

*From (Jacobson 2006)*

The following section provides information on species that occur in various wetland and upland communities. The listings contain common species that represent general community types. Most of the species are commercially available but it is a good idea to check with vendors periodically to make sure. If certain species are not available, some vendors can suggest substitutes. If you desire species that are not commonly available, you may still be able to obtain them if you communicate your wish list to vendors in advance. They are often able to have seed collected given a growing season lead-time. It is advisable to work with vendors that specialize in native wetland and upland plant materials.

The tables are intended as a planning tool for developing restoration plans. Not all of the information in the Plant Community Tables needs to go into the plan documents. For planning purposes, the tables include information from the USFWS Indicator Key for Region 3. Also included is information about the ecological succession level of each species. This information is somewhat arbitrary because some herbaceous species are found in grasslands at a high succession level and in woodlands at the middle succession level. The information is, however, useful because planting mixes have been developed to include species that are early, middle and late successional with the intent that many early and some middle successional species will fade out as the late successional species establish. The early and middle successional species may become niche specific and only re-expand on a site if there is a disturbance in the community.

In the plan documents you will have to include the zone(s) being planted, the species being planted, whether the species is being installed as seed, plant or pre-vegetated mat, the quantity, location, spacing and depth (if in the water).

### ***Indicator Definitions (USFWS Wetland Indicator Key For Region 3):***

**OBL = Obligate Wetland** - almost always occurring in a wetland (> 99% probability)

**FACW = Facultative Wetland** - Usually occurs in wetland (67% to 99% probability)

**FAC = Facultative** - equally occurs in wetlands and non-wetlands (34% to 66% probability)

**FACU = Facultative Upland** - usually occurs in non-wetlands (67% to 99% probability)

**UPL = Obligate Upland** - almost always occurs in uplands (> 99% probability)

### ***Succession Definitions:***

**E = Early successional.** Species is an annual or biennial.

**M = Middle successional.** Species is a short term perennial or subdominant in the plant community. They generally establish in two years. Most shrubs in forested communities are listed as middle successional.

**L = Late successional.** Species is a dominant on a site. They are generally slow to establish from seed (3-5 years).

### ***Zone Definitions:***

**A = Aquatic** – Plants are submerged entirely except for flowering parts. They may be floating or rooted and will not survive significant dry-down conditions. Aquatic plants are established as tubers or bulbs, rooted plants, plant fragments, or as pre-vegetated mats.

**E = Emergent** – Plants are partially submerged with leaves, stems and flowering parts partially or entirely out of the water. They can often grow under saturated conditions and may survive short periods of dry-down. Emergent species are generally installed as plants or pre-vegetated mats because they are planted in the water. When planted in the water, they need to have a portion of their leaves or stems above the water surface or they will drown. If seeded, the seed should be placed either on a mud flat or at the water's edge.

**S = Saturated** – Soils are saturated most of the year, plants will tolerate periodic flooding and dry-down periods. Species categorized as "Saturated" should be planted at the water's edge. Many species can be established as seed. However, a number of desirable species are only available as plants or pre-vegetated mats.

**M = Moist** – Soils are saturated seasonally with flooding in the spring and dry-down in the summer. Most species are established as seed.

**MZ = Mesic** – Upland soils may be saturated for short periods of time but are generally dry. Many mesic species will tolerate saturated and moist soil conditions for extended periods of time. Most species are established as seed.

**D = Dry** – Upland soils are generally dry except for after spring snowmelt or briefly after heavy rains.

### ***Installation Definitions:***

**TB = Plant (tuber/bulb)** – Aquatic plants such as lilies are generally available as tubers or bulbs. They are planted by tying a rock to the tuber/bulb with a rubber band or placed in a loose mesh, weighted, bag and dropped into the water, usually at a depths ranging from 2 to 6.6 feet.

**FP = Plant (floating)** – Aquatic plants such as pond weeds that are free floating or loosely rooted in the bottom substrate. Plants are obtained as floating fragments that are placed directly in the water. Commercial availability of floating species is limited.

**P = Plant** – All emergent and terrestrial herbaceous and woody plants that are available as seedlings and rooted aquatic plants such as wild celery that must be planted in the bottom substrate.

**PVM = Pre-vegetated mats** – Consist of plants that have been pre-grown in coconut fiber mats that are staked into the substrate. Pre-vegetated mats contain plants that are larger in size than seedlings. Plants are firmly rooted into the mats and cannot easily be pulled up by geese or dislodged by wave action or current.

**S = Seed** – Species that are generally established from seed.

**SB = Seedbank** – Species that will establish on their own from seedbank or other natural dispersal mechanism, generally are not included in seed mixes or as live plants.

**TP = Transplant** – Refers to species or materials such as sphagnum moss that are salvaged from a construction project, or obtained (under permit) from wild sources and transplanted to the new restoration site.

**LS = Live Stake** – A number of woody species such as willows can be installed as live stakes. These are dormant cuttings stuck directly into the ground. Conditions must be wet and materials must be installed early in the season (April to mid-May).

**Shallow Open Water Communities (Type 5)** - All species are established as live plants or tubers. Due to limited commercial availability of many of these species, it is best to check with suppliers well in advance of specifying them on a project. Most of these species will spread vigorously once they are installed. Therefore, clusters or colonies of plants can be spread throughout the site and they will expand from there. The number of clusters or colonies of individual species established on a site will vary depending on the size of the project.

**Species Recommendations:**

**Lilies** - Colonies of lily pads can be established by placing 15-20 tubers/bulbs in a 20' x 20' area at a depth of 4-6 feet.

**Pondweeds & Wild Celery** – Common methods to establish pondweeds and wild celery are to have them grown out in pre-vegetated mats or containers that are planted into the substrate at depths of 3-6.6 feet.

**Floating Plants** - Floating species may root loosely in the substrate from nodes in their stems or they may just float freely in the water. Five to ten pounds of material can be placed directly into the water or split into 1-2 lb units and placed. Small weights (similar to those used to anchor aquarium plants) can be used to anchor the material to the substrate.

<b>Shallow, Open Water Communities – Type 5 (generally water depth of 3 feet to 6.6 feet)</b>					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Water shield	Brasenia schreberi	OBL	L	A	TB
Coontail	Ceratophyllum demersum	OBL	M	A	FP
Muskgrass	Chara vulgaris	OBL	M	A	FP
Elodea	Elodea canadensis	OBL	M	A	FP
Lotus	Nelumbo lutea	OBL	L	A	TB
Yellow water lily	Nuphar lutea	OBL	L	A	TB
White water lily	Nymphaea odorata	OBL	L	A	TB
Large-leaved pondweed	Potamogeton amplifolius	OBL	L	A	FP
Illinois pondweed	Potamogeton illinoensis	OBL	L	A	FP
Floating-leaved pondweed	Potamogeton natans	OBL	L	A	FP
Sago pondweed	Potamogeton pectinatus	OBL	L	A	FP
Yellow water crowfoot	Ranunculus flabellaris	OBL	L	A	FP
White water crowfoot	Ranunculus longirostris	OBL	L	A	FP
Bladderwort	Utricularia macrorhiza	OBL	L	A	FP
Wild celery	Vallisneria americana	OBL	M	A	P

**Deep & Shallow Marsh Communities (Type 3 & 4)** - Most species are established as live plants or tubers. It is recommended that at least ten species should be installed, more if possible. Due to limited commercial availability of some of these species, it is best to check with suppliers well in advance of specifying them on a project. Most of these species will spread vigorously once they are installed. Therefore, clusters or colonies of plants can be spread throughout the site and they will expand from there.

