## Pollinator Plants for Stormwater Management

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PLSC 460: Spring 2021 Capstone, Dr. Cochran

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Stormwater management is an integral part to improving water quality in Maryland streams, rivers, and bays. Stormwater infrastructure is designed to either direct water runoff to engineered systems for infiltration or detained on site to slow down runoff. The most cost-effective way to reduce and treat stormwater runoff is through green infrastructure which relies on plants, soils, and natural systems to reuse, slow, or infiltrate stormwater on site.

In most situations, the designer or contractor selects plants from an approved list but the list of plants is often limited, which makes it difficult to design diverse and attractive sites. Plants included on the list should be aesthetically pleasing, easy to maintain and meet the cultural considerations for the site. A group of plants often not included on stormwater management plant lists are pollinator plants. Pollinator plants can be weedy in appearance and may require more maintenance to keep them in their space. However, they can be used effectively in stormwater projects that are in less visible areas such as the edges of parks or by selecting species that do not readily go to seed, and by avoiding invasive plants.

**Objective:** Develop a pollinator plant selection guide for three stormwater management areas: a parking lot island, building foundation planting, and open field.

### **Introduction to Stormwater Management**

**What is stormwater?** Precipitation that accumulates in natural and/or constructed storage and stormwater systems during and immediately following a storm event.

What is stormwater management? To reduce the amount of stormwater runoff into waterways and allow water to drain more naturally in urban ecosystems.

### Why is managing stormwater important?

- Urban areas have vast amounts of hard surfaces (streets, parking lots, rooftops) which increases stormwater runoff
- Runoff carries sediment, chemicals, debris, toxins, and pollutants to waterways
- Pollutants in waterways affect ecosystem balance and human activities

### Bioretention

- The daily activities of people cause pollutants to collect on impermeable surfaces and get washed into waterways during rain events. These pollutants include dirt, oil, fertilizers, yard waste and litter. Pollutants poison streams and rivers
- A micro-bioretention system captures contaminants in stormwater runoff by directing the stormwater to pass through a mixture of plant material, sand, soil, and organic matter.
- A well designed bioretention systems should drain within 24-48 hours after a rain event.

### Stormwater retention ponds

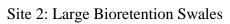
- Retention ponds are small permanent pools that collect stormwater, reducing the transfer of sediment and pollutants into the watershed.
- In addition to collecing stormwater, a retention pond can be aesthetically pleasing and provide wildlife habitat.

### Stormwater Site Assessment



Kentland Community Center, Landover, MD.

Issue	Need	STATE S
Erosion	Plants that are suited for slopes; quick to establish and fibrous root system	NULL I
Heat Island Effect	Heat tolerant plants	and the state of the state
Security	Low growing plants	and the second second
Weeds	Utilize plants that are quick to establish	and the second





Issue	Need
Erosion	Plants that are quick to establish and fibrous root system
Inundated soils	Plants must be able to withstand water between six inches and one foot deep
Building view	Plants that are aesthetically pleasing

## Site 3: Wet Pond

Issue	Need	
Permanent water pool	Plants must be able to withstand constant inundation of water of one foot or greater in depth	
Available labor	Low maintenance plants	WALL AND

### **Plant Palette List Criteria**

Plant selection based on these requirements:

- 1. Native: ~80%-100% native plant material
- 2. **Growth Habit**: Aggressive spread and establishment to compete with invasives
- 3. **Wildlife Attraction**: Attractive to native wildlife and pollinators (bees, butterflies, birds, hummingbirds)
- 4. Aesthetic Value: Aesthetically-pleasing and attractive to visitors
- 5. Low Maintenance
- 6. Deer Tolerance/Resistance
- 7. Soil Tolerance: Survivability in extreme dry/wet conditions



