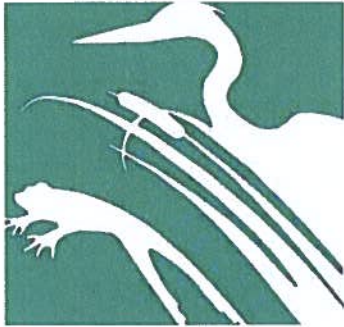




## Whippanong Library Rain Garden Hanover Township, New Jersey



Whippany River Watershed  
Action Committee



Maintenance Manual developed by Pat Rector, and Dan Ross. Power Point presentation on maintenance developed by the Water Resources Program Rutgers Cooperative Extension. Fact Sheets from Ladybird Johnson Wildflower Center unless otherwise noted.



## **ACKNOWLEDGEMENTS**

This project was made possible through grant funding that was generously provided to the Whippany River Watershed Action Committee from the Watershed Institute. The intention of the project was to provide a multi-tiered participatory educational program which would engage library patrons, visitors to the Municipal complex, the Whippany River Watershed Action Committee, Rutgers Cooperative Extension (RCE), Boy Scout Troop 155 and the community in a long-term project with educational, environmental, and social gains, as well as to introduce the youth of Hanover and library patrons to the concept of green infrastructure.

The project consisted of the design and installation of a 400 square foot rain garden at the Whippanong Library to serve as a demonstration rain garden. Rutgers Cooperative Extension was tasked with providing educational materials for upload to the WRWAC website, and providing for an educational program for the community.

In addition, RCE staff provides this rain garden maintenance manual customized for the Whippanong Library rain garden. RCE will continue to educate members of the public about the importance of green infrastructure, especially rain gardens.

This project would not have been possible if not for the gracious support and funding from the Watershed Institute, the commitment from Hanover Township, and the support of the Whippany River Watershed Action Committee. In addition we would also like to express our gratitude to the excellent staff of Whippanong Library and we commend the tireless efforts of the New Jersey Tree Foundation for all of their hard work. We would like to express our sincere gratitude to all of our partners in this effort, and look forward to partnering with them again in the future.

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New Jersey Agricultural  
Experiment Station

## YOUR RAIN GARDEN MAINTENANCE ONE PAGER

**CONGRATULATIONS!** You are the recipient of a beautiful rain garden installed by Rutgers Cooperative Extension, and the NJ Tree Foundation. This rain garden is part of a Watershed Institute grant to implement stormwater Best Management Practices (BMPs) and reduce stormwater runoff in the Whippany River watershed. Thank you for being part of these efforts, and helping us be part of improving the Water Quality of the Whippany River!

### **RAIN GARDEN MAINTENANCE**

After installation your rain garden plants are feeling stressed and thirsty. The rain garden is a new home for the plants. Eventually (*after one year*) the plants will begin to have established roots. Now, the plants need your **HELP!**

### **WATER...WATER...WATER!!!**

Please water your plants at least once a week after installation, especially during dry weeks with less than one inch of water. Water the plants for about 5 minutes each time.

Information on *watering maintenance* can be found in this *Rain Garden Maintenance Manual...page 35*.

### **WEED...WEED...WEED!!!**

Please weed out (*hand pull*) any other plants trying to grow in your rain garden other than what was planted. (*Find your rain garden plant list and pictures in this manual to identify your plants (label your plants) & use a field weed guide to identify common weeds*).

The rain garden needs weeding at least once a month, especially during rainy days where weeds can grow rapidly.

Information on *Weeding* can be found in this *Rain Garden Maintenance Manual...page 36, 37*.

### **MULCH...MULCH...MULCH!!!**

Keep your rain garden mulched. Mulching limits weed growth, and keeps the plants from drying out during hot periods. It also helps with water filtration. Keep about 3 inches of mulch in the rain garden and replace mulch as needed.

Information on *Mulching* can be found in this *Rain Garden Maintenance Manual...page 38*.

### **PRUNING...PRUNING...PRUNING!!!**

Keep your plants healthy by pruning of the dead/broken branches. The spring and fall are two ideal times to cut back dead or unhealthy growth of your perennials/shrubs.

Information on *Pruning* can be found in this *Rain garden Maintenance Manual...page 39, 40*.

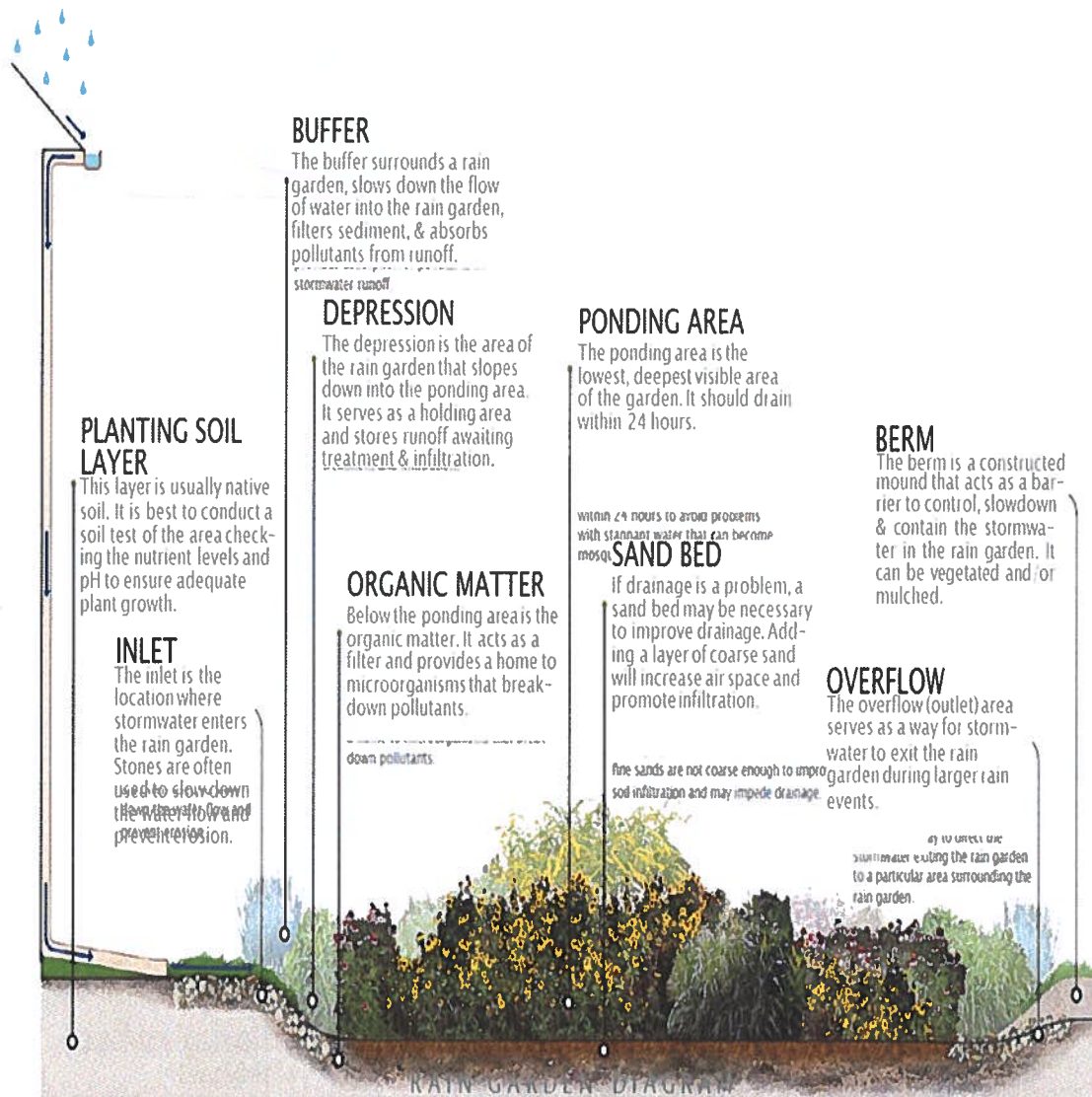
### **INSPECTING...INSPECTING...INSPECTING!!!**

It is important to inspect the rain garden after it rains to make sure the water drains within 24 hours. It is also essential to inspect for soil erosion (add plants or stones in eroded/gully areas), and plant life (replace dead plant material). Remove any excess sediment, litter, brush, and keep your rain garden clean!