**Species Recommendations:**

**Lilies** - Colonies of lily pads can be established by placing 15-20 tubers/bulbs in a 20' x 20' area at a depth of 4-6 feet.

**Pondweeds & Wild Celery** – Common methods to establish pondweeds and wild celery are to have them grown out in pre-vegetated mats or containers that are planted into the substrate at depths of 3-6.6 feet. Three to five mats should be placed in a 10' x 10' area.

**Floating Plants** - Floating species may root loosely in the substrate from nodes in their stems or they may just float freely in the water. Five to ten pounds of material can be placed directly into the water or split into 1-2 lb units and placed. Small weights (similar to those used to anchor aquarium plants) can be used to anchor the material to the substrate.

**Emergent Aquatics** – The zone where these species are planted ranges from saturated soils to several feet deep. Some species prefer saturated soils and some will grow in deep water. For example, pickerel weed will grow in deeper water but will die out if placed in a saturated soil zone. Bulrushes will grow in both deep and shallow water. Most of the sedges prefer shallower water and saturated soils. If species such as hard-stem bulrush are being used to provide shoreline protection they should be planted more densely. The State of Minnesota emergent mix was developed for large projects where live plants are not economical. It can be sown at the edge of the water. Plants will spread into the water over time.

Deep Marsh Communities – Type 4 (generally water depths from 6 inches to 3 feet)					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Water plantain	<i>Alisma subcordatum</i>	OBL	M	E	P, PVM
Water shield	<i>Brasenia schreberi</i>	OBL	L	A	TB
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	P, PVM
Bottlebrush sedge	<i>Carex comosa</i>	OBL	L	E	P, PVM
Porcupine sedge	<i>Carex hystericina</i>	OBL	L	E	P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	P, PVM
Coontail	<i>Ceratophyllum demersum</i>	OBL	M	A	FP
Rattlesnake manna grass	<i>Glyceria canadensis</i>	OBL	M	E	P, PVM
Reed manna grass	<i>Glyceria grandis</i>	OBL	L	E	P, PVM
Soft rush	<i>Juncus effusus</i>	OBL	M	E	P, PVM
Yellow water lily	<i>Nuphar lutea</i>	OBL	L	A	TB
White water lily	<i>Nymphaea odorata</i>	OBL	L	A	TB
Water smartweed	<i>Polygonum amphibium</i>	OBL	E	E	P, PVM
Pickerelweed	<i>Pontederia cordata</i>	OBL	L	E	P, PVM
Floating-leaved pondweed	<i>Potamogeton natans</i>	OBL	L	A	FP
Broad-leaved arrowhead	<i>Sagittaria latifolia</i>	OBL	M	E	P, PVM
Hard-stem bulrush	<i>Scirpus acutus</i>	OBL	L	E	P, PVM
River bulrush	<i>Scirpus fluviatilis</i>	OBL	L	E	P, PVM
Three-square bulrush	<i>Scirpus pungens</i>	OBL	L	E	P, PVM
Soft-stem bulrush	<i>Scirpus validus</i>	OBL	M	E	P, PVM
Giant bur-reed	<i>Sparganium eurycarpum</i>	OBL	L	E	P, PVM
Broad-leaved cattail	<i>Typha latifolia</i>	OBL	L	E	SB
Wild rice	<i>Zizania aquatica</i>	OBL	L	E	P, PVM

Shallow Marsh Communities – Type 3 (Saturated soils to water depths up to 6 inches)					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Sweet flag	<i>Acorus calamus</i>	OBL	L	E	S, P, PVM
Water plantain	<i>Alisma subcordatum</i>	OBL	M	E	S, P, PVM
Indigo bush	<i>Amorpha fruticosa</i>	FACW	L	S	P
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
Water Arum	<i>Calla palustris</i>	OBL	M	E	P, PVM
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	P, PVM
Bottlebrush sedge	<i>Carex comosa</i>	OBL	L	E	S, P, PVM
Porcupine sedge	<i>Carex hystericina</i>	OBL	L	E	S, P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Rattlesnake manna grass	<i>Glyceria canadensis</i>	OBL	M	E	S, P, PVM
Reed manna grass	<i>Glyceria grandis</i>	OBL	L	E	S, P, PVM
Knotted rush	<i>Juncus nodosus</i>	OBL	L	E	S, P, PVM
Torrey's rush	<i>Juncus torreyi</i>	FACW	M	E	S, P, PVM
Rice cut-grass	<i>Leersia oryzoides</i>	OBL	M	S	S, P, PVM
Water smartweed	<i>Polygonum amphibium</i>	OBL	E	E	S, P, PVM
Great water dock	<i>Rumex orbiculatus</i>	OBL	M	S	SB
Broad-leaved arrowhead	<i>Sagittaria latifolia</i>	OBL	M	E	S, P, PVM
Hard-stem bulrush	<i>Scirpus acutus</i>	OBL	L	E	S, P, PVM
River bulrush	<i>Scirpus fluviatilis</i>	OBL	L	E	S, P, PVM
Three-square bulrush	<i>Scirpus pungens</i>	OBL	L	E	P, PVM
Soft-stem bulrush	<i>Scirpus validus</i>	OBL	M	E	S, P, PVM
Giant bur-reed	<i>Sparganium eurycarpum</i>	OBL	L	E	S, P, PVM
Broad-leaved cattail	<i>Typha latifolia</i>	OBL	L	E	SB
Wild rice	<i>Zizania aquatica</i>	OBL	L	E	S, P, PVM

**Sedge Meadow, Wet Meadow, and Wet Prairie Communities (Type 2)** - These communities are established using a combination of seed mixes and live plugs or pre-vegetated mats. Most of these species will spread vigorously once they start growing. Therefore, clusters or colonies of plants can be spread throughout the site and they will expand from there.

- **Emergent Aquatic, Saturated & Moist Soil Plants** – Most of the sedges prefer shallower water and saturated soils. Clusters are spread throughout the zone where they are being planted.
- **Seed Mixes** – Note that one State seed mix is used for both the sedge meadow and wet meadow zone. A separate seed mix is used for wet prairie. Seed mixes are placed in the saturated and moist soil zones.