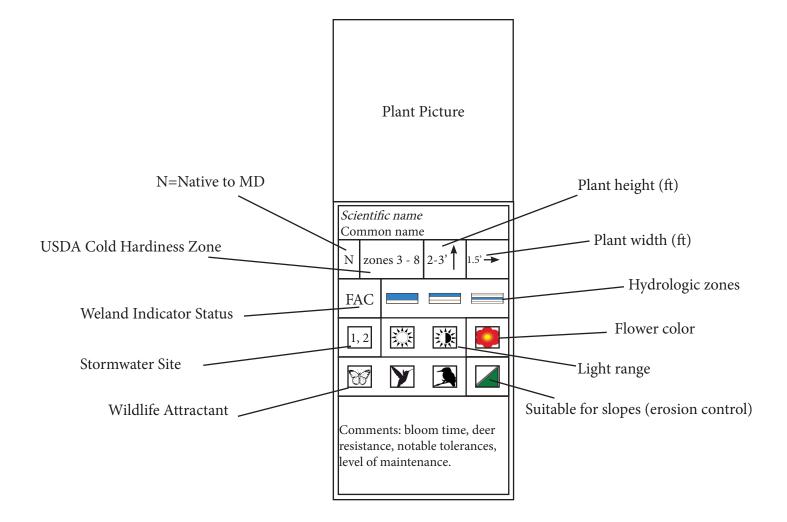
Photo credits: Adelaide Figurskey

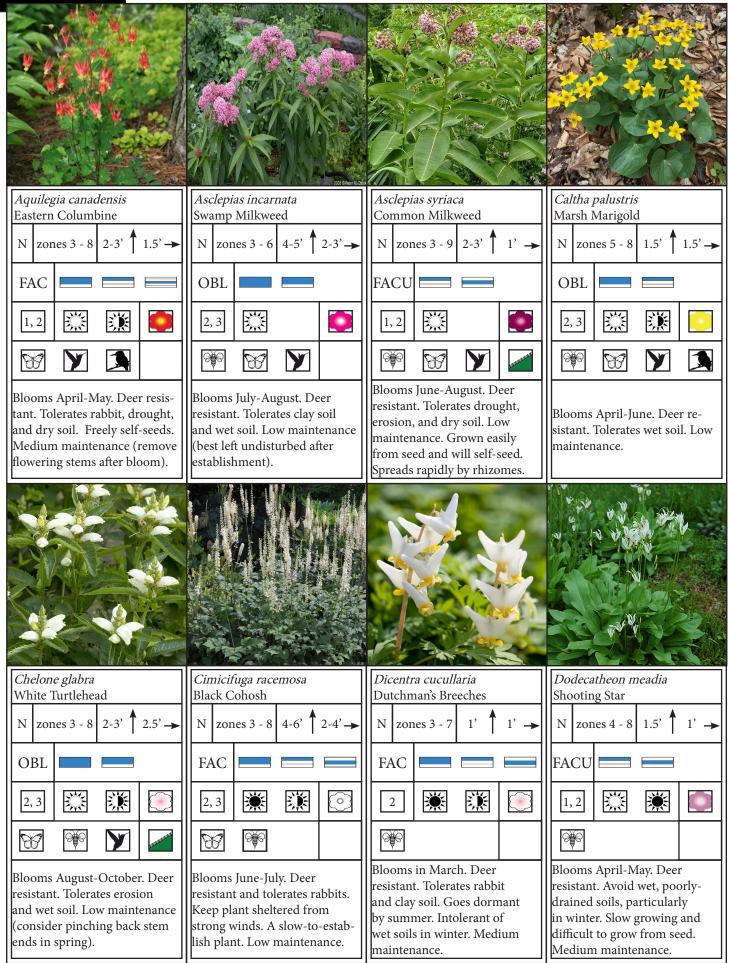
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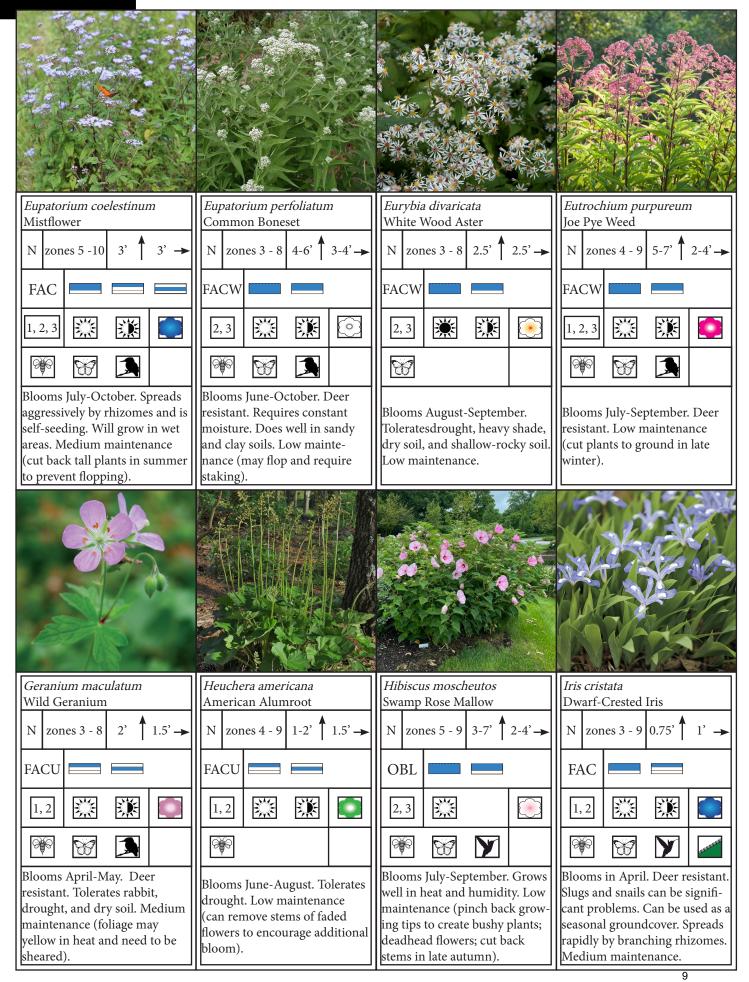
Stormwater Management Plant Palette Key										
Plant range			Landscape Value							
N	=	= Native		↑ I	Ieight	-	Sprea	d and a second	Suitable for slopes	
zones	x - x	USDA C	old Hardine	ess Zone		Stormv	vater S	Sites		Light Range
	Wile	dlife Attrac	tant		1	Parkin	ng Lot	Island		Full sun
Bees	Bees Betterflies		2	View I	View From Building		Part shade			
Birds			Humming	birds		Open	Field		X	Shade
				Flower	r Colo	r				
Blue			P	ink					White w	rith pink tinge
Burgu	ndy		P	urple					White, y	ellow-red centers
Greeni	ish white		R	ed					Yellow	
Greeni	ish yellow		s	ilvery pink					Yellowis	h green
Light p	pink		€ O V	Vhite					Violet b	lue
			Wetl	and Indicat	tor Sta	tus Rat	ing			
Indi	icator statu	ıs (abbrevia	ation)	Ecologi	cal de	al description (Lichvar and Minkin, 2008)				
OBL	Obligate			Almost	st always is a hydrophyte, rarely in uplands					
FACW		ve Wetland		,	y is a hydrophyte but occasionally found in uplands					
FAC	Facultativ				only occurs as either a hydrophyte or nonhydrophyte					
FACU		ve Upland			onally is a hydrophyte, but usually occurs in uplands					
FAC Upland Rarely is a hydrophyte, almost always in uplands   Hydrologic Zones										
				11901010	gic Z0					
Shallow	water	Regularly	inundated	Perio	dically dated	7		freque nunda		Upland slope, seldom or never innundated
Inundated below the normal pool to a depth of one foot. Shoreline of a pon stormwater wetla		-	to partly	s, satu	irated	by flo		ndation ers that cede.	Outer buffer of a pond or stormwater wetland. Withstand high runoff.	