Information on *Inspecting* can be found in this *Rain garden Maintenance Manual...page 41-42*.

## WHAT IS A RAINGARDEN?

A rain garden is a landscaped, shallow depression that allows rain and snowmelt to be collected and seep naturally into the ground. This helps recharge our groundwater supply and prevents a water quality problem called polluted runoff (nonpoint source pollution). Rain gardens are an important way to make our cities and neighborhoods more attractive and sustainable.



# EXAMPLE PLANTS FOR A RAINGARDEN



Image: Prairiemoon

**Monarda fistulosa - Beebalm**  
Height: 2-5'  
Flowering Period: May - September  
Flower Color: White, Pink, Purple  
Light Req: Sun, Part Shade



Image: Washingtongardener

**Lobelia siphilitica - Great Blue Lobelia**  
Height: 2-3'  
Flowering Period: July - October  
Flower Color: Blue  
Light Req: Sun, Part Shade, Shade



Image: Wikimedia

**Eupatorium perfoliatum - Boneset**  
Height: 3-6'  
Flowering Period: June - October  
Flower Color: White  
Light Req: Sun, Part Shade



Image: Wikimedia

**Helianthus scaberrimus - False Sunflower**  
Height: 3-6'  
Flowering Period: June - August  
Flower Color: Yellow  
Light Req: Full Sun, Part Shade



Image: Gymnosperms.org

**Iris versicolor - Blue Flag Iris**  
Height: 2-3'  
Flowering Period: May - August  
Flower Color: Blue & Purple  
Light Req: Sun, Part Shade



Image: Davesgarden

**Symphiotrichum novae-angliae -  
New England Aster**  
Height: 2-3'  
Flowering Period: July - October  
Flower Color: Blue  
Light Req: Sun, Part Shade, Shade



Example of rain garden sign

**RUTGERS**  
New Jersey Agricultural  
Experiment Station

## WHAT IS A RAINGARDEN?

**RUTGERS**  
New Jersey Agricultural  
Experiment Station



# RAIN GARDEN

Flood Reduction and Water Quality Program



This garden is designed to intercept, treat, and infiltrate stormwater at the source before it becomes runoff. Rain gardens capture and keep rainwater from draining into sewers. This makes our community healthier while reducing flooding.

[www.water.rutgers.edu](http://www.water.rutgers.edu)

<http://morris.njaes.rutgers.edu>

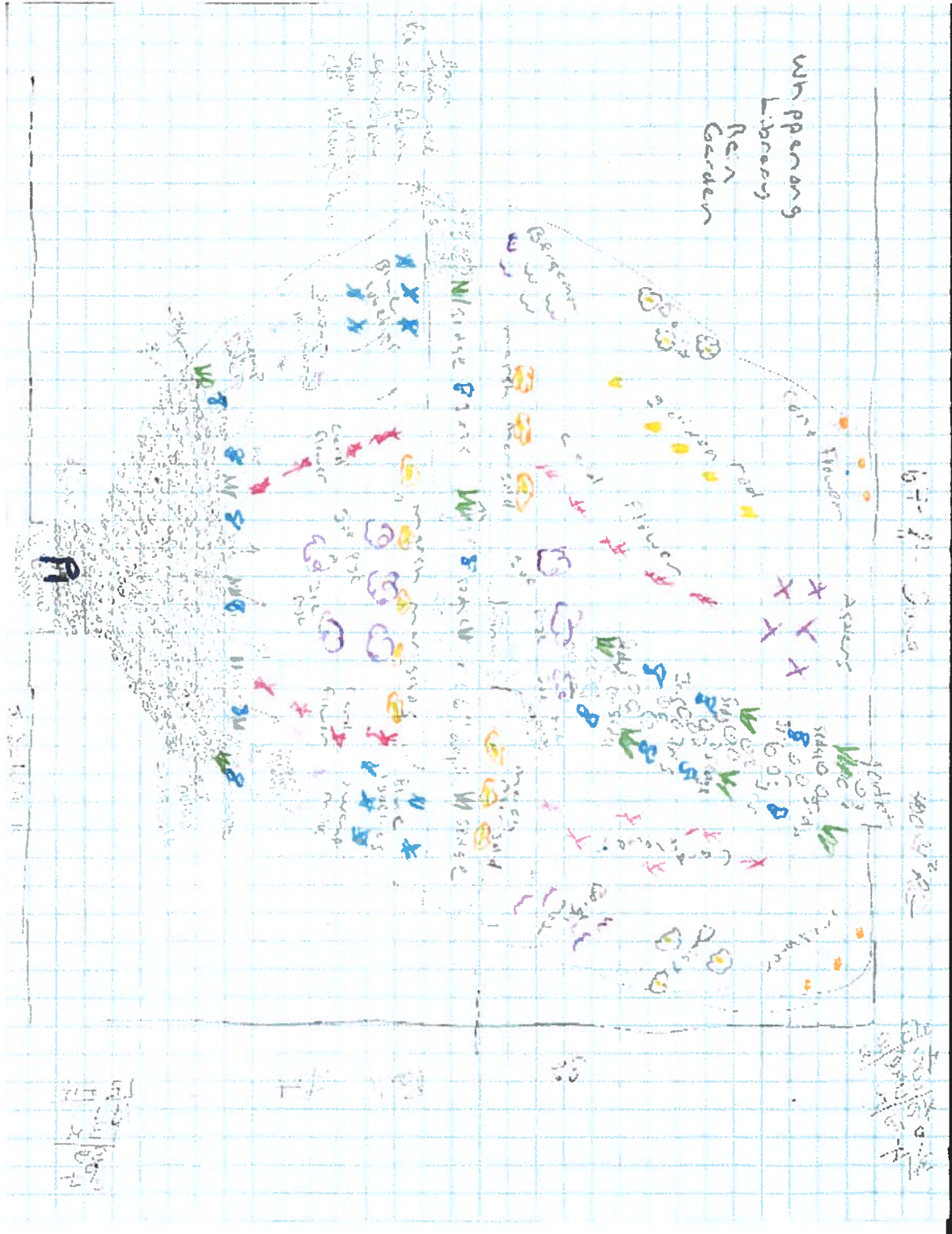


## Whippanong Library Rain Garden—Before & After Pictures





## YOUR RAINGARDEN DESIGN



## Plants in Whippanong Library Rain Garden

Common name	Scientific name	Number provided in garden
Blue Lobelia	<i>Lobelia siphilitica</i>	30
Cardinal Flower	<i>Lobelia cardinalis</i>	30
Dwarf Goldenrod	<i>Solidago Sp.</i>	30
Eastern Purple Coneflower	<i>Echinacea purpurea</i>	30
Marsh Marigold	<i>Caltha palustris</i>	35
Montauk Daisy	<i>Nipponanthemum nipponicum</i>	30
New England Aster	<i>Symphotrichum novae-anglia</i>	30
“Raspberry Wine” Bergamot	<i>Monarda Sp.</i>	35
Spotted Joe Pye Weed	<i>Eupatorium maculatum</i>	15
Swamp Milkweed	<i>Asclepias incarnata</i>	30
Switchgrass	<i>Panicum virgatum</i>	30
Pennsylvania Sedge	<i>Carex pennsylvanica</i>	35
Variegated Iris	<i>Iris pallida var.</i>	30