**Sedge Meadow Communities – Type 2 (saturated soils dominated by sedges)**

Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Canada anemone	<i>Anemone canadensis</i>	FACW	L	S	S, P, PVM
Angelica	<i>Angelica atropurpea</i>	OBL	L	S	SB
Marsh milkweed	<i>Asclepias incarnata</i>	OBL	L	S	S, P, PVM
New England aster	<i>Aster novae-angliae</i>	FACW	L	S	S, P, PVM
Red-stem aster	<i>Aster puniceus</i>	OBL	L	S	S, P, PVM
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, P, PVM
Beggar's ticks	<i>Bidens cernua</i>	OBL	E	S	SB
Fringed brome	<i>Bromus ciliata</i>	FACW	M	S	S, P, PVM
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	P, PVM
Bebb's sedge	<i>Carex bebbii</i>	OBL	L	S	S, P, PVM
Bottlebrush sedge	<i>Carex comosa</i>	OBL	L	E	S, P, PVM
Porcupine sedge	<i>Carex hystericina</i>	OBL	L	E	S, P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Wooly sedge	<i>Carex lasiocarpa</i>	OBL	L	S	P, PVM
Retrorsa sedge	<i>Carex retrorsa</i>	OBL	L	S	P, PVM
Pointed broom sedge	<i>Carex scoparia</i>	FACW	L	S	S, P, PVM
Awl-fruited sedge	<i>Carex stipata</i>	OBL	L	S	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Spike-rush	<i>Eleocharis acicularis</i>	OBL	M	S	S, P, PVM
Creeping spike-rush	<i>Eleocharis palustris</i>	OBL	M	S	S, P, PVM
Virginia wild-rye	<i>Elymus virginicus</i>	FACW-	M	S	S, P, PVM
Joe-pye weed	<i>Eupatorium maculatum</i>	OBL	L	S	S, P, PVM
Boneset	<i>Eupatorium perfoliatum</i>	FACW+	L	S	S, P, PVM
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	FACW-	M	S	S, P, PVM
Reed manna grass	<i>Glyceria grandis</i>	OBL	L	E	S, P, PVM
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	S	S, P, PVM
Sawtooth sunflower	<i>Helianthus grosseserratus</i>	FACW-	L	S	S, P, PVM
Sweet grass	<i>Hierochloe odorata</i>	FACW	L	S	P, PVM
Blue-flag iris	<i>Iris versicolor</i>	OBL	L	S	S, P, PVM
Baltic rush	<i>Juncus balticus</i>	OBL	L	S	P, PVM
Knotted rush	<i>Juncus nodosus</i>	OBL	L	S	P, PVM
Slender rush	<i>Juncus tenuis</i>	FAC	M	S	S, P, PVM
Torrey's rush	<i>Juncus torreyii</i>	FACW	M	S	P, PVM
Meadow blazingstar	<i>Liatris ligulistylis</i>	FACU+	L	S	S, P, PVM
Great blue lobelia	<i>Lobelia siphilitica</i>	FACW+	M	S	S, P, PVM
Spiked lobelia	<i>Lobelia spicata</i>	FAC	M	S	P, PVM
Common bugleweed	<i>Lycopus americanus</i>	OBL	E	S	SB
Wild mint	<i>Mentha arvensis</i>	FACW+	M	S	SB
Monkeyflower	<i>Mimulus ringens</i>	OBL	M	S	S, P, PVM
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM

Water pepper	<i>Polygonum hydropiperoides</i>	OBL	E	S	SB
Arrow-leaved tearthumb	<i>Polygonum sagittatum</i>	OBL	E	S	SB
Mountain mint	<i>Pycnanthemum virginianum</i>	FACW+	L	S	S, P, PVM
Green bulrush	<i>Scirpus atrovirens</i>	OBL	M	S	S, P, PVM
Woolgrass	<i>Scirpus cyperinus</i>	OBL	L	S	S, P, PVM
Soft-stem bulrush	<i>Scirpus validus</i>	OBL	M	E	S, P, PVM
Marsh skullcap	<i>Scutellaria galericulata</i>	OBL	E	S	SB
Giant goldenrod	<i>Solidago gigantea</i>	FACW	L	S	S, P, PVM
Blue vervain	<i>Verbena hastata</i>	FACW+	M	S	S, P, PVM
Ironweed	<i>Veronia fasciculata</i>	FACW	L	S	S, P, PVM
Culver's root	<i>Veronicastrum virginicum</i>	FAC	L	S	S, P, PVM

<b>Wet Meadow Communities – Type 2 (transitionally saturated soils dominated by grasses and composites)</b>					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Canada anemone	<i>Anemone canadensis</i>	FACW	L	S	S, P, PVM
Angelica	<i>Angelica atropurpa</i>	OBL	L	S	SB
Dogbane	<i>Apocynum</i> sp.	FAC	M	S	SB
Marsh milkweed	<i>Asclepias incarnata</i>	OBL	L	S	S, P, PVM
Panicked aster	<i>Aster lanceolatus</i>	OBL	L	S	S, P, PVM
New England aster	<i>Aster novae-angliae</i>	FACW	L	S	S, P, PVM
Red-stem aster	<i>Aster puniceus</i>	OBL	L	S	S, P, PVM
Flat-topped aster	<i>Aster umbellatus</i>	FACW	L	S	S, P, PVM
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
Beggar's ticks	<i>Bidens cernua</i>	OBL	E	S	SB
Fringed brome	<i>Bromus ciliata</i>	FACW	M	S	S, P, PVM
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	P, PVM
Bottlebrush sedge	<i>Carex comosa</i>	OBL	L	S	S, P, PVM
Porcupine sedge	<i>Carex hystericina</i>	OBL	L	E	S, P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Wooly sedge	<i>Carex lasiocarpa</i>	OBL	L	E	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Virginia wild-rye	<i>Elymus vriginicus</i>	FACW-	M	S	S, P, PVM
Joe-pye weed	<i>Eupatorium maculatum</i>	OBL	L	S	S, P, PVM
Boneset	<i>Eupatorium perfoliatum</i>	FACW+	L	S	S, P, PVM
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	FACW-	M	S	S, P, PVM
Reed manna grass	<i>Glyceria grandis</i>	OBL	L	S	S, P, PVM
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	S	S, P, PVM
Sweet grass	<i>Hierochloe odorata</i>	FACW	L	S	P, PVM
Sneezeweed	<i>Helenium autumnale</i>	FACW+	M	S	S, P, PVM
Sawtooth sunflower	<i>Helianthus grossesserratus</i>	FACW-	L	S	S, P, PVM
Jewelweed	<i>Impatiens capensis</i>	FACW	E	S	SB
Blue-flag iris	<i>Iris versicolor</i>	OBL	L	S	S, P, PVM
Slender rush	<i>Juncus tenuis</i>	FAC	M	S	S, P, PVM
Rice-cut grass	<i>Leersia oryzoides</i>	OBL	M	S	S, P, PVM

