RAINGARDEN WORKSHOP SERIES

Clean Water, Healthy Habitats



URBAN GARDENER'S GUIDE

Our urban environment is dramatically different from the natural landscape that preceded the modern city. The forests, bogs, wetlands, and prairies that once dominated the metro area offered diverse plant communities as habitat for a huge variety of wildlife, including pollinators. They had their own unique way of handling and cycling water in an efficient manner that always delivered clean water. Nature has many lessons for us to learn and if we are perceptive enough, we can adapt these lessons to our own yards. The following gardening methods and tools are excellent ways to incorporate smart natural systems into your yard.

Native Plants for Pollinators

Populations of Minnesota's pollinators are at an all time low. The causes of this rapid decrease in numbers are complex and much has yet to be learned. We do know that there is a strong



correlation between widespread habitat loss and decline of pollinators. When planning your next gardening project, consider using plants that are native to the Midwest. Plants native to the Midwest provide food sources and nesting habitat for bees, butterflies and other beneficial pollinators. They have been growing here for thousands of years and are well adapted to the climate and soils of Minnesota. This makes them easier to establish and

maintain as garden plants. No chemical pesticides or fertilizers are required and once established, native plants are very drought tolerant.

We are lucky to live in a state with abundant ecosystem diversity. Minnesota is home to three major terrestrial biomes; the Northern Coniferus Forest (1), the Eastern Deciduous Forest (2), and the Western Prairies (3). Plants from these distinct biomes can be utilized in your garden as well. Fight uniformity and bland landscape design with native plants that evoke the qualities of our local landscape. Native plants can be an attractive planting alternative to common garden variety plants.

- For more information on Native Plants:
- Landscaping with Native Plants of Minnesota, by Lynn M. Steiner
 - Visit the Blue Thumb native plant selector : http://bluethumb.org/plants/



Monarch Butterfly

- Populations are at an all time low.
- 81% decline of migratory butterflies.
- 59% decline of milkweed.

Native Bumble Bees

- Becoming increasingly rare.
- No survey exists of populations of the 350 - 400 species of natives.

Honey Bees

- Suffering from widespread Colony Collapse Disorder.
- A 50% decline in managed hives. The need for commercial agriculture pollination is at an all time high.

Causes of Decline:

- Loss of habitat
- Pesticide use
- Disease
- Changing climate

Source Credit:

Spivak et al, The Plight of the Bees. The Xerces Society, Conserving Bumble Bees. Pleasant & Oberhauser, Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population.

