine needles, twigs, and soil patterns created by the movement of water.
- Follow the water pathways uphill to their source and downhill to the storm sewer, ditch, or low areas on your property.

## Develop a Base Map

A useful tool for assessing your property is a base map. Your base map helps you visualize the location of important features on your property. A good base map can help you identify the location, size, and type of changes to make to improve the quality of water coming from your property.

- Include existing hard structures, like buildings, drives, walkways, patios and decks.
- Identify existing trees, shrubs, lawns and gardens that create shady and sunny areas.
- Illustrate the water pathways with arrows, and identify areas where water collects.

# Consider Your Property Needs

Consider landscape features that will collect, store, and disperse rainfall that falls on your property. To do this minimize hard surfaces and lawn. Divide areas of lawn and hard surfaces with native plants or gardens. Plant trees, shrubs and ground cover at run-off sources such as buildings, drives, and walkways.

## Desired Uses and Needs

When deciding how much space can be dedicated to water quality features, consider your desired uses and needs for the property.

- How much area is needed for play, relaxing, storage or septic fields?
- Is privacy needed from adjacent properties?
- Is attracting wildlife important?
- What restrictions do city, township, or subdivision associations put on landscaping features?

## Do You Have Problems With Wash-outs or Erosion?

On gently sloping areas, strategically placed rocks mixed with plants to hold the soils in place can be very effective.

Examples of plants that could work well in these areas: Cord Grass (*Spartina pectinata*), Sedges (*Carex sp.*), or Canada Wild Rye (*Elymus canadensis*).



Property Before Landscaping

Illustration by MSU Extension



Property After Landscaping

Illustration by MSU Extension

# Encourage Infiltration

A properly designed water quality garden captures run-off water and holds it long enough for it to soak into the ground.

This is known as run-off infiltration. If the site you select for your garden has too much clay in the soil, it is necessary to modify the soils with a gravel base or underdrain to ensure infiltration.

## Identifying Soils

Soils usually have varying amounts of sand, loam, or clay in them. Determine what type of soil you have and modify the soil, as appropriate, to ensure infiltration.

Soil Type	Ribbon Length	Type of Garden
Sand	0-1/2 in.	Use the existing soil
Sandy Loam	1/2-1.0 in.	Use existing soil
Clay Loam	1.0-1.5 in.	Use existing soil
Clay	> 1.5 in.	Use Gravel Base or Underdrain

- Collect a handful of soil and moisten it.
- Make a small ball in your hand, and create a ribbon of soil by pushing part of it between your thumb and forefinger.
- Measure the length of the ribbon that stands up above your thumb and forefinger without falling apart to determine what type of soil you have.



Gravel Base and Underdrain



Stepping Stones



Porous Pavers



Porous Concrete

## Consider Porous Pavement

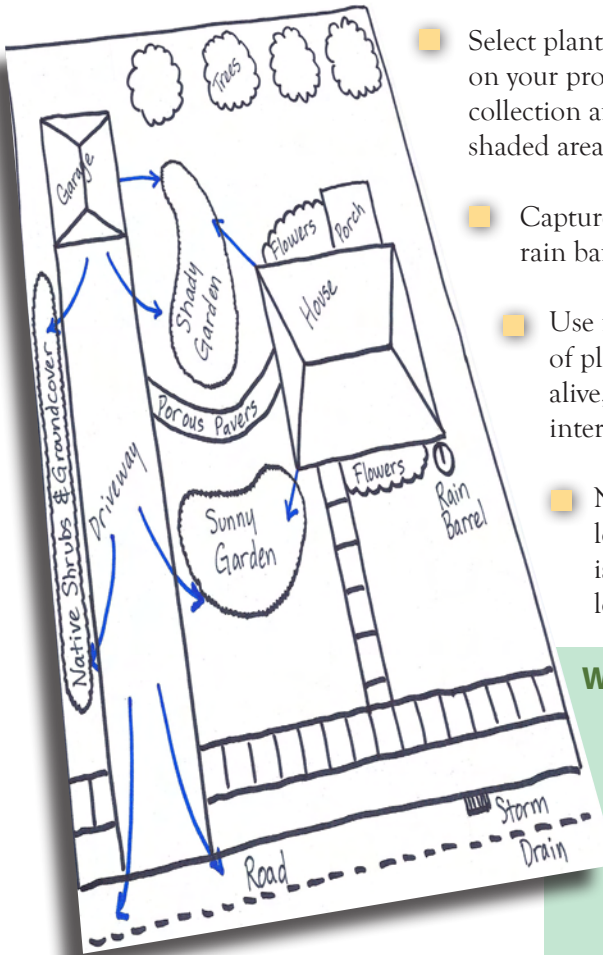
When constructing pathways consider using porous alternatives like stepping stones, porous pavers, or porous concrete that allow water to infiltrate into the ground.

# Create A Plan

Once you have considered all of your design needs, use your original base map to create a plan. Place water quality gardens strategically in low areas and at the ends of water flow pathways to capture and store run-off. Break up run-off from water flow sources with regular gardens, trees and groundcover. Incorporate your property needs creatively into the design.

## Things to Keep in Mind

- Select plants that fit the conditions on your property: wet species in water collection areas, sunny species for non-shaded areas, and so forth.
- Capture rainwater from roofs in rain barrels.
- Use multiple species and a blend of plant heights to keep color alive, maintenance down, and interest year round.
- Neat edges and fences instill a look of care; remember, this is your property - make sure it looks good!



## What is Groundcover?

Groundcover is vegetation that has short height and spreads easily with runners and rhizomes, like Wild Ginger or Violets in shade, and Wild Strawberry or Yarrow in sun.

# Installing Your Garden

## Preparing the Site

It is important to start by removing or killing the existing sod. In flat, upland areas, simply cut the sod away. In sloped, wet areas, or along the shoreline of lakes or streams, it is better to kill the grass with an appropriate herbicide to minimize erosion into the waterbody. Make sure you seek the assistance of a licensed herbicide applicator, if you use this approach.

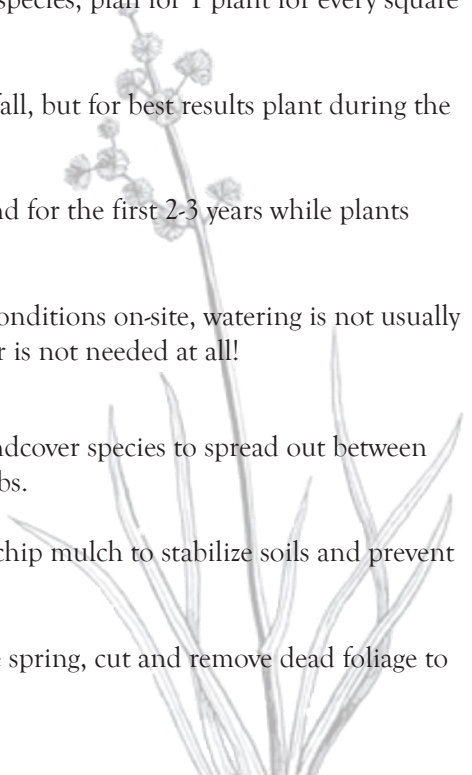
If planting a buffer along a lake or stream, use the existing contour of the shoreline. If creating an upland water quality garden, create a depressional area at the center about 4"-5" deep, with gradually sloping sides.