Meadow blazingstar	<i>Liatris ligulistylis</i>	FACU+	L	S	S, P, PVM
Great blue lobelia	<i>Lobelia siphilitica</i>	FACW+	M	S	S, P, PVM
Spiked lobelia	<i>Lobelia spicata</i>	FAC	M	S	P, PVM
Common bugleweed	<i>Lycopus americanus</i>	OBL	E	S	SB
Wild mint	<i>Mentha arvensis</i>	FACW+	M	S	SB
Monkeyflower	<i>Mimulus ringens</i>	OBL	M	S	S, P, PVM
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM
Water pepper	<i>Polygonum hydropiperoides</i>	OBL	E	S	SB
Arrow-leaved tearthumb	<i>Polygonum sagittatum</i>	OBL	E	S	SB
Mountain mint	<i>Pycnanthemum virginianum</i>	FACW+	L	S	S, P, PVM
Green bulrush	<i>Scirpus atrovirens</i>	OBL	M	S	S, P, PVM
Woolgrass	<i>Scirpus cyperinus</i>	OBL	L	S	S, P, PVM
Soft-stem bulrush	<i>Scirpus validus</i>	OBL	M	E	S, P, PVM
Marsh skullcap	<i>Scutellaria galericulata</i>	OBL	E	S	SB
Giant goldenrod	<i>Solidago gigantea</i>	FACW	L	S	S, P, PVM
Bog goldenrod	<i>Solidago uliginosa</i>	OBL	L	S	S, P, PVM
Hedge nettle	<i>Stachys palustris</i>	OBL	E	S	SB
Tall meadowrue	<i>Thalictrum dasycarpum</i>	FACW-	L	S	S, P, PVM
Blue vervain	<i>Verbena hastata</i>	FACW+	M	S	S, P, PVM
Ironweed	<i>Veronia fasciculata</i>	FACW	L	S	S, P, PVM
Culver's root	<i>Veronicastrum virginicum</i>	FAC	L	S	S, P, PVM

<b>Wet Prairie Communities – Type 2 (seasonally saturated soils in the prairie region of the state)</b>					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Big bluestem	<i>Andropogon gerardi</i>	FAC-	L	M, MZ, D	S, P, PVM
Canada anemone	<i>Anemone canadensis</i>	FACW	L	S	S, P, PVM
Angelica	<i>Angelica atropurpea</i>	OBL	L	S	SB
Dogbane	<i>Apocynum sp.</i>	FAC	M	S	SB
Marsh milkweed	<i>Asclepias incarnata</i>	OBL	L	S	S, P, PVM
Panicled aster	<i>Aster lanceolatus</i>	OBL	L	S	S, P, PVM
New England aster	<i>Aster novae-angliae</i>	FACW	L	S	S, P, PVM
Red-stem aster	<i>Aster puniceus</i>	OBL	L	S	S, P, PVM
Flat-topped aster	<i>Aster umbellatus</i>	FACW	L	S	S, P, PVM
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, P, PVM
Beggar's ticks	<i>Bidens cernua</i>	OBL	E	S	SB
Fringed brome	<i>Bromus ciliata</i>	FACW	M	S	S, P, PVM
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	P, PVM
Bottlebrush sedge	<i>Carex comosa</i>	OBL	L	E	S, P, PVM
Porcupine sedge	<i>Carex hystericina</i>	OBL	L	E	S, P, PVM
Woolly sedge	<i>Carex lasiocarpa</i>	OBL	L	S	S, P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Virginia wild-rye	<i>Elymus vriginicus</i>	FACW-	M	S	S, P, PVM



Joe-pye weed	<i>Eupatorium maculatum</i>	OBL	L	S	S, P, PVM
Boneset	<i>Eupatorium perfoliatum</i>	FACW+	L	S	S, P, PVM
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	FACW-	M	S	S, P, PVM
Reed manna grass	<i>Glyceria grandis</i>	OBL	L	E	S, P, PVM
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	S	S, P, PVM
Sneezeweed	<i>Helenium autumnale</i>	FACW+	M	S	S, P, PVM
Sawtooth sunflower	<i>Helianthus grosseserratus</i>	FACW-	L	S	S, P, PVM
Jewelweed	<i>Impatiens capensis</i>	FACW	E	S	SB
Blue-flag iris	<i>Iris versicolor</i>	OBL	L	S	S, P, PVM
Slender rush	<i>Juncus tenuis</i>	FAC	M	S	S, P, PVM
Sweet grass	<i>Hierochloe odorata</i>	FACW	L	S	P, PVM
Rice-cut grass	<i>Leersia oryzoides</i>	OBL	M	S	S, P, PVM
Meadow blazingstar	<i>Liatris ligulistylis</i>	FACU+	L	S	S, P, PVM
Tall blazingstar	<i>Liatris pycnostachya</i>	FAC-	L	M	S, P, PVM
Great blue lobelia	<i>Lobelia siphilitica</i>	FACW+	M	S	S, P, PVM
Spiked lobelia	<i>Lobelia spicata</i>	FAC	M	S	P, PVM
Common bugleweed	<i>Lycopus americanus</i>	OBL	E	S	SB
Prairie loosestrife	<i>Lysimachia quadriflora</i>	OBL	M	M	P, PVM
Winged loosestrife	<i>Lythrum alatum</i>	OBL	M	M	P, PVM
Wild mint	<i>Mentha arvensis</i>	FACW+	M	S	SB
Monkeyflower	<i>Mimulus ringens</i>	OBL	M	S	S, P, PVM
Switch grass	<i>Panicum virgatum</i>	FAC+	L	M	S, P, PVM
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM
Water pepper	<i>Polygonum hydropiperoides</i>	OBL	E	S	SB
Arrow-leaved tearthumb	<i>Polygonum sagittatum</i>	OBL	E	S	SB
Mountain mint	<i>Pycnanthemum virginianum</i>	FACW+	L	S	S, P, PVM
Green bulrush	<i>Scirpus atrovirens</i>	OBL	M	S	S, P, PVM
Woolgrass	<i>Scirpus cyperinus</i>	OBL	L	S	S, P, PVM
Soft-stem bulrush	<i>Scirpus validus</i>	OBL	M	E	S, P, PVM
Sprangletop	<i>Scolochloa festucacea</i>	OBL	M	S	S, P, PVM
Marsh skullcap	<i>Scutellaria galericulata</i>	OBL	E	S	SB
Giant goldenrod	<i>Solidago gigantea</i>	FACW	L	S	S, P, PVM
Indian grass	<i>Sorghastrum nutans</i>	FACU+	L	M	S, P, PVM
Prairie cord-grass	<i>Spartina pectinata</i>	FACW+	L	S	S, P, PVM
Hedge nettle	<i>Stachys palustris</i>	OBL	E	S	SB
Tall meadowrue	<i>Thalictrum dasycarpum</i>	FACW-	L	S	S, P, PVM
Blue vervain	<i>Verbena hastata</i>	FACW+	M	S	S, P, PVM
Ironweed	<i>Veronia fasciculata</i>	FACW	L	S	S, P, PVM
Culver's root	<i>Veronicastrum virginicum</i>	FAC	L	S	S, P, PVM

**Open Bog & Coniferous Bog Communities (Type 8)** - These communities are established using a combination of donor materials, transplants and live plugs. Clusters or colonies of plants can be spread throughout the site and they will expand from there. The number of clusters or colonies of individual species planted will vary depending on the size of the project.