## *Lobelia siphilitica*

Great Blue lobelia

Campanulaceae (Bellflower Family)

USDA Native Status: L48(N) CAN (N)

This showy perennial is usually unbranched but may exhibit some branching. The erect, 2-3ft stems produce lavender blue tubular flowers, crowded together on the upper stem. Each flower is split into two lips– the upper lip has two segments and the lower lip has three.

This blue counterpart of the Cardinal flower (*Lobelia cardinalis*) is a most desirable plant for woodland gardens especially since it blooms in late summer.

### Plant Characteristics

Duration: Perennial

Habit: Herb

Size Class: 1-3 ft

### Bloom Information:

Bloom Color: Blue

Bloom Time: Jul, Aug, Sept, Oct.

### Propagation:

Description: To propagate, divide clumps in the spring or scratch stratified Seed lightly onto the soil surface.

### Growing Conditions:

**Light Requirements:** Sun, Part Shade, Shade

**Soil Moisture:** Moist, Wet

**Drought Tolerance:** Low

**Soil Description:** Clay, Loam, Sand

**Conditions Comments:** Not at all drought tolerant.

Keep soil moist, watering if necessary in average soil conditions.



Foliage of the *Lobelia siphilitica*

## Wildlife Benefits:

**Conspicuous Flowers:** Yes  
**Attracts:** Birds, Hummingbirds

Special value to native bees  
Special value to bumble bees  
Supports Conservation Biological Control

Information provided by the Pollinator Program at the Xerces Society for Invertebrate Conservation.

**Warning:** Plant parts are poisonous and are considered toxic if eaten in large quantities. Symptoms include nausea, vomiting, diarrhea, salivation, exhaustion, and weakness, dilation of the pupils, convulsions and coma. Toxicity: Alkaloids lobelamine, lobeline, and others, plus a volatile oil.



Photo Courtesy of [www.lewisginter.org](http://www.lewisginter.org)

Information from Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=losi](https://www.wildflower.org/plants/result.php?id_plant=losi)

## *Lobelia cardinalis*

Cardinal Flower

Campanulaceae (Bellflower Family)

USDA Native Status: L48(N), CAN(N)

This 1-6ft, perennial has showy red flowers in 8 in terminal spikes. Each flower has three spreading lower petals and two upper petals, all united into a tube at the base. The lower portion of the erect stem is lined with lance-shaped leaves.

Although relatively common, over-picking of this handsome wildflower has resulted in scarcity in some areas. Cardinal flower depends on humming-birds, which feed on the nectar, for pollination.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Size Class:** 3-6 ft

### Bloom Information:

**Bloom Color:** Red

**Bloom Time:** May, Jun, Jul. Aug, Sept, Oct.

### Propagation:

**Propagation Material:** Seeds

**Seed Collection:** As seeds approach Maturity, the capsule opens slightly At its top. Store dried, cleaned seed In a sealed, refrigerated container up to three years

**Commercially Available:** Yes



Foliage of the Cardinal Flower

## Growing Conditions:

**Water Use:** Low

**Light Requirement:** Sun, Part Shade, Shade

**Soil Moisture:** Moist, Wet

**Soil Description:** Moist to wet, humus rich soil.  
Medium Loam, Clay Loam, Sandy, Sandy Loam, Clay

**Conditions Comments:** Soil must be kept moist or wet at all times. A winter mulching in Northern climates is beneficial. Can be propagated by bending a stem down into the mud and fastening it with a rock or sticks.



## Wildlife Benefits:

Cardinal Flower attracts hummingbirds

**Conspicuous Flowers:** Yes

**Attracts:** Birds, Butterflies, Hummingbirds

**Nectar Source:** Yes

**Deer Resistant:** Moderate

**Warning:** All parts poisonous, considered toxic if eaten in large quantities. Symptoms include nausea, vomiting, diarrhea, salivation, exhaustion and weakness, dilation of pupils convulsions, and coma.

**Toxic Properties:** Alkaloids  
Lobelamine, lobeline, and  
Others, plus a volatile oil.



## *Solidago nemoralis*

Goldenrod sp.

Asteraceae (Aster Family)

USDA Native Status: L48(N) CAN(N)

Slender stemmed plant. 1 1/2– 2 ft. tall. Thin coarsely-toothed leaves. Flowers occur on the upper side of hairy stalks which arch out and downward creating a vase-shaped flower cluster.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Size Class:** 1-3 ft.

### Bloom Information:

**Bloom Color:** Yellow

**Bloom Time:** Jun, Jul, Aug, Sept, Oct.

### Propagation:

**Propagation Materials:** Seeds

**Description:** May also be propagated by division of mature plants. Make sure each section has a bud and a root.

### Growing Conditions:

**Water Use:** Minimum

**Light Requirements:** Sun, Part Shade, Shade

**Soil Moisture:** Dry

**Soil Description:** Sandy rocky soils, Sandy, Sandy Loam, Medium Loam, Clay Loam, Clay.

**Conditions Comments:** Individual plants bloom at various times, thus extending the flowering season.



Foliage of the Dwarf Goldenrod

## Wildlife Benefits:

Goldenrod Attracts butterflies

**Conspicuous Flowers:** Yes

**Attracts:** Birds

**Nectar Source:** Yes

**Deer Resistance:** Moderate

Value to Beneficial Insects:

Special Value to Honey Bees

Supports Conservation Biological Control

Information Provided by the Pollinator  
Program at the Xerces Society for  
Invertebrate Conservation



This information provided by the Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=SONE](https://www.wildflower.org/plants/result.php?id_plant=SONE)



## *Echinacea purpurea*

Eastern Purple Coneflower

Asteraceae (Aster Family)

USDA Native Status L48(N) CAN(I)

A popular perennial with smooth, 2-5 ft. stems and long lasting lavender flowers. Rough scattered leaves that become small toward the top of the stem. An attractive perennial with purple (rarely white) drooping rays surrounding a spiny brownish central disk.

The flowers of Echinacea species are used to make an extremely popular herbal tea, purported to help strengthen the immune system.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Size Class:** 1-3 ft.

### Bloom information:

**Bloom Color:** Pink, Purple

**Bloom Time:** Apr, May, Jun, Jul, Aug, Sept.

### Propagation:

**Propagation Materials:** Seeds

**Description:** Seeds may be sown outside in late fall or stored, and sown in the spring. Plants can be multiplied by making root divisions in early spring however division seems to stimulate the development of too many stems and fewer flowers.