## Planting

- Choose plants that best fit the sun/shade and water conditions indicated in the plant list.
- If purchasing plant plugs of native species, plan for 1 plant for every square foot of garden.
- Planting can occur from spring to fall, but for best results plant during the spring.
- Water generously when planting and for the first 2-3 years while plants become established.
- If using native species that fit the conditions on-site, watering is not usually needed after 1-2 years, and fertilizer is not needed at all!

## Finishing and Maintenance

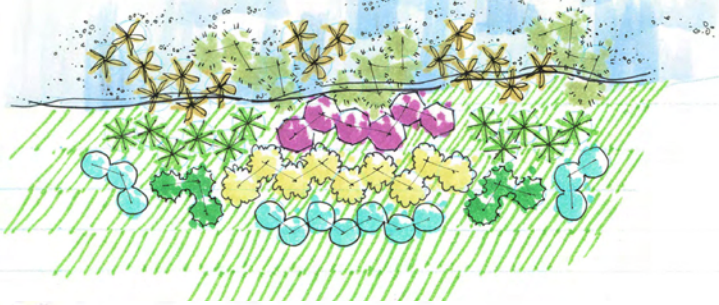
- To minimize weeds, consider groundcover species to spread out between wildflowers, grasses, trees and shrubs.
- Initially use coarse chopped wood chip mulch to stabilize soils and prevent unwanted plants and weeds.
- Before plant shoots come up in the spring, cut and remove dead foliage to a height of 6 inches.





# Shoreline Garden Layouts








SUNNY, TALL  
GARDEN: MOIST SHORELINES



-  LAKE SEDGE (*Carex lacustris*)
-  GREEN BULRUSH (*Scirpus atrovirens*)
-  MARSH MILKWEED (*Asclepias incarnata*)
-  SWAMP ASTER (*Aster puniceus*)
-  LANCE-LEAVED COREOPSIS (*Coreopsis lanceolata*)
-  BONESET (*Eupatorium perfoliatum*)
-  GREAT BLUE LOBELIA (*Lobelia siphilitica*)

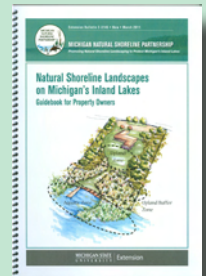
SUNNY, MEDIUM  
GARDEN: DRY TO MOIST SHORELINES



-  SOFT RUSH (*Juncus effusus*)
-  BLUE FLAG IRIS (*Iris versicolor*)
-  FOWL MANNA GRASS (*Glyceria striata*)
-  GOLDEN ALEXANDERS (*Zizia aurea*)
-  CANADA ANEMONE (*Anemone canadensis*)
-  MARSH BLAZING STAR (*Liatris spicata*)
-  NODDING ONION (*Allium cernuum*)

Illustrations by Bob Dompierre

**Do You  
Have  
Waterfront  
Property?**

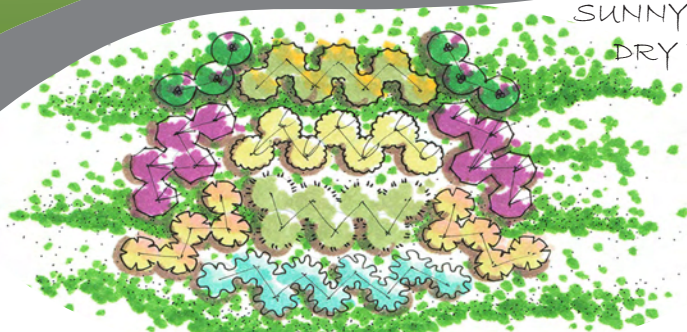









Check out  
*Natural Shoreline Landscapes on Michigan's Inland Lakes: A Guidebook for Property Owners.*

To order, go to: [www.mishorelinepartnership.org](http://www.mishorelinepartnership.org)

# Sunny Garden Layouts

SUNNY SLOPES:  
 DRY TOP; WET  
 BOTTOM



-  BUTTERFLY WEED (*Asclepias tuberosa*)
-  MAY NIGHT SALVIA (*Salvia x superba*)
-  PURPLE CONEFLOWER (*Echinacea purpurea*)
-  TALL COREOPSIS (*Coreopsis tripteris*)
-  FIREWEED (*Epilobium angustifolium*)
-  PURPLE JOE PYE WEED (*Eupatorium purpureum*)
-  BONESET (*Eupatorium perfoliatum*)

SUNNY, WET AREAS

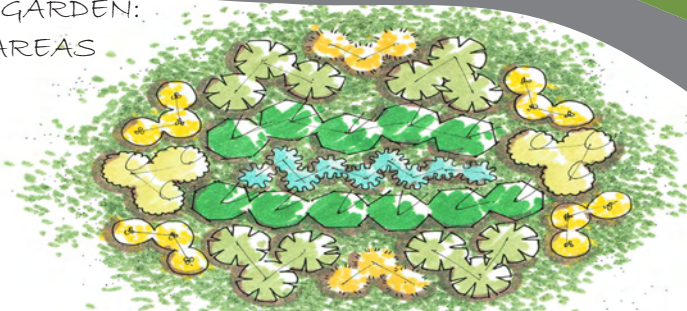


-  MISSOURI IRONWEED (*Vernonia missurica*)
-  BLUE FLAG IRIS (*Iris virginica*)
-  CARDINAL FLOWER (*Lobelia cardinalis*)
-  LITTLE BLUESTEM (*Schizachyrium scoparium*)
-  BLAZING STAR (*Liatris spicata*)
-  GREAT BLUE LOBELIA (*Lobelia siphilitica*)
-  GOLDEN ALEXANDERS (*Zizia aurea*)

Illustrations by Bob Domperre

# Shady Garden Layouts






## SHRUB GARDEN: MOIST AREAS



-  **LARGE CRANBERRY BUSH** (*Vaccinium macrocarpon*)
-  **CULVERS ROOT** (*Veronicastrum virginicum*)
-  **MAPLE LEAF VIBURNUM** (*Viburnum acerifolium*)
-  **HAPPY RETURNS DAYLILY** (*Hemerocallis 'Happy Returns'*)
-  **BLANKET FLOWER** (*Gaillardia pulchella*)
-  **MEADOWSWEET** (*Spiraea alba*)

## WOODLAND GARDEN: DRY AREAS



-  **JACK IN THE PULPIT** (*Arisaema triphyllum*)
-  **WHITE BANEBERRY** (*Actaea pachypoda*)
-  **WOOD POPPY** (*Stylophorum diphyllum*)
-  **TALL BELLFLOWER** (*Campanula americana*)
-  **WILD GINGER** (*Asarum canadense*)
-  **MAIDEN HAIR FERN** (*Adiantum pedatum*)
-  **GOLDEN EDGED HOSTA** (*Hosta fortunei*)
-  **WILD GERANIUM** (*Geranium maculatum*)