**Aquatic, Saturated, & Moist Soil Plants** – Sphagnum moss will most likely be spread on the site from the impacted wetland site. Living sphagnum should be placed on the top of a layer of dead sphagnum. Live plants that are either purchased or transplanted can then be scattered throughout the site.

<b>Open Bog Communities – Type 8 (living sphagnum moss over acid peat, often floating, and stunted trees)</b>					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Bog rosemary	<i>Andromeda glaucophylla</i>	OBL	M	S	P
Water arum	<i>Calla palustris</i>	OBL	M	S	P, PVM
Woolly sedge	<i>Carex lasiocarpa</i>	OBL	M	S	P, PVM
Bog sedge	<i>Carex oligosperma</i>	OBL	M	S	P, PVM
Leatherleaf	<i>Chamaedaphne calyculata</i>	OBL	M	S	P
Showy lady-slipper	<i>Cypripedium reginae</i>	FACW+	L	S	P, TP
Sundew	<i>Drosera rotundifolia</i>	OBL	L	S	P
Three-way sedge	<i>Dulichium arundinaceum</i>	OBL	L	S	P, PVM
Tawny cottongrass	<i>Eriophorum virginicum</i>	OBL	L	S	P, PVM
Tamarack	<i>Larix laricina</i>	FACW	L	S	P
Labrador-tea	<i>Ledum groenlandicum</i>	OBL	M	S	P
Bog buckbean	<i>Menyanthes trifoliata</i>	OBL	M	S	P
Marsh muhly grass	<i>Muhlenbergia glomerata</i>	FACW+	L	S	P, PVM
Pitcher plant	<i>Sarracenia purpurea</i>	OBL	L	S	TP
Bog goldenrod	<i>Solidago uliginosa</i>	OBL	L	S	P, PVM
Sphagnum moss	<i>Sphagnum magellanicum</i>	OBL	L	A	TP
Steeplebush	<i>Spiraea tomentosa</i>	FACW	M	S	P
Poison sumac	<i>Toxicodendron vernix</i>	OBL	M	S	P
Broad-leaved cattail	<i>Typha latifolia</i>	OBL	M	S	SB
Large cranberry	<i>Vaccinium macrocarpon</i>	OBL	M	S	P
Small cranberry	<i>Vaccinium oxycoccos</i>	OBL	M	S	P

**Coniferous Bog Communities – Type 8 (sphagnum moss mat with larger trees dominating)**

Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Bog rosemary	<i>Andromeda glaucophylla</i>	OBL	M	S	P
Swamp birch	<i>Betula pumila</i>	OBL	M	S	P
Water arum	<i>Calla palustris</i>	OBL	M	S	P, PVM
Wooly sedge	<i>Carex lasiocarpa</i>	OBL	M	S	P, PVM
Bog sedge	<i>Carex oligosperma</i>	OBL	M	S	P, PVM
Leatherleaf	<i>Chamaedaphne calyculata</i>	OBL	M	S	P
Showy lady-slipper	<i>Cypripedium reginae</i>	FACW+	L	S	P, TP
Sundew	<i>Drosera rotundifolia</i>	OBL	L	S	P
Three-way sedge	<i>Dulichium arundinaceum</i>	OBL	M	S	P, PVM
Tawny cottongrass	<i>Eriophorum virginicum</i>	OBL	M	S	P, PVM
Tamarack	<i>Larix laricina</i>	FACW	L	S	P
Labrador-tea	<i>Ledum groenlandicum</i>	OBL	M	S	P
Bog buckbean	<i>Menyanthes trifoliata</i>	OBL	M	S	P
Black spruce	<i>Picea mariana</i>	FACW	L	S	P
Pitcher plant	<i>Sarracenia purpurea</i>	OBL	L	S	TP
Sphagnum moss	<i>Sphagnum magellanicum</i>	OBL	L	A	TP
Steeplebush	<i>Spiraea tomentosa</i>	FACW	M	S	P
Poison sumac	<i>Toxicodendron vernix</i>	OBL	M	S	P
Broad-leaved cattail	<i>Typha latifolia</i>	OBL	M	S	SB
Large cranberry	<i>Vaccinium macrocarpon</i>	OBL	M	S	P
Small cranberry	<i>Vaccinium oxycoccos</i>	OBL	M	S	P

**Shrub Carr, Alder Thicket, Hardwood & Coniferous Swamp Communities (Type 6 & 7)** - These communities are best established using a combination of seeding, live plants, live stakes and pre-vegetated mats. A basic wet meadow seed mixture may be used for groundlayer establishment. Later successional species can be installed as a combination of seed, plants or plugs, etc. Clusters or colonies of plants can be spread throughout the site and they will expand. The number of clusters or colonies of individual species planted will vary depending on the size of the project.

**Emergent, Saturated, & Moist Soil Plants** – Many of these species are not available as seed and will have to be installed as plants or transplants. Normally live plants are clustered. Clusters are spread throughout the zone where they are being planted.

<b>Shrub Carr Swamp Communities – Type 6 (saturated or seasonally flooded, dominated by tall deciduous shrubs)</b>					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Red-stem aster	<i>Aster puniceus</i>	OBL	E	S	P
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Stalk-grain sedge	<i>Carex stipata</i>	OBL	L	S	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Silky dogwood	<i>Cornus amomum</i>	FACW+	L	S	P
Red-osier dogwood	<i>Cornus stolonifera</i>	FACW	L	S	P
Joe-pye weed	<i>Eupatorium maculatum</i>	OBL	M	S	S, P, PVM
Marsh muhly grass	<i>Muhlenbergia glomerata</i>	FACW+	L	S	S, P, PVM
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM
Beaked willow	<i>Salix bebbiana</i>	FACW+	M	S	P, LS
Pussy willow	<i>Salix discolor</i>	FACW	M	S	P, LS
Sandbar willow	<i>Salix exigua</i>	FACW+	M	S	P, LS
Slender willow	<i>Salix gracilis</i>	FAC+	M	S	P, LS
Common elderberry	<i>Sambucus canadensis</i>	FACW-	M	S	P
Giant goldenrod	<i>Solidago gigantea</i>	FACW	M	S	S, P, PVM
Bog goldenrod	<i>Solidago uliginosa</i>	OBL	L	S	S, P, PVM
Meadowsweet	<i>Spiraea alba</i>	FACW+	M	S	P
Marsh fern	<i>Thelypteris palustris</i>	FACW+	L	S	P