# Plant Selection Quick Reference Key



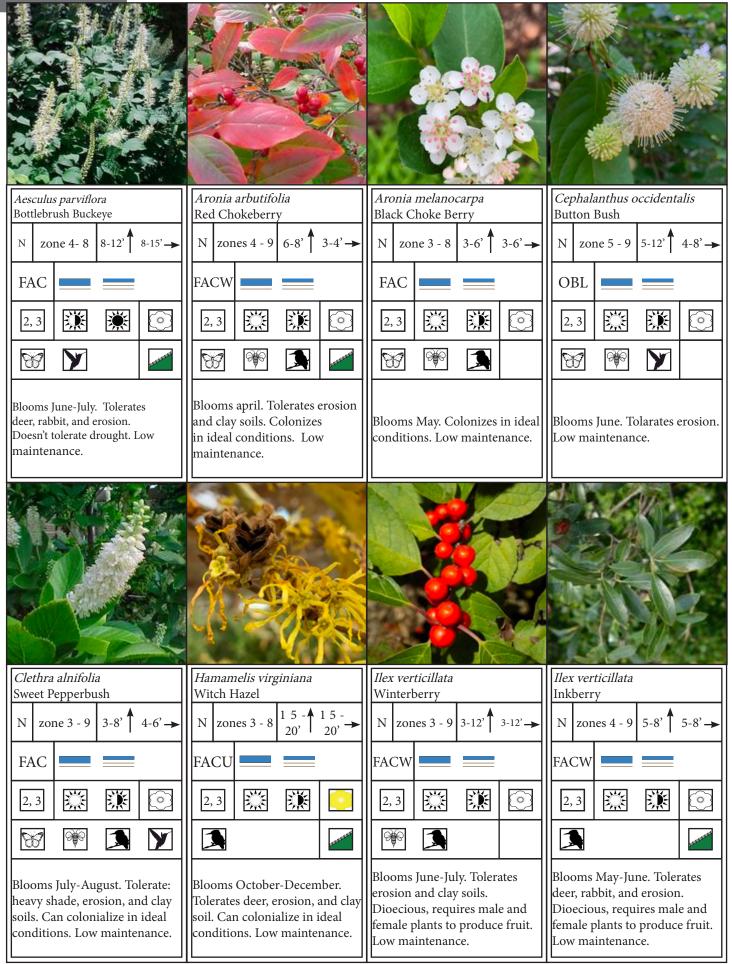


<i>Iris versicolor</i> Blue Water	<i>Lobelia cardinalis</i> Cardinal Flower	<i>Lobelia siphilitica</i> Great Blue Lobelia	<i>Lupinus perennis</i> Lupine
N zones 3 - 9 2.5' ↑ 2.5' →	N zones 3 - 9 2-4' ↓ 1-2' →	N zones 4 - 9 2-3' ↑ 1.5' →	N zones 3 - 8 .6-2' ↑ 1.5' →
OBL	FACW	FACW	FACU =
1, 2, 3	2,3	2,3	1,2
	<b>* *</b>	<b>F</b>	🕅 🕅 🕅
Blooms May-June. Deer resistant. Tolerates wet soil and may be grown in shallow standing water. Low maintenance.	Blooms July-September. Deer resistant. Requires constant moisture. Tolerates rabbit, wet soil, and periodic flooding. Low maintenance.	Blooms July-September. Deer resistant. Tolerates heavy shade and wet soil. Low maintenance (divide in spring as needed; may self-seed).	Blooms May-June. Deer resistant. Medium drought tolerance. Prefers acidic soil. Does not tolerate high alkalinity or water-logged soils. Nitrogen-fixing.
<i>Oclemena nemoralis</i> Bog Aster	<i>Packera aurea</i> Golden Ragwort	<i>Penstemon digitalis</i> Foxglove Beardtongue	<i>Pontederia cordata</i> Pickerel Weed
N zones 3 - 8 .5-2' ↑.5-1'→	N zones 3 - 8 .5-3' ↑ 1.5' →	N zones 3 - 8 3-5' ↑ 2' →	N zones 3 - 10 2-4' ↑ 2' →
OBL	FACW	FAC	OBL
2,3	1, 2, 3	1,2	2,3
<b>* *</b>	<b>F</b>	F S >	<b>F</b>
Blooms June-September. Requires consistent moisture and does not tolerate drought.	Blooms in April. Freely self- seeds. Tolerates wet conditions. Medium maintenance (remove flowering stems after bloom/ seed dispersal).	Blooms April-June. Deer resistant. Tolerates drought, dry soil, and clay soil. Avoid wet, poorly drained soils. Medium maintenance.	Blooms June-October. Medium maintenance (rhizomes spread rapidly to form colonies).