## Section 3: Plant List



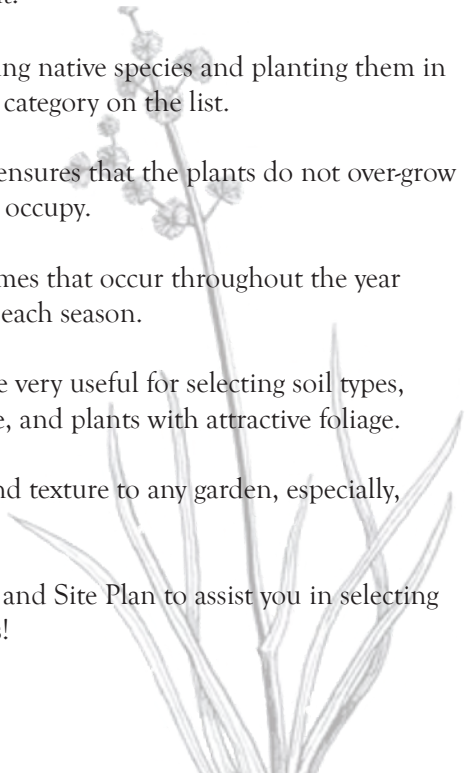
# Using the Plant List

The following plant list has been developed to help make plant selection a little easier. The majority of the plants included in this list are native to Michigan though there are a few non-native plants included. For most of the non-native species there is also a native plant that would be a good substitute. There are many more Michigan native plants than what has been included on this list. The plants on this list were chosen because, in general, they are fairly easily found on the market and have a broad distribution across the state. Plants that are typically difficult to grow or are on the state threatened or endangered list were left off though they may be available through a reputable native plant grower.

## Choosing the Right Plant

Choosing the right plant for the location can make establishing a garden easier. It reduces the amount of maintenance and watering necessary, and can eliminate the need to augment the soil to start your garden. This list is divided into categories that will help you to choose the right plant.

- Watering can be reduced by choosing native species and planting them in accordance with the “water needs” category on the list.
- Choosing the proper plant height ensures that the plants do not over-grow the space that they are intended to occupy.
- A diversity of plants with bloom times that occur throughout the year enables you to enjoy the garden in each season.
- The notes column of the list can be very useful for selecting soil types, choosing plants that attract wildlife, and plants with attractive foliage.
- Foliage can be used to add color and texture to any garden, especially, grasses, sedges, and rushes.
- Don't forget to use your Base Map and Site Plan to assist you in selecting plants with the right characteristics!



# Legend

## Plant Names

Common names of plants are not standardized, so it is possible when purchasing plants that they will be listed under another name. To be certain that you are purchasing the correct plant, look at the tag for the botanical name. This will ensure that you find the plant that is listed, and may also help you to find good substitutions.

## Plant Height

Plant height ranges are given, because plants can vary in height based upon the influence of water, sun exposure, and proximity to other plants. Note, however, that plant heights can often be limited by pruning, especially grasses, sedges, shrubs and trees.

## Light Preferences

● = Full Sun   ◐ = Partial Sun   ● = Shade

## Native vs. Non-Native

In most instances, there is a native species that can substitute for a non-native species. Native species tend to have deeper root systems, require less fertilizer and water, and provide better habitat.

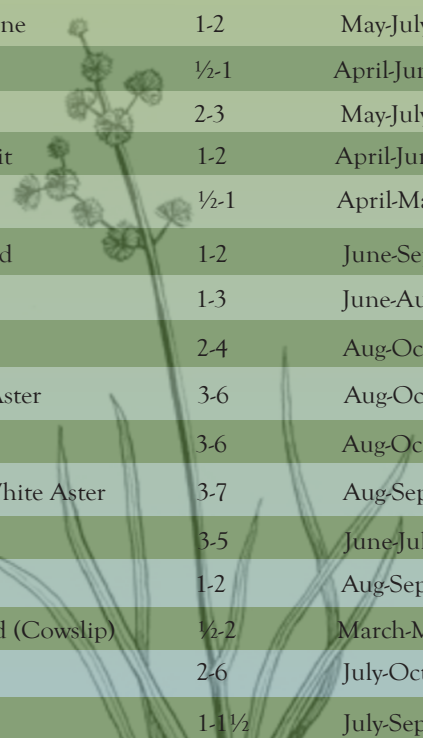
The (★) column indicates a species native to Michigan.



# Plant List

## Wildflowers

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Achillea filipendula</i>	Moonshine Yarrow	2-4	June-Sept
<i>Achillea millefolium</i>	Yarrow	1-4	June-Sept
<i>Actaea pachypoda</i>	White Baneberry	1-2	May
<i>Actaea rubra</i>	Red Baneberry	1-2	May
<i>Alchemilla mollis</i>	Lady's Mantle	1-2	May-Aug
<i>Alisma subcordatum</i>	Water Plantain	2-3	June-Sept
<i>Allium cernuum</i>	Nodding Onion	1-2	May-Aug
<i>Amorpha canescens</i>	Lead Plant	2-3	May-Aug
<i>Anemone canadensis</i>	Canada Anemone	1-2	May-July
<i>Anemonella thalictroides</i>	Rue Anemone	½-1	April-June
<i>Aquilegia canadensis</i>	Columbine	2-3	May-July
<i>Arisaema tryphyllum</i>	Jack-in-the-Pulpit	1-2	April-June
<i>Asarum canadense</i>	Wild Ginger	½-1	April-May
<i>Asclepias incarnata</i>	Marsh Milkweed	1-2	June-Sept
<i>Asclepias tuberosa</i>	Butterfly Weed	1-3	June-Aug
<i>Aster laevis</i>	Smooth Aster	2-4	Aug-Oct
<i>Aster novae-angliae</i>	New England Aster	3-6	Aug-Oct
<i>Aster puniceus</i>	Swamp Aster	3-6	Aug-Oct
<i>Aster umbellatus</i>	Tall Flat Top White Aster	3-7	Aug-Sept.
<i>Astilbe arendsii</i>	Pink Astilbe	3-5	June-July
<i>Belamcanda chinensis</i>	Blackberry Lily	1-2	Aug-Sept
<i>Caltha palustris</i>	Marsh Marigold (Cowslip)	½-2	March-May
<i>Campanula americana</i>	Tall Bellflower	2-6	July-Oct
<i>Campanula rotundifolia</i>	Harebell	1-1½	July-Sept





Flower Color	Water Needs	Sun	★	Notes
Yellow	Med	☉		Resistant to deer; aromatic leaves; use in dried flower arrangements
White	Med-Dry	☉	★	Can be aggressive; drought tolerant
White	Med	☾	★	Woodland plant with showy white flowers followed by white berries
White	Med	☾	★	Woodland flower with textured foliage; red berries; native <i>Astilbe</i> substitute
Yellow	Med	●		Attractive groundcover; dried flower arrangements; clump-forming
White	Wet	☉	★	Must be kept in moist to flooded areas; waterfowl food; fast growing
Pink	Med-Dry	●	★	Best in sandy soils; clump-forming; attractive garden plant
Purple	Med-Dry	●	★	Attracts butterflies; spike flowers; drought tolerant; long-lived
White	Med-Wet	●	★	Spreads aggressively; delicate 1-2" flower, deep green leaves
White	Med	☾	★	Long-lasting spring blooms; native to southern Michigan; groundcover
Red	Med	☉	★	Deer deterrent; attracts hummingbirds; best in partial shade gardens
Purple	Med-Wet	☾	★	Attractive shade plant; bright red fall fruit; easily grown from seed
Red	Med-Wet	☾	★	Medicinal uses; satiny, deep-green, heartshaped leaves; groundcover
Pink	Med-Wet	☉	★	Deep root; clump-forming; attracts butterflies; attractive garden plant
Orange	Dry	●	★	Gorgeous bed plant; attracts butterflies; medicinal uses; poisonous
Variable	Med-Dry	☉	★	Grows well in sand; blooms late; attracts butterflies
Purple	Med	☾	★	Medicinal uses; attracts butterflies; rabbit deterrent; prefers sand
Lav/White	Wet	☉☾	★	Spreads opportunistically from rhizomes
White	Med-Wet	●	★	Attracts butterflies and birds; wonderful garden plant
Pink	Med-Wet	☾		Gorgeous floral spike; dark green foliage; great addition to shade bed
Orange	Dry	☉		Delicate flowers followed by blackberry seeds; drought tolerant
Yellow	Wet	☾	★	Attracts butterflies; soft spongy roots; best along stream banks; early bloom
Blue	Med	☉☾	★	Fabulous star shaped flowers; easily grown
Blue	Med-Dry	●	★	Attracts butterflies; fond of sandy soil; gorgeous garden plant