**Alder Thicket Swamp Communities – Type 6 (saturated, poorly drained soils, dominated by alder)**

Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Speckled alder	<i>Alnus incana</i> ssp. <i>rugosa</i>	OBL	L	S	P
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Marsh marigold	<i>Caltha palustris</i>	OBL	L	S	P
Stalk-grain sedge	<i>Carex stipata</i>	OBL	M	S	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	M	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Crested shield fern	<i>Dryopteris cristata</i>	OBL	L	S	P
Rattlesnake manna grass	<i>Glyceria canadensis</i>	OBL	M	S	P, PVM
Common winterberry holly	<i>Ilex verticillata</i>	FACW+	M	S	P
Jewelweed	<i>Impatiens capensis</i>	FACW	E	S	SB
Sweet gale	<i>Myrica gale</i>	OBL	L	S	P
Sensitive fern	<i>Onoclea sensibilis</i>	FACW	L	S	P
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM
Dewberry	<i>Rubus hispidus</i>	FACW-	M	S	P
Common elderberry	<i>Sambucus canadensis</i>	FACW-	M	S	P
Giant goldenrod	<i>Solidago gigantea</i>	FACW	M	S	S, P, PVM
Sphagnum moss	<i>Sphagnum</i> sp.	OBL	L	S	TP
Meadowsweet	<i>Spiraea alba</i>	FACW+	M	S	P
Steeplebush	<i>Spiraea tomentosa</i>	FACW	M	S	P
Skunk cabbage	<i>Symplocarpus foetidus</i>	FACW	M	S	P
High bush cranberry	<i>Viburnum trilobum</i>	FACW+	M	S	P
Marsh blue violet	<i>Viola cucullata</i>	OBL	M	S	P
Northern violet	<i>Viola macloskeyi</i>	OBL	M	S	P

**Hardwood Swamp Communities – Type 7 (saturated soils, dominated by deciduous hardwood trees)**

Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Red maple	<i>Acer rubrum</i>	FAC	L	M	P
Speckled alder	<i>Alnus incana</i> ssp. <i>rugosa</i>	OBL	L	S	P
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	FACW-	L	M	P
Red-stem aster	<i>Aster puniceus</i>	OBL	L	S	P
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
Yellow birch	<i>Betula alleghaniensis</i>	FAC	M	M	P
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	OBL	L	S	S, P, PVM
Marsh marigold	<i>Caltha palustris</i>	OBL	L	S	P
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	E	S, P, PVM
Fox sedge	<i>Carex vulpinoidea</i>	OBL	E	S	S, P, PVM
Wood reedgrass	<i>Cinna latifolia</i>	FACW+	M	S	P, PVM
Red-osier dogwood	<i>Cornus stolonifera</i>	FACW	M	S	P
Joe-pye weed	<i>Eupatorium maculatum</i>	OBL	L	S	S, P, PVM
Black ash	<i>Fraxinus nigra</i>	FACW+	L	S	P
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	M	S, P, PVM
Jewelweed	<i>Impatiens capensis</i>	FACW	E	S	SB
Ostrich fern	<i>Matteuccia struthiopteris</i>	FACW	L	S	P
Marsh muhly grass	<i>Muhlenbergia glomerata</i>	FACW+	L	S	P, PVM
Sensitive fern	<i>Onoclea sensibilis</i>	FACW	L	S	P
Cinnamon fern	<i>Osmunda cinnamomea</i>	FACW	L	S	P
Fowl bluegrass	<i>Poa palustris</i>	FACW+	M	S	S, P, PVM
Quaking aspen	<i>Populus tremuloides</i>	FAC	M	S	P
American black currant	<i>Ribes americanum</i>	FACW	M	S	P
Common elderberry	<i>Sambucus canadensis</i>	FACW-	M	S	P
Water parsnip	<i>Sium suave</i>	OBL	M	S	P
Giant goldenrod	<i>Solidago gigantea</i>	FACW	M	M	S, P, PVM
Bog goldenrod	<i>Solidago uliginosa</i>	OBL	L	S	P, PVM
Meadowsweet	<i>Spiraea alba</i>	FACW+	M	S	P
Skunk cabbage	<i>Symplocarpus foetidus</i>	OBL	M	S	P

Coniferous Swamp Communities – Type 7 (saturated soils, dominated by lowland coniferous trees & ferns)					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Wild sarsaparilla	<i>Aralia nudcaulis</i>	FACU	M	S	P
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	FACW-	L	M	P
Yellow birch	<i>Betula alleghaniensis</i>	FAC	M	M	P
Black ash	<i>Fraxinus nigra</i>	FACW+	L	S	P
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	M	S, P, PVM
Tamarac	<i>Larix laricina</i>	FACW	L	S	P
Cinnamon fern	<i>Osmunda cinnamomea</i>	FACW	L	S	P
Royal fern	<i>Osmunda regalis</i>	OBL	L	S	P
Marsh fern	<i>Thelypteris palustris</i>	FACW+	L	S	P
White cedar	<i>Thuja occidentalis</i>	FACW	L	S	P
Poison sumac	<i>Toxicodendron vernix</i>	OBL	M	S	P
Northern violet	<i>Viola macloskeyi</i>	OBL	M	S	P

**Floodplain Forest Communities (Type 1)** - Planting floodplain forest is a relatively new practice. A common way of establishing floodplain forest is to establish an early successional cover of grasses from seed and either let the woody species seed in on their own (assuming an adjacent seed source) or to establish woody species as seed. Floodplain forest species generally regenerate themselves after a significant flood event (a single stage event). Therefore, different age groups of trees and shrubs are generally not found.

- **Emergent, Saturated, & Moist Soil Plants** – Areas of wet soils within floodplain forest are typically planted with seed. Containerized plants can also be used for establishing emergent species.
- **Seed Mixes** – State riverine mixes have been developed for establishing diversity within floodplain forest restorations.