Foliage of the Eastern Purple  
Coneflower

## Growing Conditions:

Water use: Medium

Light Requirement: Sun, Part Shade

Soil Moisture: Dry

Soil Description: Well-drained, sandy or richer soils

## Conditions Comments:

Echinacea is a suitable addition to a prairie garden and attractive in flower arrangements. It is a popular perennial with smooth stems, and long-lasting, lavender flowers. Purple coneflower can become very aggressive, and may need to be broken up.

**Conspicuous flowers:** yes

**Nectar source:** yes

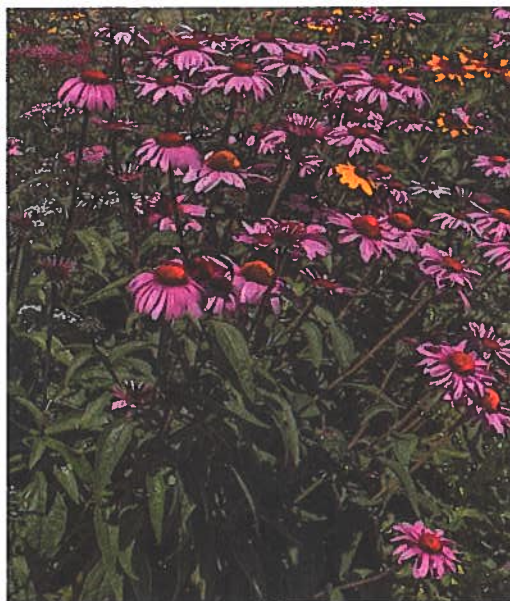
**Deer resistant:** no

## Wildlife Benefits:

Echinacea attracts butterflies and hummingbirds.

It also has a special value to native bees

This information was provided by the Pollinator Program at The Xerces Society for Invertebrate Conservation.



This information provided by Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=ECPU](https://www.wildflower.org/plants/result.php?id_plant=ECPU)

## *Caltha palustris*

Yellow marsh marigold

Ranunculaceae (Buttercup Family)

USDA Native Status: L48(N) AK(N), CAN(N)

A succulent plant with glossy heart- or kidney shaped leaves and a thick, hollow branching stem with bright shiny yellow flowers. Yellow marsh marigold is a mounding perennial, 1-2ft tall, with clusters of large, showy buttercup-like yellow flowers.

The flowers of this showy spring plant resemble large buttercups, rather than the marigolds.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Leaf:** Green

**Size Class:** 1-3 ft

### Bloom Information:

**Bloom Color:** Yellow

**Bloom Time:** Apr, May

### Propagation:

**Description:** Seeds should be sown immediately upon ripening and should not be allowed to dry out before sowing.

**Seed Collection:** Approximate date in Northern US: early to mid June.

**Commercially available:** yes



Foliage of marsh marigold in early spring

## Growing Conditions:

**Water Use:** High

**Light Requirement:** Part Shade, Shade

**Soil Moisture:** Moist, Wet

**Soil pH:** Acidic (pH <6.8)

**Soil Description:** Muddy, humus-rich soil

## Conditions Comments:

Marsh marigold requires little care other than protection from drying, winter and early spring winds.

## Wildlife Benefits:

**Conspicuous Flowers:** yes

**Attracts:** Birds

**Warning:** Leaves are to be considered poisonous and can be toxic if consumed in large quantities. Symptoms include burning of the throat, vomiting, bloody diarrhea, dizziness, and convulsions. Toxic principle: Protoanemonin



Information provided by Ladybird Johnson Wildflower Center.  
[https://www.wildflower.org/plants/result.php?id\\_plant=CAPA5](https://www.wildflower.org/plants/result.php?id_plant=CAPA5)

## *Nipponanthemum nipponicum*

Montauk Daisy

Asteraceae (Aster family)

Native Status: JAP (N) L48(Naturalized)

Typical “daisy” flower with white petals and a greenish yellow eye. Flowers are about 3 inches wide and held singly on long straight stems. Begins blooming in mid-summer, and blooming can continue into the fall.

Foliage is tough and shiny, dark green leaves are oval shaped and toothed. Leaves toward the bottom of the plant can drop prematurely. It should be planted behind shorter perennials or annuals to hide the bare stems.



### Plant Characteristics:

**Duration:** Perennial

**Habit:** herb

**Leaf:** dark green, oval and toothed

**Size Class:** 1-3 ft tall

### Bloom Information:

**Bloom Color:** White

**Bloom Time:** Aug, Sept, Oct.

### Propagation:

Perennial plant comes back each season, but may require pinching back once in the spring to promote a bushy shape. Plants need dividing every few years in the spring.



Foliage of the Montauk daisy

## Growing Conditions:

**Water Use:** Low, Drought Tolerant

**Light Requirement:** Sun, Full Sun

**Soil Moisture:** Dry, Well Drained

**Soil Description:** Prefers Dry Soil, Tolerates Drought Well, Once Established

## Conditions Comments:

Some light shade is appreciated, especially in hot climates

## Wildlife Benefits:

Nectar Source for Butterflies

Deer Resistant: Yes



Information provided by Hortmag.com. <http://www.hortmag.com/plants/plants-we-love/montauk-daisy>

## *Symphotrichum novae-angliae*

New England Aster

Asteraceae (Aster Family)

USDA Native Status: L48 (N), CAN(N)

New England aster is a large and showy plant, growing to 6 ft. or more in height. The perennial's hairy, clasping leaves are arranged densely on its stout stems. Showy, bright, rose-purple flowers with orange– yellow centers bloom in profusion at the tips of the leafy branches.



The flower color is highly variable, ranging from lavender to blue to white.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Size Class:** 3-6 ft.

### Bloom Information:

**Bloom Color:** Pink, Purple

**Bloom Time:** Aug, Sept, Oct.

### Propagation:

**Description:** Sow seeds outside in the fall, or provide cold stratification. Mature plants can be divided in the spring by sectioning off individual stems.



Foliage of the New England Aster

**Seed Collection:** The seed heads remain intact for several weeks after the first frost. At that time, shake the seed loose, or pluck them from the head. Air-dry and store in sealed, refrigerated containers.

**Commercially Available:** Yes

## Growing Conditions:

**Light Requirement:** Part Shade

**Soil Moisture:** Moist

**Soil pH:** Acidic (pH<6.8)

**Soil Description:** Moist Soils

## Conditions Comments:

New England aster flowers until frost. Its roots should be divided every several years to keep the plant growing vigorously. Can be aggressive.

Usually accompanies goldenrods in old fields undergoing natural succession.

## Wildlife Benefits:

Bees and Butterflies frequent this wildflower.  
Nectar source for Monarch butterflies.

Conspicuous Flowers: Yes

Attracts: Butterflies

Larval Host: Pearl Crescent and Checkerspot butterflies

Nectar Source: Yes

Special value to Native Bees, Bumble Bees, and Honey Bees.

This information provided by the Pollinator Program at The Xerces Society for Invertebrate Conservation



Information provided by Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=syno2](https://www.wildflower.org/plants/result.php?id_plant=syno2)



## *Carex pensylvanica*

Pennsylvania sedge

Cyperaceae (Sedge Family)

USDA Native Status L48(N), CAN (N)

Pennsylvania sedge is a low, clumped, grass-like perennial, 6-12 in. high, with a cluster of brown seed capsules clinging high on the stem. Foliage is pale green in the spring and summer, turning sandy-tan in the fall.