# Plant List

## Wildflowers

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Cassia hebecarpa</i>	Wild Senna	4-6	July-Aug
<i>Chelone glabra</i>	Turtlehead	1-3	July-Oct
<i>Coreopsis lanceolata</i>	Lance-leaved Coreopsis	2	June-July
<i>Coreopsis tripteris</i>	Tall Coreopsis	3-6	July-Sept
<i>Coreopsis verticillata</i>	Moonbeam Coreopsis	1-3	June-Sept
<i>Echinacea purpurea</i>	Purple Coneflower	2-3	June-Aug
<i>Epilobium angustifolium</i>	Fireweed	2-6	June-Aug
<i>Eupatorium maculatum</i>	Joe-Pye Weed	4-6	July-Sept
<i>Eupatorium perfoliatum</i>	Boneset	4-6	Aug-Oct
<i>Eupatorium purpureum</i>	Purple Joe-Pye Weed	5-7	Aug-Sept
<i>Eupatorium rugosum</i>	White Snakeroot	1-5	July-Oct
<i>Fragaria virginiana</i>	Wild Strawberry	½	April-June
<i>Gaillardia pulchella</i>	Blanket Flower	1-2½	May-Sept
<i>Geranium himalayense</i>	Johnson's Blue Geranium	1-2	May-June
<i>Geranium maculatum</i>	Wild Geranium	1-2	April-May
<i>Helenium autumnale</i>	Sneezeweed	2-5	July-Oct
<i>Helianthus giganteus</i>	Tall Sunflower	3-12	July-Oct
<i>Heliopsis helianthoides</i>	Oxeye or False Sunflower	2-5	June-Sept
<i>Hemerocallis "Happy Returns"</i>	Happy Returns Daylily	½-2	May-Aug
<i>Hepatica americana</i>	Round-Lobed Hepatica	½-1	April-May
<i>Hosta fortunei</i>	Golden-Edged Hosta	1-2	June-Aug
<i>Hosta plantaginea</i>	August Lily Hosta	2	Aug
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	1-3	May-Aug
<i>Iris virginica</i>	Blue Flag Iris	2-3	May-July

Flower Color	Water Needs	Sun	★	Notes
Yellow	Med-Wet	☉	★	Attracts butterflies; fond of sandy soil; gorgeous garden plant
Variable	Med-Wet	●	★	Unique flower; prefers compost mulch
Yellow	Dry	☉	★	Grows in sandy or loam soils; readily re-seeds; attracts birds and butterflies
Yellow	Med-Dry	●	★	Tolerant to heat, humidity and drought; a colorful addition to a bed
Yellow	Med-Dry	●		Delicate foliage; low maintenance; drought tolerant; tolerates poor soils
Purple	Med-Dry	☉		Non-native in Michigan; medicinal uses; popular, easy to grow garden plant
Pink	Med-Wet	☉	★	Attracts butterflies; striking flower; aggressive in wet, disturbed areas
Pale Pink	Med-Wet	●	★	Flower clusters up to 6" across; attracts butterflies
White	Med-Wet	☉	★	Tolerant of sandy and clay soils; clump-forming; fuzzy cluster blossoms
Pink	Med	●	★	Clump-forming; fragrant; attracts butterflies; attractive addition for a garden
White	Dry	☉☾	★	Beautiful cut flower; poisonous if ingested
White	Med-Dry	●	★	Groundcover; beneficial to wildlife; edible fruit
Red/Yellow	Med-Dry	☉☾		Daisy-like red and yellow blossoms; Dense colonies; easily grown from seed
Blue	Med	●		Easy to grow; also called Cranesbill; clump-forming
Pink	Med	●☾	★	Clump-forming; great addition to shade beds
Yellow	Med-Wet	●	★	Avoid fertilizer; bright yellow daisy-like flowers
Yellow	Med-Wet	●☾	★	Tall, bright addition to a partial shade garden, 4" wide flower
Yellow	Med-Dry	●	★	Easily grown; native to Eastern US; grows well in clay
Yellow	Med	☉☾		Heat tolerant; long flower season; gorgeous addition to any bed
Blue/White	Med-Dry	☾		Delicate 1" star-shaped flower; great ground cover in shade garden
Purple	Med	☾		Beautiful foliage; great addition to shade gardens; mass for groundcover
White	Med	☾		Shiny foliage; fragrant flowers; great planted close together as groundcover
White	Med-Wet	☾	★	Medicinal properties
Blue	Med-Wet	●	★	Gorgeous perennial; attracts butterflies; does well in shallow water

# Plant List

## Wildflowers

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Liatris aspera</i>	Rough Blazing Star	2-5	Aug-Sept
<i>Liatris spicata</i>	Dense or Marsh Blazing Star	1-3	July-Sept
<i>Lobelia cardinalis</i>	Cardinal Flower	2-6	July-Oct
<i>Lobelia siphilitica</i>	Great Blue Lobelia	1-4	July-Sept
<i>Mimulus ringens</i>	Monkeyflower	1-3	June-Sept
<i>Mitchella repens</i>	Partridgeberry	<1	June-Sept
<i>Monarda fistulosa</i>	Wild Bergamot; Bee Balm	2-4	June-Sept
<i>Monarda punctata</i>	Horsemint	1-3	July-Sept
<i>Nymphaea tuberosa</i>	White Water Lily	1-5	July-Aug
<i>Oenothera biennis</i>	Common Evening Primrose	2-5	June-Oct
<i>Peltandra virginica</i>	Arrow Arum	1-2	May-July
<i>Penstemon digitalis</i>	Foxglove Beard Tongue	3-4	May-June
<i>Penstemon hirsutus</i>	Hairy Beard Tongue	1-3	May-July
<i>Phlox divaricata</i>	Woodland Phlox	1-3	April-June
<i>Phlox pilosa</i>	Sand Prairie Phlox	1-2	May-June
<i>Physotegia virginiana</i>	Obedient Plant	2-5	Aug-Oct
<i>Podophyllum peltatum</i>	May Apple	1-2	April-May
<i>Polygonatum biflorum</i>	True Solomon Seal	1-3	May-June
<i>Pontederia cordata</i>	Pickernelweed	2-4	May-Oct
<i>Potentilla simplex</i>	Common Cinquefoil	½-1½	April-June
<i>Ratibida pinnata</i>	Yellow Coneflower	3-5	July-Sept
<i>Rudbeckia hirta</i>	Black-Eyed Susan	1-3	Aug-Sept
<i>Rudbeckia laciniata</i>	Cut-Leaved Coneflower	3-10	Aug-Sept
<i>Rudbeckia triloba</i>	Three-Lobed Coneflower	2-5	July-Oct