Floodplain Forest Communities – Type 1 (seasonally flooded alluvial soils, dominated by mature deciduous hardwood trees)					
Common Name	Botanical Name	Indicator	Succession	Zone	Installation
Box elder	<i>Acer negundo</i>	FACW-	E	S	SB
Silver maple	<i>Acer saccharinum</i>	FACW	L	S	S, SB
American slough grass	<i>Beckmannia syzigachne</i>	OBL	E	S	S, PVM
River birch	<i>Betula nigra</i>	FACW	L	S	S, SB
Fringed brome	<i>Bromus ciliata</i>	FACW	M	S	S, P, PVM
Slough sedge	<i>Carex atherodes</i>	OBL	L	E	S, P, PVM
Gray's sedge	<i>Carex grayi</i>	FACW+	M	M	P, PVM
Lake sedge	<i>Carex lacustris</i>	OBL	L	E	S, P, PVM
Tussock sedge	<i>Carex stricta</i>	OBL	L	S	S, P, PVM
Honewort	<i>Cryptotaenia canadensis</i>	FAC	M	M	P, TP, SB
Riverbank wild rye	<i>Elymus riparius</i>	FACW	M	S	S, P, PVM
Virginia wild rye	<i>Elymus virginicus</i>	FACW-	M	S	S
Green ash	<i>Fraxinus pennsylvanica</i>	FACW	L	M	S, SB
Rattlesnake grass	<i>Glyceria canadensis</i>	OBL	L	E	S, P, PVM
Giant manna grass	<i>Glyceria grandis</i>	OBL	M	S	S, P, PVM
Fowl manna grass	<i>Glyceria striata</i>	OBL	M	M	S, P, PVM
Jewelweed	<i>Impatiens capensis</i>	FACW	E	S	SB
Wood nettle	<i>Laportea canadensis</i>	FACW	E	M	SB
Cardinal flower	<i>Lobelia cardinalis</i>	OBL	M	M	S, P, PVM

Fowl bluegrass	Poa palustris	FACW+	M	S	S, P, PVM
Eastern cottonwood	Populus deltoides	FAC+	L	M	S, SB
Wild goldenglow	Rudbeckia laciniata	FACW+	M	M	S, P, PVM
Black willow	Salix nigra	OBL	L	S	S, SB
River bulrush	Scirpus fluviatilis	OBL	L	S	S, P, PVM
American elm	Ulmus americana	FACW-	L	M	S, SB
Riverbank grape	Vitis riparia	FACW-	M	M	P

**Forest Communities** - Forested communities will most likely require staged planting to restore as some vegetation cannot tolerate full sunlight. Initially, an understory containing woodland edge species can be established and the trees and shrubs can be planted. Once a canopy starts to develop some of the more shade requiring species can be established (this may take some years). Some of the less shade tolerant species will eventually fade out as they are replaced with shade tolerant species.

**Trees, shrubs and shade requiring herbaceous species** – Containerized and bare root plants are typically planted randomly in areas of the site where they are best suited.

**Seed Mixes** – The savanna/woodland edge seed mixture can be used to establish the first stage herbaceous species that will tolerate sun to partial shade.

**Mixed Coniferous & Deciduous Forest Communities** – Conifers dominate these plant communities; what species is dependent on soil types, moisture, disturbance regime, etc. Deciduous tree and shrub species in these communities tend to be early or mid-successional. Understory herbaceous species behave this way as well. They grow “suppressed” under the canopy, on sunnier edges, or are present in the seed bank. When a disturbance occurs causing openings in the canopy they grow rapidly and fill in any open spaces. Then, deciduous species fill in, followed by coniferous species. Disturbances may be caused by fires, blow-downs from wind storms, etc.

<b>Mixed Coniferous &amp; Deciduous Forest Communities (dry soils, dominated by upland coniferous trees &amp; sub dominant deciduous trees)</b>				
Common Name	Botanical Name	Succession	Zone	Installation
Balsam fir	Abies balsamea	L	D	P
Red maple	Acer rubrum	L	MZ	P
Sugar maple	Acer saccharum	L	MZ	P
Mountain maple	Acer spicatum	M	MZ	P
Fragrant giant hyssop	Agastache foeniculum	M	MZ, D	S, P
Big bluestem	Andropogon gerardi	L	D	S, P
Smooth-blue aster	Aster laevis	L	MZ, D	S, P
Large-leaved aster	Aster macrophyllus	L	MZ, D	S, P
Canada milkvetch	Astragalus canadensis	M	MZ	S, P
Paper birch	Betula papyrifera	M	D	P
Pagoda dogwood	Cornus alterniflora	M	D	P
Canada dogwood	Cornus canadensis	M	D	P
Round-leaved dogwood	Cornus rugosa	M	D	P
American hazelnut	Corylus americana	M	D	P
Beaked hazelnut	Corylus cornuta	M	D	P
Wild oat-grass	Danthonia spicata	L	D	S, P
Showy tic-trefoil	Desmodium canadense	M	MZ	S, P
Canada wild rye	Elymus canadensis	M	D	S, P



Bottlebrush grass	<i>Elymus hystrix</i>	M	MZ, D	S, P
Slender wheat grass	<i>Elymus trachycaulus</i>	M	MZ, D	S, P
Virginia wild rye	<i>Elymus virginicus</i>	M	M, MZ, D	S, P
Fireweed	<i>Epilobium angustifolium</i>	M	D	P
Stiff sunflower	<i>Helianthus rigidus</i>	M	MZ, D	S, P
Early sunflower	<i>Heliopsis helianthoides</i>	M	MZ	S, P
Fly honeysuckle	<i>Lonicera canadensis</i>	M	D	P
Wild honeysuckle	<i>Lonicera dioica</i>	M	D	P
Jack pine	<i>Pinus banksiana</i>	L	D	P
Red pine	<i>Pinus resinosa</i>	L	D	P
White pine	<i>Pinus strobus</i>	L	D	P
Balsam poplar	<i>Populus balsamifera</i>	M	MZ	P
Large-tooth aspen	<i>Populus grandidentata</i>	M	MZ	P
Quaking aspen	<i>Populus tremuloides</i>	M	D	P
Northern pin oak	<i>Quercus ellipsoidalis</i>	L	D	S, P
Bur oak	<i>Quercus macrocarpa</i>	L	D	S, P
Red oak	<i>Quercus rubra</i>	L	D	S, P
Black-eyed Susan	<i>Rudbeckia hirta</i>	E	MZ, D	S, P
Upland white aster	<i>Solidago ptarmicoides</i>	M	MZ, D	S, P
Stiff goldenrod	<i>Solidago rigida</i>	M	MZ, D	S, P
White cedar	<i>Thuja occidentalis</i>	L	MZ, D	P
Hoary vervain	<i>Verbena stricta</i>	M	D	S, P
Heart-leaved Alexander's	<i>Zizia aptera</i>	L	D	S, P
Golden Alexander's	<i>Zizia aurea</i>	M	MZ, D	S, P

**Xeric Deciduous Forest Communities** – Understory species can be established using a woodland edge/savanna seed mixture supplemented with live plants for species not available from seed. Trees and shrubs can be established from seed and plants.