NATIVE PLANTS FOR POLLINATORS

					BASIN	SLOPE	EDGE		SPRING			SUMMER		FALL	
Common Name	Latin Name	space	height	w	WM	м	DM	D	A	M	J	J	A	S	0
Anise hyssop	Agastache foeniculum	1'	3'			x	х				х	х	x	х	
Wild Garlic	Allium canadense	6″	18″		х	x	х	x		x	х	х			
Nodding Onion	Allium cernuum	6″	18″		х	x	х					х	x		
Tall Thimbleweed	Anemone virginiana	aaa	3'			x	х				х	х	x		
Wild Ginger	Asarum canadense	1'	6″		х	x	х		x	x	х				
Poke Milkweed	Asclepias exaltata	2'	5′			x	х				х	х			
Swamp Milkweed	Asclepias incarnata	1'	3'	х	х	x					х	х	x		
Common Milkweed	Asclepias syriaca	1'	3'		х	x	х	x			х	х	x		
Butterfly Milkweed	Asclepias tuberosa	18″	18″			x	х	х			х	х	x		
Heart-Leaved Aster	Aster cordifolius	1'	3'			x	х							x	х
Purple Dome Aster**	Aster novae-anglae 'PD'	2'	2'			x	х						x	x	х
Big-leaved Aster	Aster macrophyllus	aaa	2'		х	x	х	x					x	x	х
l ead Plant	Amorpha canascens	2'	3'			x	х	x		1	х	х	x		
Columbine	Aquilegia canadensis	1'	2'			x	х	x	x	x	х		1		
White Wild Indigo	Baptisia alba	3'	4'		х	x	х	x		1	х	х	1		
Blue False Indigo	Rantisia australis	2'	4'		х	x				x	х	х			
Tall Bellflower	Campanula americana	18"	5'		x	x	x			1		х	x	x	х
Native White Turtlehead	Chelone Ivonii	2'	5'	x	x							х	x	x	
Rose Turtlehead **	Chelone obligua	2'	3'	x	x	x	1		i —	i —		х	x		
Lance-Leaf Coreopsis	Coreopsis lancelota	1'	2'			1	x	x		x	x	х	x		
Purple Prairie Clover	Dalea purpurea	1'	2'			x	x	x				x	x	x	
Purple Coneflower	Echinacea purpurea	18"	$\underline{\lambda}'$		x	x	x					x	x	x	х
Rattlesnake Master	Ervngium vuccifolium	18"			x	x	x					x	x	x	
Little loe-Pye Weed **	Eupatorium dubium 'Little loe'	2'			x	x	x					x	x	x	
Boneset	Eupatorium perfoliatum	1'	 /	x	x							x	x	x	
Wild Geranium	Geranium maculatum	1'	1'			x	x		x	x	x	x			
Speezeweed	Helenium autumnale	2'	1	x	x								x	x	x
Button Blazing Star	l jatris aspera	1'	3'		~	x	x	x				x	x	x	x
Meadow Blazing Star	l intris ligulistylis	1'	5'		x	x	x	<u> </u>		i – –		~	x	x	
Prairie Blazing Star	l jatris nycnostachya	1'	<u></u> <u></u> <u></u> <u></u> <u></u>	x	x	x	~					x	x	x	
Great Blue Lobelia	l obelia sinhilitica	1'	2'	x	x	x	i			i —		x	x	x	x
Bradbury's Monarda	Monarda bradburniana	1'	2'			x	x			x	x	x			
Wild Bergamot	Monarda fistulosa	2'	1'		x	x	x	x				x	x	x	
Beardtongue	Penstemon digitalis	1'	2'		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	x	x	<u> </u>			x	x	<u> </u>		
lacob's Ladder	Polemonium rentans	1'	1'		x	x	x		x	x	x	~			
Mountain Mint	Pycnanthemum virginianum	1'	2'	x	x	x	x				x	x	x	×	
Prairie Cone Flower	Ratibida pinnata	18"	5'		~	x	x					x	x	x	
Orange Coneflower	Rudheckia fulgida	2'	2'		x	x	x			i – –		x	x	x	
Wild Colden Clow	Rudbeckia laciniata	2	7'		x	x	~					x	x	x	x
Bloodroot	Sanguinaria canadensis	6"	6"		x	x	x		x	x		~			
Solomon's Plume	Smilacina racemosa	18"	2'		x	x	x	x	x	x	x				
Zig-Zag Coldenrod	Solidago flevicaulis	10	2'	x	x	x	x	<u> </u>	<u> </u>				x	x	x
Stiff Coldenrod	Solidago rigida	1'	 /		x	x	x	x					x	x	x
Obio Spiderwort	Tradescantia obiensis	1'	2'		x	x	x	x		x	x	x	<u> </u>		
Blue Vervain	Verbena hastata	1'	5'	x	x	x		Ê		L ^		x	x		
Hoary Vervain	Verhena stricta	1'	2'			<u> </u>	x	x			x	x	x X	x	
Common Ironweed	Vernonia fasciculata	2'	<i>E'</i>		x	×		⊢^				x	Ŷ	x	
Culvers Root	Veronicastrum vernonia	2'	5'		x	x	x				x	x	x x	Ê	
Colden Alexanders		1'	2'		x	x	x		×	x I	x		⊢^─	\vdash	
Goraen / inclunice13			<u> </u>			. ^			<u> </u>	<u> </u>					



Purple Coneflower Echinacea purpurea



Little Joe-Pye Weed Eupatorium dubium 'Little Joe'



Meadow Blazing Star Liatris ligulostylis

DESIGNING WITH NATIVE PLANTS FOR POLLINATORS







Soil Moisture Tolerance

Moisture tolerance refers to the level of pooled water that specific species of plants will be able to tolerate within a raingarden. This is one of the more important plant characteristics required for your planting design because not all native plants can thrive in the basin of a raingarden where runoff will collect.

You can use the included plant chart to help you make decisions about plant material. 'W' refers to Wet, 'WM' is wetmesic, 'M' is mesic (or medium), 'DM' is dry-mesic, 'D' is dry.