Flower Color	Water Needs	Sun	★	Notes
Purple	Med-Dry	☀	★	Drought tolerant; attracts butterflies; blooms late in season
Purple	Med	●	★	Drought tolerant; used in cut flower arrangements; feathery plume
Red	Med-Wet	☀☾	★	Bright red flower attracts hummingbirds/butterflies; replant with seedlings
Blue	Med-Wet	●	★	Easily grown; attracts hummingbirds; grows well in a variety of soils
Purple	Med-Wet	●	★	Great for wet areas; interesting flower shape
Pink	Med-Dry	☾	★	Produces red fruit; medicinal uses; food source for wildlife; groundcover
Purple	Med-Dry	●	★	Aromatic; attracts butterflies/hummingbirds; medicinal uses; can be aggressive
Yellow	Med-Dry	☀	★	Attracts hummingbirds; likes sandy soil
White	Dry	●	★	Beautiful aquatic plant; tuber; floating leaves/flowers; beneficial to wildlife
Yellow	Med	☀	★	Opens in evening; used in dried flower arrangements; can be aggressive
Yellow	Wet	☀☾	★	Salt /pH tolerant; grows in water; used in buffer zones; beneficial to wildlife
White	Med-Dry	☀☾	★	Ornamental; beautiful flower and foliage; attracts butterflies/hummingbirds
Purple	Med-Dry	●	★	Versatile plant; low growing; early summer bloom; likes sandy soil
Blue	Med	☀☾	★	Can be aggressive; gorgeous 1½" flower; Caution - No invasive <i>Phlox paniculata</i>
Pink	Med-Dry	☀☾	★	Early flowering prairie plant; ornamental
Pink	Med	☀☾	★	Nectar source; spreads by small rhizomes to carpet area
White	Med	☾	★	Medicinal uses; dormant in summer; early bloom; produces yellow fruit
Yellow	Med-Wet	☾	★	Bell-shaped flowers; black berries in fall; beneficial to wildlife
Blue	Wet	●	★	Provides wave buffering along shoreline; wildlife benefits; grows in water
Yellow	Wet	☀☾	★	Groundcover; dainty flower; attracts butterflies; early bloomer
Yellow	Med-Dry	☀	★	Long, drooping petals; wildlife benefits; long-lived; prefers sandy/clay soils
Yellow	Med-Dry	●	★	Erosion control plant; wildlife benefits; biennial; does well in sandy soils
Yellow	Med-Wet	●	★	Easily grow; great for wet areas; grows well in variety of soils
Yellow	Med	●	★	Thick, low, wet, woods, rocky slopes; long blooming season; attracts butterflies

# Plant List

## Wildflowers

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Sagittaria latifolia</i>	Arrowhead	1-4	July-Sept
<i>Salvia X superba</i>	May Night Salvia	1-1½	April-June
<i>Sedum "Autumn Joy"</i>	Autumn Joy Sedum	1-2	Sept
<i>Sedum "Vera Jameson"</i>	Purple Leaf Sedum	1	Aug-Sept
<i>Sisyrinchium angustifolium</i>	Blue-Eyed Grass	½-2	May-July
<i>Sium suave</i>	Water Parsnip	2-6	July-Sept
<i>Solidago caesia</i>	Blue-Stemmed Goldenrod	2-3	Sept-Oct
<i>Solidago patula</i>	Roundleaf Goldenrod	3-6	Aug-Oct
<i>Solidago speciosa</i>	Showy Goldenrod	1-4	July-Oct
<i>Stachys lanata</i>	Lamb's Ear	½-2	June-July
<i>Stylophorum diphyllum</i>	Wood Poppy	1-2	May-June
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue	3-6	June-July
<i>Thalictrum dioicum</i>	Early Meadow Rue	1-2	April-June
<i>Tiarella cordifolia</i>	Foamflower	1-2	May-June
<i>Tradescantia ohiensis</i>	Spiderwort	2-4	June-July
<i>Verbena hastata</i>	Blue Vervain	3-6	July-Sept
<i>Verbena stricta</i>	Hoary Vervain	2-4	July-Sept
<i>Vernonia missurica</i>	Missouri Ironweed	3-10	Aug-Oct
<i>Veronicastrum virginicum</i>	Culver's Root	2-6	June-Sept
<i>Zizia aurea</i>	Golden Alexanders	1-3	April-June

Flower Color	Water Needs	Sun	★	Notes
White	Wet	●	★	Aquatic plant; edible root; wildlife food source; great for water gardens
Deep Blue	Med	●		Very showy; wrinkled foliage; best in poor soil
Pink	Med-Dry	●		Also called Stonecrop; succulent; drought tolerant; does not like clay
Pink	Med-Dry	●		Ornamental foliage; succulent; drought resistant; clump-forming
Deep Blue	Med	●	★	Low growing; clump-forming; grass-like foliage
White	Wet	●	★	Aquatic plant; showy in bloom
Yellow	Med-Dry	●	★	Readily re-seeds; provides nectar for butterflies
Yellow	Med-Wet	●	★	Provides nectar for butterflies
Yellow	Dry	●	★	Tall and wild; a true prairie species; nectar source
Purple	Med-Dry	●		Furry leaves; drought resistant; can be aggressive; attracts butterflies
Yellow	Med-Wet	●	★	Woodland; requires consistently moist soil; blooms repeatedly
White	Med-Wet	●	★	Attractive foliage and flowers; early summer bloom; may need staking
Green	Med	●	★	Female and male plants; female plants seed
White	Med	●	★	Spike of tiny flowers; attractive foliage turning bronze in autumn
Blue	Med-Dry	●	★	Aggressive; each tri-petalled blossom lasts one day
Blue	Med-Wet	●	★	Attracts butterflies; wonderful for cut flower arrangements; can be aggressive
Blue	Med-Dry	●	★	Attracts butterflies; great for cut flower arrangements; drought resistant
Purple	Med	●	★	Easily grown; attracts butterflies; aggressive; late summer blooms
Pink	Med	●	★	Small dense flower on tall spike; great for cut flower arrangements
Yellow	Wet	●	★	Can be aggressive; interesting addition to gardens