Prefers light-textured soils, and is resistant to deer grazing and browse.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Grass/ Grass-like

**Root Type:** Fibrous

**Size Class:** 1-3 ft.

### Bloom Information:

**Bloom Color:** Not Applicable

**Bloom Time:** May, Jun, Jul.

### Propagation:

Propagate by dividing mature plants in the spring, making sure each section has roots and leaves.

Commercially Available: Yes



## Growing Conditions:

**Light Requirements:** Sun, Part Shade, Shade

**Soil Moisture:** Dry to moist.

**Soil Description:** Dry to moist soils

## Conditions Comments:

This is a fine ground cover, spreading relentlessly by rhizomes. Older patches may be invaded by other plants, probably because of the soil enrichment produced by the sedge.

## Wildlife Benefits:

Attracts: Birds



Information provided by Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=cape6](https://www.wildflower.org/plants/result.php?id_plant=cape6)

## *Monarda didyma*

“Raspberry wine” Bee Balm

Lamiaceae (Mint Family)

USDA Native Status L48 (N)

Erect stems support uniquely shaped berry red tubular flowers. Dark green leaves have an aroma of mint and basil. Essential to mixed perennial borders. Single plants make a great show, but groups heighten the effect. Good mildew resistance.

### Plant Characteristics:

**Duration:** Perennial

**Growth Rate:** Fast

**Spacing:** Plant 14”-18” Apart

**Size Class:** 2-3 ft. tall

### Bloom Information:

**Bloom Color:** Purple/ Pink/ Red

**Bloom Time:** Jun. Jul. Aug.

### Propagation:

Divide plants in the spring or fall every 3-4 years. Thinning stems out to increase air circulation will help prevent powdery mildew, as will keeping plants watered during dry spells.

Foliage can be cut back after flowering to encourage fresh leaves and possible late fall re-bloom.



Foliage of the Monarda plant.

## Growing Conditions:

**Water Requirements:** Wet, Moist Soils

**Light Requirements:** Full Sun, Part Sun, Part Shade

**Soil Requirements:** Moist, Well-Drained Soils

**Soil Comments:** Loamy Soil, to Clay Soil

## Growing Comments:

Follow a regular watering schedule during the first growing season to establish a deep, extensive root system. Remove old flowers to prolong flowering. Cut back to the ground at the end of the season.

## Wildlife Benefits:

Beneficial to pollinators.  
Deer and Rabbit Resistant

Attracts: Butterflies, and Hummingbirds  
Beneficial for Native Bees.

Hardy in US Zones 4-9



Information provided by Bluestone Perennials and Monrovia  
<https://www.bluestoneperennials.com/MORW.html>  
<https://www.monrovia.com/plant-catalog/plants/843/raspberry-wine-bee-balm/>

## *Eutrochium maculatum*

Spotted Joe-Pye Weed

Asteraceae (Aster Family)

USDA Native Status L48(N) CAN (N)

Joe Pye Weed is crowned with clusters of bright pinkish purple flowers in the late summer. *Eutrochium maculatum* is perfect for planting in damp soil, in marshy areas, along streambanks, and on pond edges, or for use in rain gardens!

### Plant Characteristics:

**Duration:** Perennial

**Growth Rate:** Fast

**Habit:** Herb

**Spacing:** 18"

**Size Class:** 3-5 ft. tall



### Bloom Information:

**Bloom Color:** Pink/ Purple

**Bloom Time:** Aug, Sept

### Propagation:

Joe Pye can be propagated through division of the fibrous root networks in the spring or late fall. Plants tend to reproduce somewhat aggressively in wetland habitats.



Whorled foliage of the Joe Pye Weed

Information from Prairie Moon Nursery [https://www.prairienursery.com/store/native-plants/joe-pye-weed-eupatorium-maculatum#.W362n\\_WcEdU](https://www.prairienursery.com/store/native-plants/joe-pye-weed-eupatorium-maculatum#.W362n_WcEdU)

## Growing Conditions:

**Water Requirements:** Wet to Moist

**Light Requirements:** Full or Partial Sun

**Soil Requirements:** Mineral-Rich Soil

**Soil Comments:** Silty or Sandy Loam Preferred

## Growing Comments:

Habitats include wet black soil prairies, wet sand prairies, sedge meadows, marshes, fens, and swampy thickets with small trees or shrubs. Spotted Joe-Pye Weed is partial to sandy wetlands, but it is also found in non-sandy wetlands. It is usually found in high quality natural areas, rather than degraded habitats with a history of disturbance.

## Wildlife Benefits:

**Attracts:** Honey bees, bumble bees, and other native bees, as well as butterflies, skippers and some moths.

The seeds of Joe Pye Weed are also a minor source of food for the swamp sparrow. While the foliage of Joe Pye Weed is not a preferred source of food among mammalian herbivores, it may occasionally be browsed upon by deer, rabbits and or livestock.



**Benefits:** Pollinators

**USDA Hardy Zones:** 3,4,5,6



Information provided by Illinois Wildflowers: [http://illinoiswildflowers.info/wetland/plants/sp\\_joepye.htm](http://illinoiswildflowers.info/wetland/plants/sp_joepye.htm)

## *Asclepias incarnata*

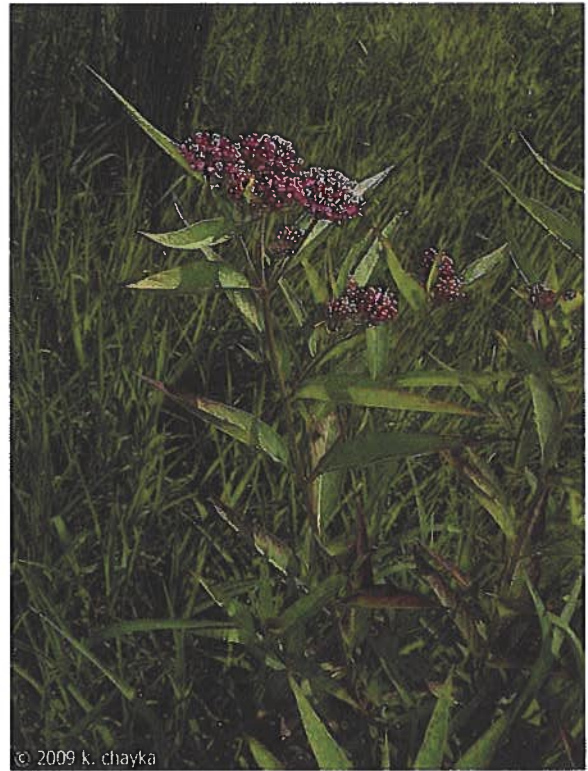
Swamp milkweed

Asclepiadaceae (Milkweed Family)

USDA Native Status L48(N), CAN (N)

The large, bright, terminal blossoms of this showy, 2-4 ft. perennial are made up of small, rose-purple flowers. Deep pink flowers clustered at the top of a tall, branching stem, bearing numerous narrow, lanceolate leaves. Opposite, narrow, lance-shaped leaves line the erect, open-branched stem. Elongated, tan-brown seed pods persist into winter.

The juice of this wetland milkweed is less milky than that of other species. The genus was named in honor of Aesculapius, Greek god of medicine, undoubtedly because some species have long been used to treat a variety of ailments.



### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Leaf Arrangement:** Opposite

**Size Class:** 3-6 ft.

### Bloom Information:

**Bloom Color:** Pink, Purple

**Bloom Time:** Jun, Aug, Sept, Oct



### Propagation:

**Description:** Propagate by seeds, by collecting seeds in October and November, and starting seedlings early in the spring. Established plants may also be divided in the spring.

Foliage of swamp milkweed

## Growing Conditions:

**Water Requirements:** High

**Light Requirements:** Sun, Part Shade

**Soil Moisture:** Moist, Wet

**Soil Description:** Rich, wet, muddy to average garden moisture. One of the few ornamentals that thrives in mucky, clay soils. Prefers neutral to slightly acidic soil.

## Growing Comments:

With its showy flower clusters that attract butterflies and hummingbirds, swamp milkweed is underutilized in gardens. Swamp milkweed will inevitably have aphids. These insects are not a problem unless the plant looks sick; at that point an effective treatment is to spray the plant and aphids with soapy water. Great plant for wetland gardens and habitats.

## Wildlife Benefits:

**Wildlife:** Milkweeds are an important food source for the Monarch caterpillar.

**Conspicuous Flowers:** Yes

**Fragrant Flowers:** Yes

**Attracts:** Butterflies, Hummingbirds

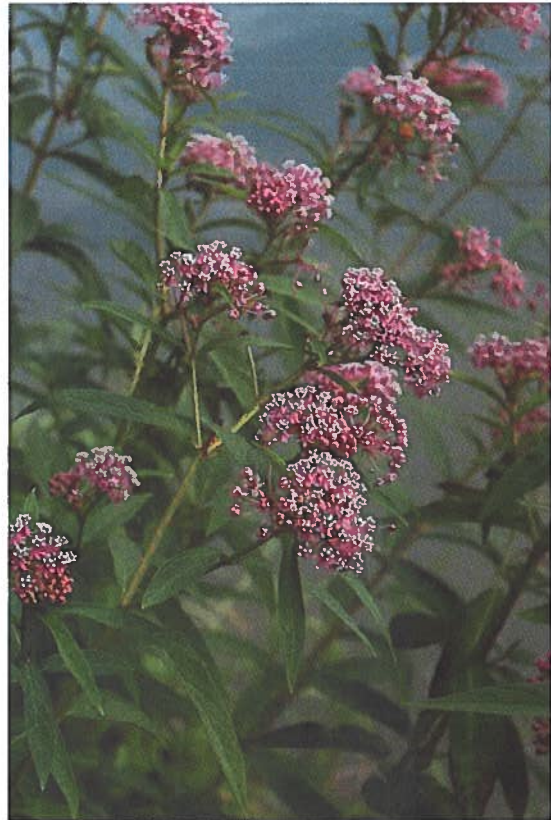
**Larval Host:** Monarch, and Queen Butterflies

**Deer Resistance:** High

**Warning:** All parts toxic, in large quantities.

**Special Value:** to native bees, bumble bees, and honey bees, and supports conservation biological control efforts.

This information was provided by the Pollinator Program at The Xerces Society for Invertebrate Conservation





## *Panicum virgatum*

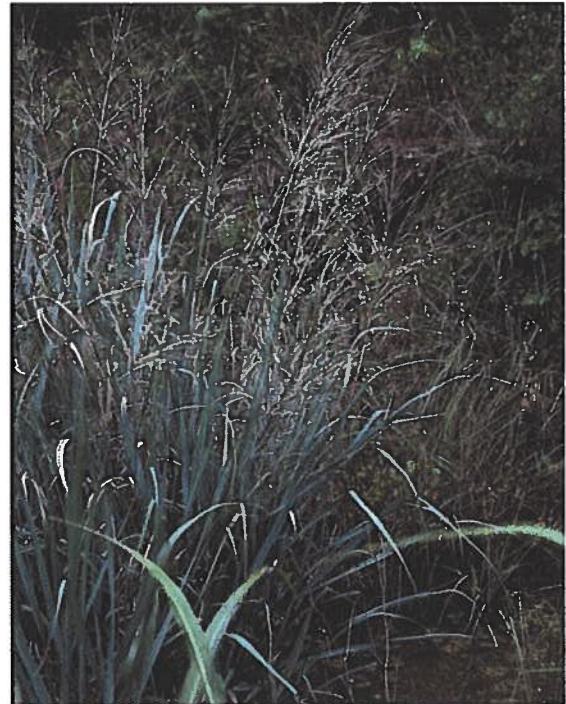
Switchgrass

Poaceae (Grass Family)

USDA Native Status L48(N), HI(I), CAN(N)

Clump-forming, warm-season grass with open, lazy sprays with small seeds, Aug-Oct. Switchgrass is a 3-6ft, rhizomatous, loose sod former with large, open, finely-textured, reddish-purple seedheads. Fall color is pale yellow. Bright green leaves occur up and down the stem, turning bright yellow in the fall. Grows in large clumps, with many persistent curly leaves.

Switchgrass is one of the dominant species of the tallgrass prairie, but also grows along roadsides where moisture is present. The rich, yellow-colored clumps, last throughout winter.



### Plant Characteristics:

**Duration:** Perennial

**Habit:** Grass/ Grass-like

**Root Type:** Fibrous

**Leaf Arrangement:** Alternate

**Size Class:** 3-6 ft.

### Bloom Information:

**Bloom Color:** Green, Brown

**Bloom Time:** Aug, Sept, Oct, Nov.

**Bloom Notes:** Pollinated by wind

### Propagation:

**Description:** Propagate by sowing seed in fall, or stratified seeds in the spring.

**Commercially Available:** Yes



## Growing Conditions:

**Water Use:** Medium

**Light Requirements:** Sun, Part Shade

**Soil Moisture:** Dry, Moist

**Soil Description:** Dry to moist soils, Sandy, Sandy Loam, Medium Loam Clay, Clay Loam, Clay.

## Conditions Comments:

Clump-forming, warm-season grass with open, lazy sprays and small seeds. Switchgrass is a loose sod former with a large, open, finely textured, reddish-purple seedhead. Bright green leaves occur up and down the stem, turning bright yellow in the fall.

## Wildlife Benefits:

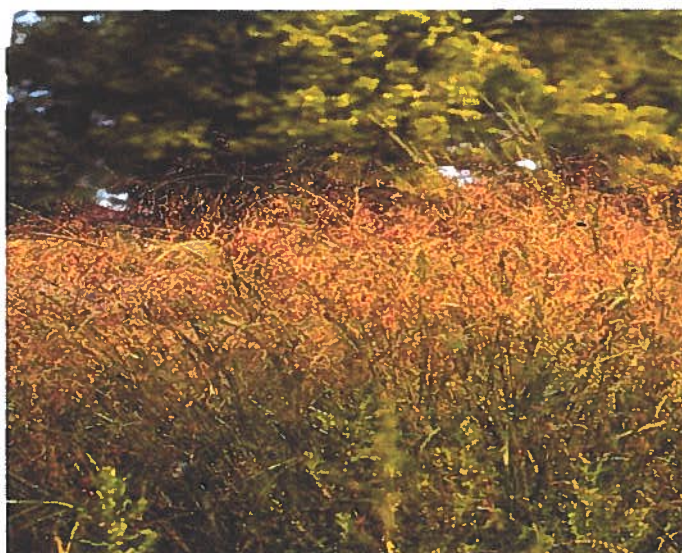
**Wildlife:** Fair for grazing, seeds eaten by ground-feeding songbirds, and game birds. Provides cover and nesting material.