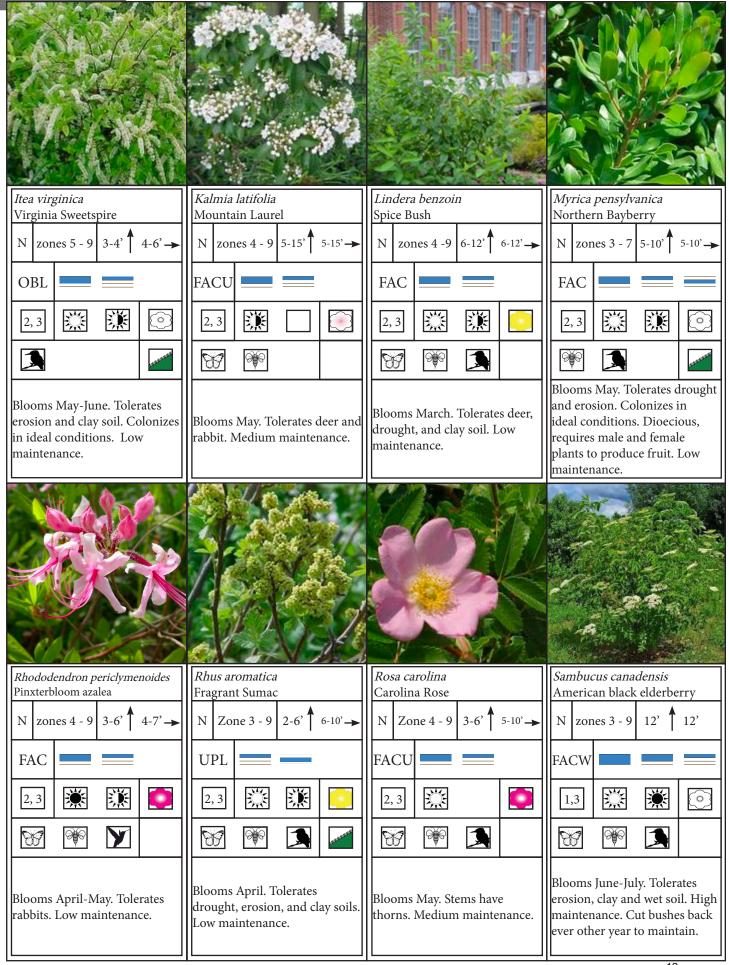


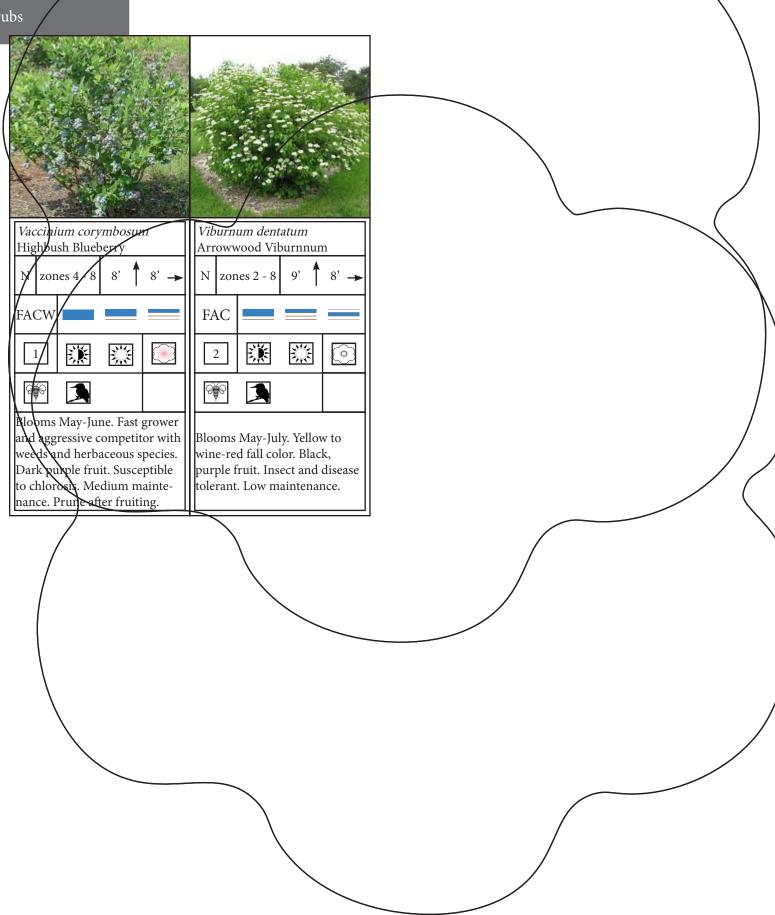
Rudbeckia hirta Black-Eyed Susan	<i>Rudbeckia laciniata</i> Cutleaf Coneflower	<i>Solidago drummondii</i> Goldenrod	<i>Symphyotrichum cordifolium</i> Heart-Leaved Aster
N zones 3 - 7 2-3' $1-2' \rightarrow$		N zones 5 - 8 2-3' $2-3' \rightarrow$	N zones 3 - 8 2-5' $2' \rightarrow$
FACU	FACW	FACU	FACU — — ==
1, 2, 3	2,3	2,3	2,3
Blooms June-September. Tolrates deer, drought and clay soil. Can self-seed. Low maintenance.	Blooms July-September. Can spread aggressively and tolerates deer. Medium maintenance.	Blooms August-September. Tolerates deer, drought and poor soil textures. Low maintenance.	Blooms August-September. Can aggressively self-seed. Low maintenance.
<i>Symphyotrichum novae-angliae</i> New England Aster	<i>Symphyotrichum novi-belgii</i> New York Aster	<i>Vernonia noveboracensis</i> New York Ironweed	<i>Zizia aurea</i> Golden Alexander
N zones 4 - 8 3-6' 2-3' -	N zones 4 -8 1-1.5' 1-2' →	N zones 5 - 9 4-6' ↑ 3-4'→	N zones 3 - 8 2-3'  2' →
FACW	FACW	FACW	FAC
2,3	2,3	2, 3	2,3
Blooms August-September. Ideal conditions can self-seed agressively. Tolernates clay soils Low maintenance.	Blooms August-September. Tolernates deer and rabbit. Low maintenance.	Blooms August-September. Tolerates deer and wide range of soils. Can agressively self- seed. Low maintenance.	Blooms May-June. Ideal conditions can agressively self- seed. Medium maintenance.