The important thing to remember is that plants chosen for your raingarden basin are not wetland plants. Wetland plants need constantly wet conditions, similar to a wetland or the edge of a lakeshore. Raingarden basin plants are prairie plants that can tolerate temporary inundation, but not constant wetness. Plants that are good choices for raingarden basins are plants with a moisture tolerance of wet mesic ('WM').





Plantings in the basin must be able to withstand periods of innundation

Natives for Shade

There are many wonderful native plant species that will work for raingardens in shaded areas. Typically natives for shady areas are plants that would be found in woodland areas throughout our region. Shade tolerance can be a rather complex set of characteristics unique to each specie, but in general shade conditions receive less than 6 hours of sunlight. Also, the quality of the available sunlight will be defined by the time of day the area will recieve direct light. A shade to part shade garden will be more approporiate where there is some filtered direct light in the morning or late afternoon.







Heart-Leaved

Aster



Shady landscape planting created by EnergyScapes



RAINGARDENS

A raingarden is bowl-shaped garden that is designed to collect and infiltrate stormwater runoff from impervious surfaces such as roads, driveways, roofs, and sidewalks. Minnesota's lakes and rivers are increasingly polluted. Today, the greatest source of water pollution in urban and suburban areas is from stormwater runoff.



Stormwater runoff not only affects wildlife, but also affects our drinking water supply. The water that flows over the urban landscape picks up road salt, sediment, oils and heavy metals from vehicles, animal waste, fertilizers and organic wastes. Raingardens help capture runoff before it flows to the storm sewer system and helps to clean the water the way nature originally intended.



2009 Best Residential Raingarden, Earthwizards design



2009 Best Residential Raingarden, Earthwizards design



2009 Best Business Raingarden, 7 Sigma

For more information:

• *The Blue Thumb Guide to Raingardens* By Rusty Schmidt, Dan Shaw, and David Dods

• *Plants for Stormwater Design*, Vol. I, II By Rusty Schmidt, Dan Shaw

BOULEVARD GARDENS

Urban boulevards tend to rise up over time. This process is the result of soil erosion from neighboring properties. The rise eventually blocks water from flowing onto the boulevard, leaving thirsty grass and trees in the boulevard. What little rainwater falls on the boulevard quickly runs off the domed landform and is lost to the sidewalk and gutter. This also can cause dangerous ice problems in the winter.

First, the soil level should be lowered below the level of the sidewalk to encourage water flow into the boulevard. At this point, grass can be re-planted and it will thrive. Its new condition will allow it to utilize much more rainwater, making life easier for you and the trees in the boulevard.

If you decide to garden your boulevard, add 3" of shredded hardwood mulch. Make sure that the level of the mulch is below the level of the sidewalk. This ensures that water will flow into the boulevard.

Remember, many cities have height restrictions on boulevard plants. Most cities require under 36" and under 24" if you are on a corner. Check your local ordinances to be sure.



Typical Urban Boulevard



Raingarden Boulevard



Watershed-friendly Boulevards



For more information on Boulevard Gardens: • Metro Blooms Boulevard Garden Tips, www.metroblooms.org/guide_garden-tips.php • UMN Extension Boulevard Plant List, www.extension.umn.edu/distribution/horticulture/DG8464.html

PERMEABLE PAVEMENT

One of the problems with conventional paving such as concrete, asphalt, and even compacted gravel is the fact that they are impervious to water and contribute large amounts of stormwater runoff to our lakes and rivers. If you are planning any paving project in your future landscaping, consider using permeable pavements for your driveway, patio, parking area, or sidewalks.









Permeable paver surfaces look very similar to conventional paver surfaces, but construction of the subbase is much deeper and built to collect and store stormwater.

DRIVEWAY RUNOFF DIVERSION

Your driveway is often the greatest contributor of runoff to your local lake or river because the runoff that flows off of it has little or no chance to infilitrate before flowing to the street and storm sewer. Luckily, there are several methods of diverting runoff from of your driveway and into a raingarden. The stormwater that currently flows down your driveway or walking path falls into the channel and is redirected laterally to a new collection area.



Channel Drains



Installing a channel drain is a great method for diverting water to a raingarden and improving the environmental functionality of your property. Other diversion methods include rubber razors and speed bumps.

Rubber Razors

Speed Bumps



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