# Plant List

## Grasses, Sedges, Rushes

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Acorus calamus</i>	Sweet Flag	2-5	May-July
<i>Andropogon gerardii</i>	Big Blue Stem	4-8	July-Sept
<i>Calamagrostis canadensis</i>	Canada Blue-Joint Grass	2-4	June
<i>Carex comosa</i>	Bristly Sedge	2-3	May-June
<i>Carex crinita</i>	Fringed Sedge	2-5	May
<i>Carex grayii</i>	Gray's Sedge	1-2	May-June
<i>Carex hystericina</i>	Porcupine Sedge	2-3	May-June
<i>Carex lacustris</i>	Lake Sedge	2-4	May-June
<i>Carex lupulina</i>	Hop Sedge	2-4	May-June
<i>Carex muskingumensis</i>	Muskingum Sedge	2-3	May-June
<i>Carex pennsylvanica</i>	Pen Sedge	½-1	April-June
<i>Carex stricta</i>	Tussock Sedge	1-3	April-June
<i>Carex vulpinoidea</i>	Fox Sedge	2-3	May-June
<i>Elymus canadensis</i>	Canada Wild Rye	2-5	June-Aug
<i>Elymus hystrix</i>	Bottle Brush Grass	2-3	May-June
<i>Elymus riparius</i>	Riverbank Wild Rye	2-4	July-Aug
<i>Elymus virginicus</i>	Virginia Wild Rye	2-5	June
<i>Glyceria striata</i>	Fowl Manna Grass	1-5	May-June
<i>Juncus effusus</i>	Soft Rush	1-4	July
<i>Juncus tenuis</i>	Path Rush	1-2	June-Sept
<i>Juncus torreyi</i>	Torrey's Rush	1-2	June-Sept
<i>Koeleria macrantha</i>	June Grass	1-2	May-June
<i>Panicum virgatum</i>	Switchgrass	3-6	Aug-Oct
<i>Schizachyrium scoparium</i>	Little Bluestem	2-4	Aug



Flower Color	Water Needs	Sun	★	Notes
Yellow	Wet	☀	★	Wildlife benefits; medicinal uses
Purple	Med-Dry	●	★	Erosion control use; preferred by livestock; beneficial to birds
Brown	Med-Wet	☀☾	★	Spreads opportunistically by rhizomes
Green	Med-Wet	●	★	Waterfowl food source; long-lived; rhizomes form dense clumps
Green	Med-Wet	☀☾●	★	Likes semi-shade; forms dense clumps
Green	Med-Wet	☀☾	★	Ornamental grass; interesting flower form; easily grown
Green	Wet	☀☾●	★	Long-lived; clump-forming; tufted
Green	Wet	●	★	Can grow in shallow standing water; adds color to waters edge
Green	Med-Wet	☀☾●	★	Grows well in shade but does well in sun, too
Green	Wet	●	★	Grows well in shade
Green	Med-Dry	☾	★	Good groundcover
Brown	Wet	●	★	Forms blue-green tussocks/hummocks; slow spreading with dense roots
Brown	Med-Wet	☀☾	★	Rhizomes form dense clumps
Green	Med-Dry	●	★	Ornamental grass; rye-like spikes persist in winter; groundcover for dry slopes
Green	Med-Dry	●	★	Ornamental grass; bristly flowerheads resemble bottle brush
Green	Med-Wet	☀☾	★	Slightly nodding; long, wide, wheat-like spikes; beneficial to butterflies
Green	Med	☀☾	★	Mixes well with Bottle Brush grass and woodland flowers; grows in forest edges
Green	Med-Wet	☀☾●	★	Bunch-forming; cool-season grass with dense roots
Brown	Wet	●	★	Easily grown in wet/saturated soils; corkscrew stems good in arrangements
Brown	Med-Dry	●	★	Tolerates drought, compacted soil; may be used as groundcover
Brown	Med-Wet	☀	★	Tolerates drought; has interesting “seed balls” at tips of stems
Green	Med-Dry	☀	★	Grows well in clay soils; woodlands; tolerates some flooding
Green	Med-Wet	●	★	Clump-forming ornamental grass; erosion control; establishes from seed
Green	Med-Dry	☀	★	Ornamental grass; distinctive blue coloration on stems; attractive fall color



# Plant List

## Grasses, Sedges, Rushes

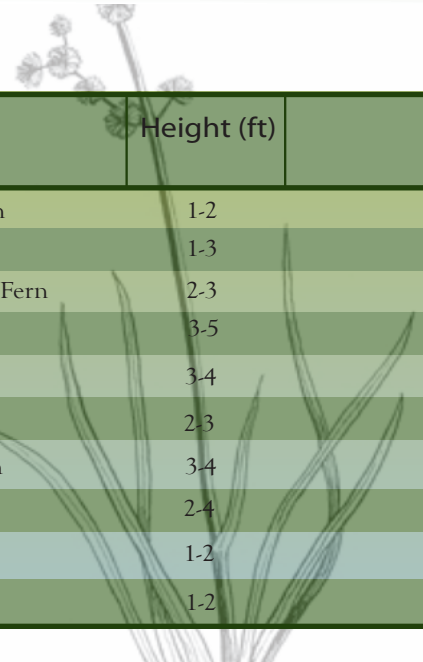
Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Scirpus atrovirens</i>	Green Bulrush	3-5	June-Aug
<i>Scirpus cyperinus</i>	Wool Grass	3-5	June-Sept
<i>Sorghastrum nutans</i>	Indian Grass	3-4	Aug
<i>Spartina pectinata</i>	Prairie Cord Grass	3-7	July Aug



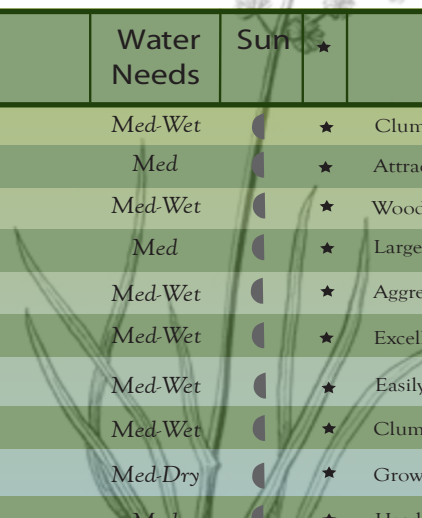
# Plant List

## Ferns

Plant Names		Height (ft)
Botanical	Common	
<i>Adiantum pedatum</i>	Maidenhair Fern	1-2
<i>Athyrium filix-femina</i>	Lady Fern	1-3
<i>Dryopteris marginalis</i>	Marginal Wood Fern	2-3
<i>Dryopteris goldiana</i>	Goldie Fern	3-5
<i>Onoclea sensibilis</i>	Sensitive Fern	3-4
<i>Osmunda cinnamomea</i>	Cinnamon Fern	2-3
<i>Osmunda claytoniana</i>	Interrupted Fern	3-4
<i>Osmunda regalis</i>	Royal Fern	2-4
<i>Polystrichum acrostichoides</i>	Christmas Fern	1-2
<i>Thelypteris noveboracensis</i>	New York Fern	1-2



Flower Color	Water Needs	Sun	★	Notes
Brown	Wet	☉	★	Soil stabilizer; tolerates flood or drought for short periods; can be invasive
Tan	Wet	☉	★	Strong fibrous roots form clumps in high water
Green	Med-Dry	●	★	Showy; clump forming; often used in wind erosion control; tolerates salt
Green	Med-Wet	☉	★	Aquatic grass that tolerates draining; attractive fall yellow color; great plumes



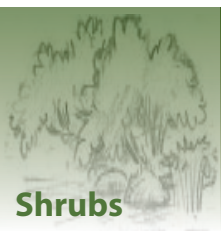
Water Needs	Sun	★	Notes
Med-Wet	☾	★	Clump-forming; ornamental fern; good for landscape borders
Med	☾	★	Attractive in shade beds
Med-Wet	☾	★	Woodland landscape; non-aggressive
Med	☾	★	Large fern; attractive in shady garden borders
Med-Wet	☾	★	Aggressive in optimum conditions; bright green color; frost sensitive
Med-Wet	☾	★	Excellent for wet areas; yellow in autumn
Med-Wet	☾	★	Easily grown; use in borders and along streams
Med-Wet	☾	★	Clump-forming; yellow in autumn; needs wet areas
Med-Dry	☾	★	Grows in fountain-like clumps; utilized for erosion control
Med	☾	★	Hardy; easy to grow; aggressive