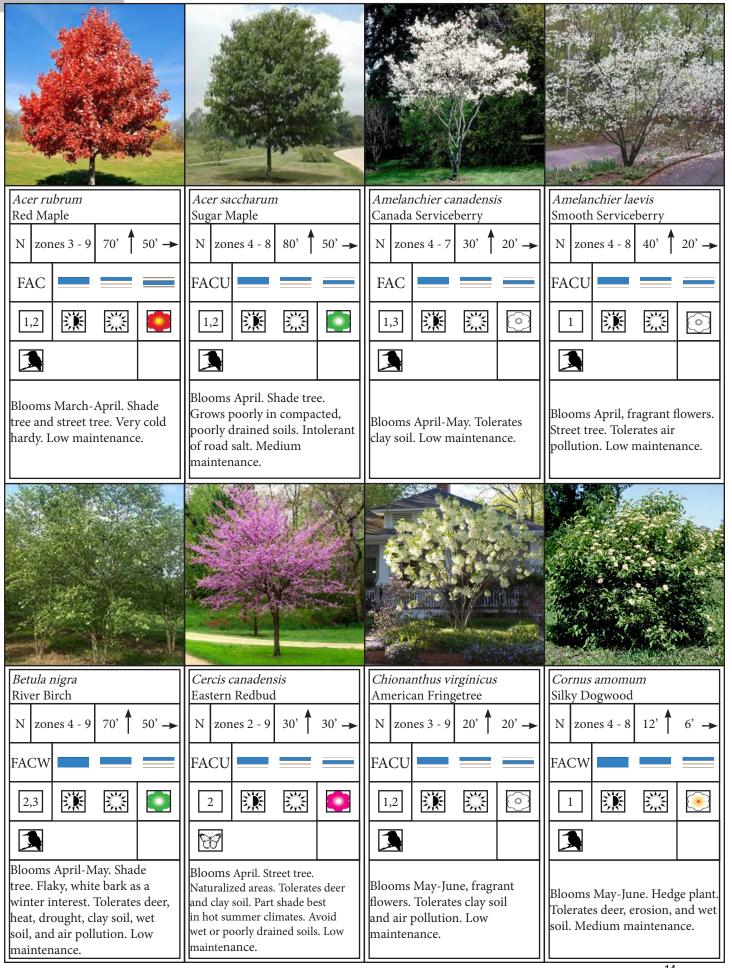
### Shrubs



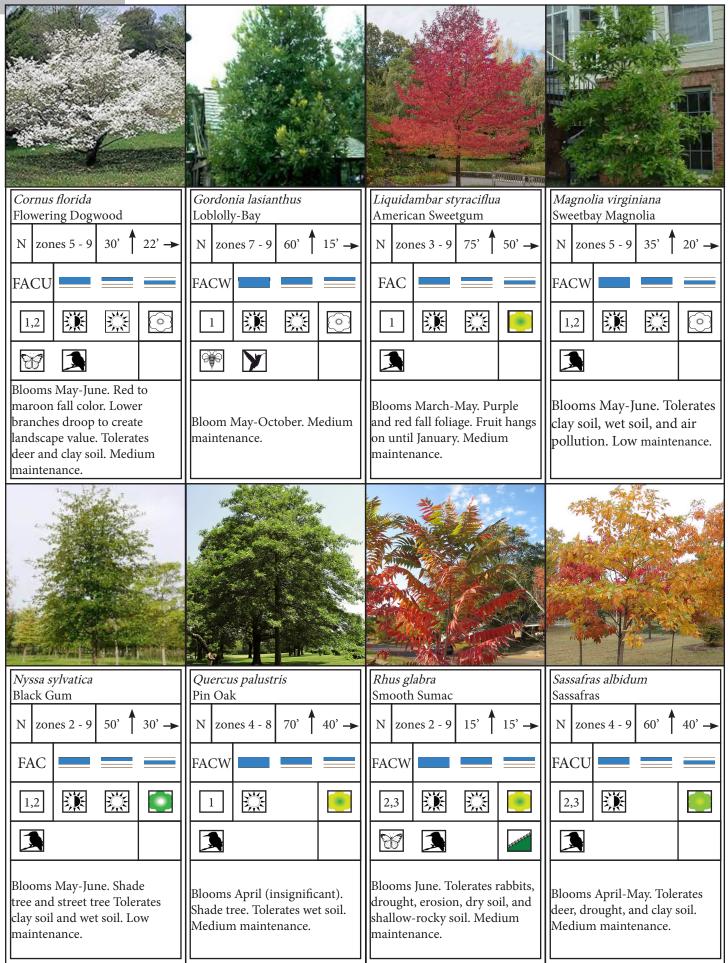
### Shrubs