**Conspicuous Flowers:** Yes

**Attracts:** Birds, Butterflies

**Larval Host:** Delaware Skipper, The Grass Family is an essential larval host for most banded skippers, and most of the satyrs.

**Deer Resistance:** High



Information provided by Ladybird Johnson Wildflower Center  
[https://www.wildflower.org/plants/result.php?id\\_plant=pavi2](https://www.wildflower.org/plants/result.php?id_plant=pavi2)

## *Iris pallida* (Variegata)

Variegated Iris

USDA Native Status L48(Non Native)

Variegated Iris is a highly prized iris grown for its fragrant violet-blue flowers, and striking tri-colored foliage. It is drought resistant, but prefers to grow near water, and along pond edges. *Iris pallida* is native to Italy, and is closely related to the tall bearded iris, which is the source of the sweet fragrance found in modern hybrids.

### Plant Characteristics:

**Duration:** Perennial

**Habit:** Herb

**Flower Color:** Blue

**Size Class:** 2-3 ft.



### Bloom Information:

**Bloom Color:** Blue

**Bloom Time:** Apr. May.

### Propagation:

Mature plants can be divided in the spring.

**Commercially Available:** Yes

**Hardiness Zones:** 4,5,6,7,8,9

**Planting Time:** Spring, Summer, Fall

**Preferred Rain Fall:** 30"- 40"



Foliage of the Variegated Iris

## Growing Conditions:

**Water Use:** High, Water Regularly

**Light Requirements:** Sun, Part Shade

**Soil Moisture:** Moist, well-drained soil

**Soil Description:** Prefers humus-rich soil

## Conditions Comments:

Once established, these iris prefer regular moisture, but will tolerate mild periodic dry spells and temporary bouts of dryness. Faded foliage should be removed as needed, or as new leaves emerge.

## Wildlife Benefits:

**Conspicuous Flowers:** Yes

**Deer Resistance:** High



## RAINGARDEN MAINTENANCE

### REQUIRED MAINTENANCE

- SPRING/FALL CLEAN UP
- SCHEDULED INSPECTION
- WATERING
- MULCHING
- WEEDING
- PRUNING
- PLANT HARVESTING

### AS NEEDED MAINTENANCE

- RE-PLANTING
- REMOVING SEDIMENT
- SOIL TESTING
- CLEANING OF GUTTERS
- LAYING DOWN STONE,  
LANDSCAPE FRABRIC & PINS



## RAINGARDEN MAINTENANCE

*"Raingardens are  
LOW maintenance  
gardens, not NO  
maintenance  
gardens!"*



## WATERING

New Raingardens will need to be watered for the first one or two years until the garden is established!

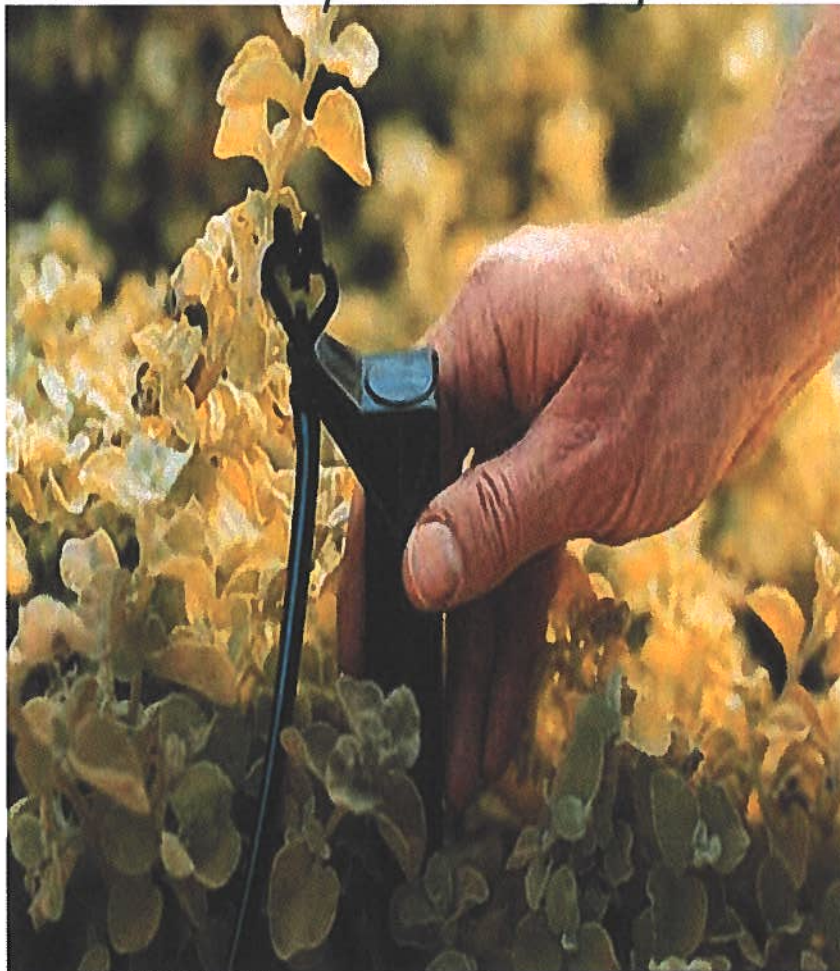


Image: Thisoldhouse

## WEEDING

- Weeding helps keep your garden healthy and looking great!
- Weeding more often will limit the amount of time you will have to spend weeding
- Watch for overly-competitive weed species, as it can take over your whole yard!
- Some weeds can spread aggressively through underground rhizomes

*How to spot weeds?*

Check Rutgers's RCE NJ Weed Gallery: <http://www.rce.rutgers.edu/weeds> and the USDA PLANTS database: <http://plants.usda.gov>





## WEEDING

*Be on the lookout for these invasive species in your  
raingarden!*



Garlic Mustard -  
Alliaria

<http://ext100.wsu.edu/whitman/2013/11/13/garlic-mustard/>



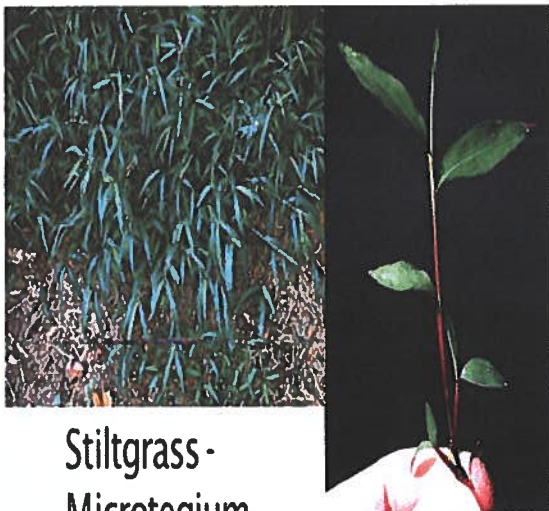
<http://www.ag.auburn.edu/agrn/weedsci/weedid/plant/list.php>

Mugwort - Artemisia



<http://www.ag.auburn.edu/agrn/weedsci/weedid/plant/list.php>

Dandelion - Taraxa



Stiltgrass -  
Microtegium

<http://www.ces.ncsu.edu/hil/hil-905.html>



## Mulching

### *Why is mulch important?*

- Keeps rain garden moist and ready to absorb rain like a sponge
- Protects your plants as they establish and helps keep weed growth to a minimum

### How Much Mulch?

Size of Rain garden	Appropriate Amount of Mulch
25 Square Feet	25 Square Feet
50 Square Feet	50 Square Feet
100 Square Feet	100 Square Feet
200 Square Feet	200 Square Feet



## Pruning

### Benefits of Pruning:

Pruning helps direct the growth of plants, which improves the health and increases production of flowers and fruits.