# Plant List

## Vines

Plant Names		Height (ft)	Bloom Time
Botanical	Common		
<i>Amphicarpa bracteata</i>	Hog Peanut	2-8	Aug-Sept
<i>Clematis virginiana</i>	Virgins' Bower	10-20	July-Sept
<i>Menispermum canadense</i>	Moonseed	8-10	May-July
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	1-60	May-June

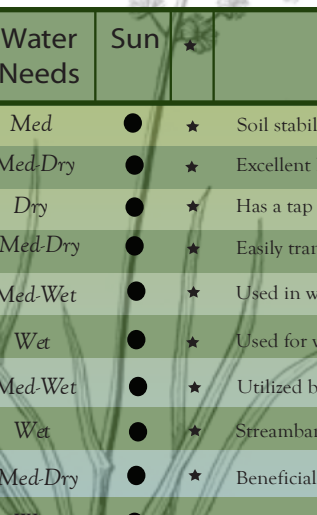


# Plant List

## Shrubs

Plant Names		Height (ft)	Growth Rate
Botanical	Common		
<i>Alnus rugosa</i>	Speckled Alder	15-25	Med
<i>Amelanchier laevis</i>	Smooth Serviceberry	25	Med
<i>Ceanothus americanus</i>	New Jersey Tea	3-4	Slow
<i>Celtis occidentalis</i>	Hackberry	25	Med
<i>Cephalanthus occidentalis</i>	Buttonbush	5-12	Med
<i>Cornus amomum</i>	Silky Dogwood	7-15	Med
<i>Cornus racemosa</i>	Grey Dogwood	6-15	Med
<i>Cornus stolonifera</i>	Red-Osier Dogwood	6-9	Med
<i>Corylus americana</i>	Hazelnut	3-13	Med
<i>Hydrangea arborescens</i>	Annabelle Hydrangea	3-6	Fast

Flower Color	Water Needs	Sun	★	Notes
<i>Pink</i>	<i>Med</i>	☾	★	Pea-like flowers; delicate twining vine
<i>White</i>	<i>Med</i>	●	★	Aggressive; fragrant; needs support
<i>White</i>	<i>Med-Wet</i>	●	★	Medicinal uses; poisonous if ingested; forms black berries
<i>Green</i>	<i>Med-Dry</i>	☀☾	★	Useful in erosion control; beneficial to wildlife; ornamental vine; salt tolerant



Flower Color	Water Needs	Sun	★	Notes
<i>Brown</i>	<i>Med</i>	●	★	Soil stabilizer; acid to neutral pH; fixes nitrogen
<i>White</i>	<i>Med-Dry</i>	●	★	Excellent landscape plant with dark green foliage; blooms in spring
<i>White</i>	<i>Dry</i>	●	★	Has a tap root; do not try to transplant; drought tolerant
<i>Green</i>	<i>Med-Dry</i>	●	★	Easily transplanted; can grow in dry soils; withstands grime of cities
<i>White</i>	<i>Med-Wet</i>	●	★	Used in wetland restoration; great wildlife benefit; best in wet conditions
<i>White</i>	<i>Wet</i>	●	★	Used for windbreaks, wildlife borders, streambank restorations; colorful stems
<i>White</i>	<i>Med-Wet</i>	●	★	Utilized by several birds; not typically stocked in nurseries
<i>White</i>	<i>Wet</i>	●	★	Streambank/slope protection and stabilization; good habitat; plant in masses
<i>Brown</i>	<i>Med-Dry</i>	●	★	Beneficial to a variety of wildlife; medicinal uses; ornamental shrub
<i>White</i>	<i>Wet</i>	●	★	Best in partial shade; clump-forming; deciduous shrub; medicinal uses



## Shrubs

# Plant List

Plant Names		Height (ft)	Growth Rate
Botanical	Common		
<i>Lindera benzoin</i>	Spicebush	3-16	Slow
<i>Physocarpus opulifolius</i>	Eastern Ninebark	3-10	Slow
<i>Prunus virginiana</i>	Chokecherry	20-30	Fast
<i>Ptelea trifoliata</i>	Hop Tree	20	Slow
<i>Ribes americana</i>	Wild Black Currant	3-5	Med
<i>Rosa carolina</i>	Carolina Rose	3-6	Med
<i>Rosa palustris</i>	Swamp Rose	3-7	Med
<i>Salix interior</i>	Sandbar Willow	6-20	Med-Fast
<i>Sambucus canadensis</i>	American Elderberry	6-26	Fast
<i>Sambucus racemosa</i>	Red-Berried Elderberry	8-20	Fast
<i>Spiraea alba</i>	Meadowsweet	2-5	Med
<i>Spiraea bumalda</i>	Anthony Waterer Spirea	2-3	Fast
<i>Spiraea tomentosa</i>	Steeplebush	2-5	Med-Fast
<i>Staphylea trifolia</i>	American Bladdernut	10-15	Fast
<i>Vaccinium macrocarpon</i>	Large Cranberry	2-6	Slow
<i>Viburnum acerifolium</i>	Maple-Leaf Viburnum	2-6	Slow
<i>Viburnum dentatum</i>	Arrowwood	3-10	Med
<i>Viburnum lentago</i>	Nannyberry	14-16	Slow
<i>Viburnum prunifolium</i>	Blackhaw	12-15	Slow
<i>Viburnum opulus (var. americanum)</i>	Highbush Cranberry	6-10	Med