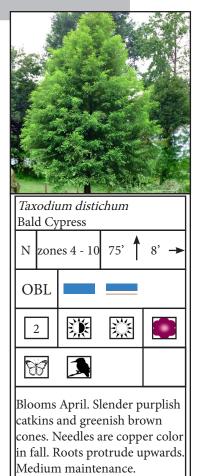




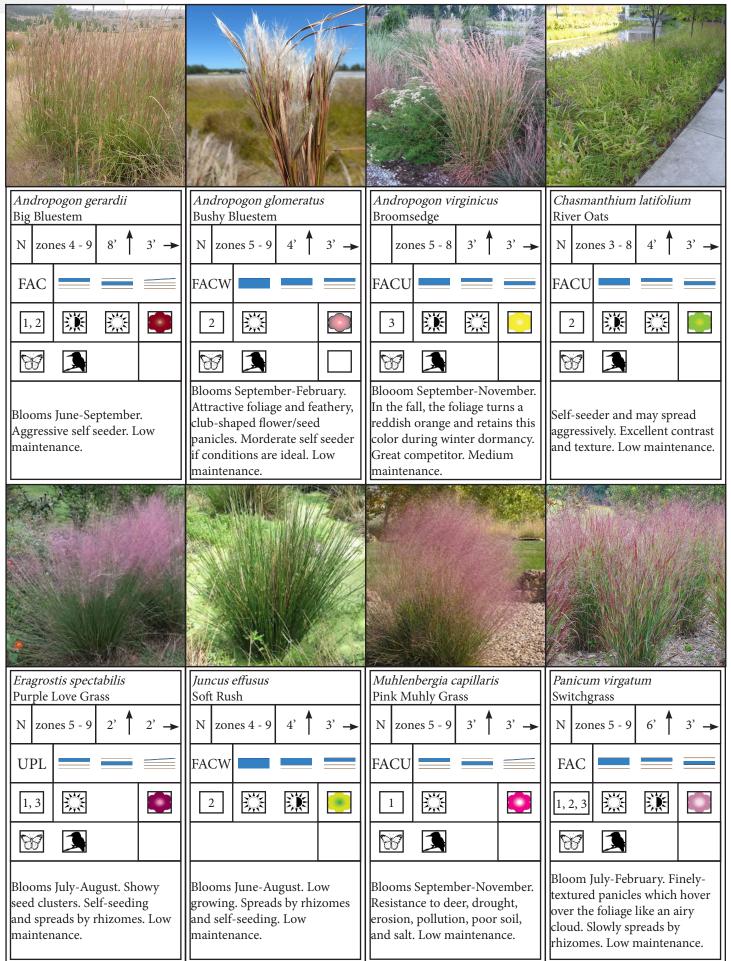


### Trees





#### Grasses



### Grasses