### How does pruning in a rain garden differ?

In a raingarden, dense shrub growth is encouraged to provide increased filtering capacity.



## PRUNING

### *Different ways to prune*

#### Thinning

basically, thinning out the plant. This type of pruning removes entire branches back to the main trunk or major branches to the ground.

-Expected result: Large, open shrub

#### Heading

also known as heading back. This type of pruning removes only part of a branch.

-Expected result: growth of multiple branches in place of single branch, thus a more dense shrub.



Image: 800oakwit

## INSPECTION

*What am I inspecting for?*

- weeds and invasive plants
- plant health
- excessive sediment
- movement of sediment  
within the raingarden
- any successes or problems



If raingarden does not drain within 24-48 hours, it can lead to mosquito habitat. Notify the Morris County Mosquito Commission if you notice mosquito breeding at 973-285-6450



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## INSPECTION

When should I inspect?

Regularly check and observe the garden during rain events and note any problems or successes.

Okay times to inspect:

- Prior to growing season
- End of growing season
- After large storm events
- During weather extremes



*Problem: Gullying after rain event*

*Solution: Add a berm and/or plants*



## **Sediment Removal as necessary**



With a flat shovel, remove soil that has accumulated in the basin. Avoid the vegetation!

There is no exact schedule for when this should be done. Try to monitor sediment accumulation, especially after all heavy storm events.

Be sure that sediment is not churning up from exposed areas of the rain garden. Flow should be dissipated to avoid these situations, which are likely to occur in the early stages of stabilization.

Core aerate or cultivate bare areas annually if surface becomes clogged with fine sediments.

## SEDIMENT

### *How to remove sediment?*

-With a flat shovel, remove soil that has accumulated in the basin. Avoid the vegetation!

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-Core aerate or cultivate bare areas annually if the surface becomes clogged with fine sediments





## INSPECT FOR EROSION

### LAYING DOWN STONE AND LANDSCAPE FABRIC & PINS



Laying down stone helps prevent erosion and contain sediment.



Landscape fabric is secured with landscaping pins under stone to prevent weed growth.



## INSPECT PLANTS

*After the first season, it may be obvious what plants were successful and what plants do not work for your rain garden.*

-Over the growing season, was the weather drastically different than the conditions the basin was designed to retain?

-Was flow too fast through the basin, damaging health?

-Is flow being incorrectly diverted from the rain garden?



## RE-PLANTING

-Replace dead or diseased plant material

-Re-seed the berm if there are areas of exposed soil

-Replace rocks that may be diverting flow out of the garden

-Build up areas where more protection is needed



## FALL MAINTENANCE

### *REMOVE LEAVES, AND ANY DEBRIS*

-Keep inflows, outflows, and ponding area in your rain garden clear of any leaves and debris.

-Too much accumulation of leaves and debris can slow down percolation in the rain garden, and or overflow.

-Keep your new gutters, and drain pipes clear of any leaves, and/or debris as well.

-Too much accumulation of leaves and debris can create clogs, which will decrease infiltration and can also decrease the proper outflow during large storm events.



## CLEANING OF GUTTERS

-Make sure rain gutters are clear of debris.

-If the flow of water is blocked in the gutter, the rain water will have difficulties getting to your rain garden.



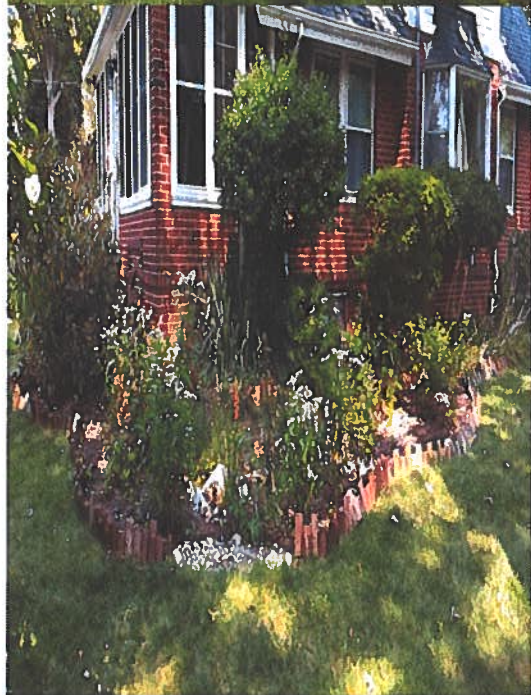
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**FINALLY  
PREPARE A PHOTO JOURNAL**

*Keep track of your rain garden*

A rain garden is always changing,  
keeping track of it's progress will  
help ensure that it stays healthy.



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## WEB RESOURCES

-Blue Thumb <http://www.bluethumb.org/plants/> this website will allow you to pick native plants based on Rain Garden, moisture (i.e. wet area, upland area, bloom color etc.) and then provide a list of plants that fits that criteria through a search feature.

-Rutgers Water Resources Program Rain Garden Website: [http://www.water.rutgers.edu/Rain\\_Gardens/RGWebsite/raingardens.html](http://www.water.rutgers.edu/Rain_Gardens/RGWebsite/raingardens.html)

-Rutgers Fact Sheet [http://www.water.rutgers.edu/Rain\\_Gardens/fs513.pdf](http://www.water.rutgers.edu/Rain_Gardens/fs513.pdf)

-Native plants manual website <http://www.npsnj.org/rain.garden.home.htm>

-Native Plant Society Manual: [http://www.npsnj.org/references/NPSNJ%20Rain%20Garden%20Manual%20\(Pages%201-24\).pdf](http://www.npsnj.org/references/NPSNJ%20Rain%20Garden%20Manual%20(Pages%201-24).pdf) (Includes example designs)

-Native Plant Society of NJ Manual Part II: [http://www.npsnj.org/references/NPSNJ%20Rain%20Garden%20Manual%20\(Pages%2025-48\).pdf](http://www.npsnj.org/references/NPSNJ%20Rain%20Garden%20Manual%20(Pages%2025-48).pdf)

-University of Wisconsin Cooperative Extension how to manual: [http://www.water.rutgers.edu/Rain\\_Gardens/home.rgmanual.pdf](http://www.water.rutgers.edu/Rain_Gardens/home.rgmanual.pdf)

-Virginia Dept. of Forestry Rain Garden Technical Manual: [http://www.dof.virginia.gov/mgt/resources/pub-Rain-Garden-Tech-Guide\\_2008-05.pdf](http://www.dof.virginia.gov/mgt/resources/pub-Rain-Garden-Tech-Guide_2008-05.pdf)

-University of Connecticut Extension Rain Gardens: <http://www.sustainability.uconn.edu/pdf/raingardenbroch.pdf>

-Landscape plants rated by deer resistance. Perdomo, Nitzsche, and Drake. Rutgers Cooperative Research & Extension Bulletin E271 <https://njaes.rutgers.edu/pubs/publication.asp?pid=E271>

Enjoy your new rain garden!



Finished Rain Garden on June 21, 2018  
Photo Courtesy of the staff at Whippanong Library