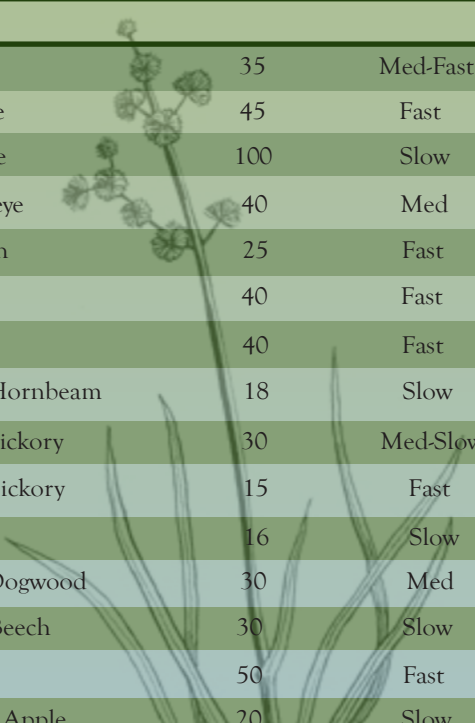


Flower Color	Water Needs	Sun	★	Notes
Yellow	Med-Wet	●	★	Beneficial to wildlife; in partial shade leaves turn bright yellow in autumn
White	Med	●	★	Ornamental shrub; beneficial to wildlife; used for erosion control on banks
White	Med	●	★	Can grow in acidic to alkaline soils; ornamental small tree or shrub
	Wet	●	★	Shade tolerant; seeds and foliage have a unpleasant odor
Yellow	Med-Wet	●	★	Can be invasive; wildlife food source; ornamental shrub
Pink	Med-Dry	●	★	Better resistance to disease than most hybrid roses
Pink	Med-Wet	●	★	Attractive throughout the year; food source for wildlife
Brown	Med-Wet	●	★	Short-lived; forms colonies; does well in flooded areas
White	Med-Wet	●	★	Edible fruit; medicinal uses; beneficial to wildlife; blue-black berry
White	Med-Wet	●	★	Red berries; raw fruits are toxic
White	Wet	●	★	Fragrant; good in low spots or boggy areas
White	Med	●	★	Showy autumn foliage; ornamental value; showy flowers
Pink	Med	●	★	Showy pink flower spires; blooms in Aug-Sept; good for hedges; rich soils
White	Med-Wet	●	★	Easily grown; seed capsules used in dried flower arrangements
Pink	Med-Wet	●	★	Grows in acidic soils; leaves become purple in winter
White	Med-Dry	●	★	Reddish-purple fall color; black fruit; develops large colonies; acidic soils
White	Med	●	★	Medicinal uses; bird food source
White	Med	●	★	Good seasonal color; food source for wildlife
White	Med-Dry	●	★	Special concern plant in Michigan; attracts birds; adaptable
White	Med-Wet	●	★	Beneficial to wildlife; good windbreak; red fruit; ornamental shrub



# Plant List

Plant Names		Height (ft) at 20 yrs old	Growth Rate
Botanical	Common		
<b>Evergreen Trees</b>			
<i>Abies balsamea</i>	Balsam Fir	40-90	Slow
<i>Juniperus virginiana</i>	Eastern Red Cedar	25	Slow
<i>Picea glauca</i>	White Spruce	100	Slow
<i>Picea mariana</i>	Black Spruce	100	Slow
<i>Pinus resinosa</i>	Red Pine	50-80	Fast
<i>Pinus strobus</i>	Eastern White Pine	150	Fast
<i>Thuja occidentalis</i>	Northern White Cedar	40-50	Slow
<b>Deciduous Trees</b>			
<i>Acer rubrum</i>	Red Maple	35	Med-Fast
<i>Acer saccharinum</i>	Silver Maple	45	Fast
<i>Acer saccharum</i>	Sugar Maple	100	Slow
<i>Aesculus glabra</i>	Ohio Buckeye	40	Med
<i>Betula alleghaniensis</i>	Yellow Birch	25	Fast
<i>Betula nigra</i>	River Birch	40	Fast
<i>Betula papyrifera</i>	Paper Birch	40	Fast
<i>Carpinus caroliniana</i>	American Hornbeam	18	Slow
<i>Carya cordiformis</i>	Bitternut Hickory	30	Med-Slow
<i>Carya ovata</i>	Shagbark Hickory	15	Fast
<i>Cercis canadensis</i>	Redbud	16	Slow
<i>Cornus florida</i>	Flowering Dogwood	30	Med
<i>Fagus grandifolia</i>	American Beech	30	Slow
<i>Liriodendron tulipifera</i>	Tulip Tree	50	Fast
<i>Malus coronaria</i>	Sweet Crab Apple	20	Slow





Flower Color	Water Needs	Sun	★	Notes
	Med-Wet	☀️	★	Readily transplanted; prefers acidic soils; tolerates wide range of soils
	Dry	●	★	Used for windbreaks
	Med	●	★	Used for windbreaks; adaptable to wide range of conditions
	Med-Wet	☀️	★	Interesting irregular form; tolerant of nutrient poor soils; prefer acidic soils
	Med-Dry	☀️	★	Prefers dry, sandy, acidic soils; found in low fertility areas; susceptible to salt
	Med-Dry	●	★	Tolerates many soil types; intolerant to air pollutants; used for windbreaks
	Med-Wet	●	★	Prefers neutral soil; adapted for nutrient poor soils
Red	Med	●	★	Gorgeous red fall color; fragrant blossoms March-Apr; intolerant to pollution
	Med	●	★	Easily transplanted; one of the best trees for poor soils
	Med	●	★	Best in slightly acidic soils; great shade tree; used for maple syrup
White	Med-Wet	☀️	★	Leaves shaped like a hand; wonderful color spring-fall; attracts hummingbirds
	Med	●	★	Good lawn tree; providing relatively light shade; showy golden bark
Yellow	Wet	☀️	★	Very attractive ornamental tree; very good for erosion control
Yellow	Wet	●	★	Striking coloration with white bark and yellow fall color; good riparian buffer
Green	Med	☀️	★	Beautiful understory tree; difficult to transplant; unique fruit; good fall color
	Med-Wet	●	★	Large tap-root makes transplanting difficult; unique bark and fruit
	Med-Dry	●	★	Edible fruit; adaptable to wide range of soils; bark has culinary use
Purple	Dry	☀️	★	Flowers bloom early spring; will grow taller in shade conditions
White	Dry	●	★	Excellent ornamental tree; striking display in full bloom
	Med	☀️	★	Prefers acidic soils; excellent shade providing tree for large open areas
Yellow	Med	☀️	★	Great ornamental tree; unusual flowers; yellow fall color; disease resistant
Pink	Med	●	★	Native to lower Michigan only, ornamental tree; edible fruit



## Trees

# Plant List

Botanical	Plant Names Common	Height (ft) at 20 yrs old	Growth Rate
<b>Deciduous Trees</b>			
<i>Nyssa sylvatica</i>	Black Gum	30	Med
<i>Ostrya virginiana</i>	Ironwood	30	Med
<i>Platanus occidentalis</i>	Sycamore	65	Fast
<i>Populus tremuloides</i>	Trembling Aspen	50	Fast
<i>Prunus serotina</i>	Black Cherry	40	Fast
<i>Quercus alba</i>	White Oak	25	Slow
<i>Quercus bicolor</i>	Swamp White Oak	30	Fast
<i>Quercus macrocarpa</i>	Bur Oak	25	Slow
<i>Quercus rubra</i>	Red Oak	35	Med
<i>Salix nigra</i>	Black Willow	50	Fast
<i>Tilia americana</i>	Basswood	60	Med



Flower Color	Water Needs	Sun	★	Notes
<i>Med</i>	☉☾	★	★	Provides erosion control; attractive dense autumn foliage
<i>Med</i>	☉☾	★	★	Shade tolerant; dark green foliage; attractive cluster of nuts
<i>Wet</i>	●	★	★	Disease resistant; tolerant to air pollution; rehabilitates mining sites
<i>Med</i>	●	★	★	Beautiful clear yellow fall color; smooth bark; spreads rapidly
<i>Med</i>	☉	★	★	Fast growing shade tree; leaves may be toxic
<i>Med</i>	●	★	★	Excellent residential tree; large crown; red fall color; dense foliage
<i>Wet</i>	●	★	★	Grows well in compacted soils; drought tolerant; tolerant to flooding
<i>Med</i>	●	★	★	Tolerant to compacted, or sandy soils; deep tap-root facilitates infiltration
<i>Med</i>	●	★	★	Easily transplanted; tolerant to air pollution and dry soils; shade tolerant
<i>Wet</i>	☉	★	★	Thrives in wet areas; weak branches; encourages evapotranspiration
<i>Yellow</i>	<i>Med</i>	☉☾	★	Shade providing tree; soil-enriching