<b>Xeric Deciduous Forest Communities (dry soils, dominated by upland deciduous trees. Canopy is irregular allowing sunlight to penetrate to the forest floor. Understory species bloom in mid-summer)</b>				
Common Name	Botanical Name	Succession	Zone	Installation
Mountain maple	<i>Acer spicatum</i>	M	MZ	P
Fragrant giant hyssop	<i>Agastache foeniculum</i>	M	MZ, D	S, P
Big bluestem	<i>Andropogon gerardi</i>	L	M, MZ, D	S, P
Smooth-blue aster	<i>Aster laevis</i>	L	MZ, D	S, P
Large-leaved aster	<i>Aster macrophyllus</i>	L	MZ, D	S, P
Canada milkvetch	<i>Astragalus canadensis</i>	M	MZ	S, P
Sky-blue aster	<i>Aster oolentangiensis</i>	M	MZ, D	S, P
Paper birch	<i>Betula papyrifera</i>	M	D	P
Pennsylvania sedge	<i>Carex pennsylvanica</i>	L	MZ, D	P
Pagoda dogwood	<i>Cornus alterniflora</i>	M	D	P
Canada dogwood	<i>Cornus canadensis</i>	M	D	P
Round-leaved dogwood	<i>Cornus rugosa</i>	M	D	P
American hazelnut	<i>Corylus americana</i>	M	D	P
Beaked hazelnut	<i>Corylus cornuta</i>	M	D	P

Wild oat-grass	Danthonia spicata	L	D	S, P
Showy tic-trefoil	Desmodium canadense	M	MZ	S, P
Canada wild rye	Elymus canadensis	M	D	S, P
Bottlebrush grass	Elymus hystrix	M	MZ, D	S, P
Slender wheat grass	Elymus trachycaulus	M	MZ, D	S, P
Virginia wild rye	Elymus virginicus	M	M, MZ, D	S, P
Fireweed	Epilobium angustifolium	M	D	S, P
Northern bedstraw	Gallium boreale	M	D	P
Wild geranium	Geranium maculatum	L	MZ, D	P
Stiff sunflower	Helianthus rigidus	M	MZ, D	S, P
Early sunflower	Heliopsis helianthoides	M	MZ	S, P
Fly honeysuckle	Lonicera canadensis	M	D	P
Wild honeysuckle	Lonicera dioica	M	D	P
Quaking aspen	Populus tremuloides	M	D	P
Northern pin oak	Quercus ellipsoidalis	L	D	S, P
Bur oak	Quercus macrocarpa	L	D	S, P
Red oak	Quercus rubra	L	D	S, P
Black-eyed Susan	Rudbeckia hirta	E	MZ, D	S, P
False Solomon's seal	Smalacina sp.	L	MZ, D	P
Upland white aster	Solidago ptarmicoides	L	MZ, D	S, P
Stiff goldenrod	Solidago rigida	M	MZ, D	S, P
Hoary vervain	Verbena stricta	M	D	S, P
Heart-leaved Alexander's	Zizia aptera	L	D	S, P

**Mesic Deciduous Forest Communities** – Staged planting is generally required to establish these communities. A woodland edge/savanna seed mix can be used to establish the first phase understory. Trees and shrubs are generally established from seed or plants. Once a canopy begins to develop, the spring ephemeral wildflower species are planted.

**Mesic Deciduous Forest Communities (mesic soils, dominated by upland deciduous trees. Found on cool north-facing slopes on rich soils. Community is fire sensitive. Understory species bloom in the spring)**

Common Name	Botanical Name	Succession	Zone	Installation
Sugar maple	Acer saccharum	L	MZ	P
Mountain maple	Acer spicatum	M	MZ	P
Fragrant giant hyssop	Agastache foeniculum	M	MZ, D	S, P
Big bluestem	Andropogon gerardi	L	D	S, P
Jack-In-The-Pulpit	Arisaema triphyllum	L	MZ	P
Wild ginger	Asarum canadense	L	MZ	P
Smooth-blue aster	Aster laevis	L	MZ, D	S, P
Large-leaved aster	Aster macrophyllus	L	MZ, D	S, P
Canada milkvetch	Astragalus canadensis	M	MZ	S, P
Canoe Birch	Betula papyrifera	M	MZ	S, P
American hornbeam	Carpinus caroliniana	M	MZ	P
Bitternut hickory	Carya cordiformis	M	MZ	P
Spring-beauty	Claytonia virginica	L	MZ	P
Pagoda dogwood	Cornus alterniflora	M	MZ, D	P

Toothwort	<i>Dentaria laciniata</i>	M	MZ	P
Showy tic-trefoil	<i>Desmodium canadense</i>	M	MZ	S, P
Dutchman's breeches	<i>Dicentra cucullaria</i>	L	MZ	P
Leatherwood	<i>Dirca palustris</i>	M	MZ	P
Canada wild rye	<i>Elymus canadensis</i>	M	MZ, D	S, P
Bottlebrush grass	<i>Elymus hystrix</i>	M	MZ, D	S, P
Slender wheat grass	<i>Elymus trachycaulus</i>	M	MZ, D	S, P
Virginia wild rye	<i>Elymus virginicus</i>	M	M, MZ, D	S, P
White trout lily	<i>Erythronium albidum</i>	L	MZ	P
Stiff sunflower	<i>Helianthus rigidus</i>	M	MZ, D	S, P
Early sunflower	<i>Heliopsis helianthoides</i>	M	MZ	S, P
Hepatica	<i>Hepatica americana</i>	L	MZ	P
False rue anemone	<i>Isopyrum biternatum</i>	L	MZ	P
Butternut	<i>Juglans cinerea</i>	L	MZ	S, P
Ironwood	<i>Ostrya virginiana</i>	M	MZ	P
May-apple	<i>Podophyllum peltatum</i>	L	MZ	P
Black-eyed Susan	<i>Rudbeckia hirta</i>	E	MZ, D	S, P
Bloodroot	<i>Sanguinaria canadensis</i>	L	MZ	P
Upland white aster	<i>Solidago ptarmicoides</i>	L	MZ, D	S, P
Stiff goldenrod	<i>Solidago rigida</i>	M	MZ, D	S, P
Basswood	<i>Tilia americana</i>	L	MZ	S, P
Trillium	<i>Trillium grandiflorum</i>	L	MZ	P
American elm	<i>Ulmus americana</i>	L	MZ	S, P
Blue vervain	<i>Verbena hastata</i>	M	MZ	S, P
Hoary vervain	<i>Verbena stricta</i>	M	D	S, P
Golden Alexander's	<i>Zizia aurea</i>	M	MZ, D	S, P

**Oak Savanna Communities** – These communities are established by planting a prairie mixture supplemented with seedlings of species not available as seed. Oak and other woody species can be seeded or installed as plants. Larger oak can be brought in with a tree spade. Very large trees are difficult to transplant.

<b>Oak Savanna Communities (dry to mesic soils, dominated by scattered oak and dry prairie species)</b>					
Common Name	Botanical Name	Succession	Zone	Installation	Range
Prairie onion	<i>Allium stellatum</i>	M	MZ, D	S, P	
Leadplant	<i>Amorpha canescens</i>	L	D	S, P	
Big bluestem	<i>Andropogon gerardi</i>	L	MZ, D	S, P	
Wild columbine	<i>Aquilegia canadensis</i>	M	MZ, D	P	
Butterfly milkweed	<i>Asclepias tuberosa</i>	L	MZ, D	S, P	SW, SE
Heath aster	<i>Aster ericoides</i>	M	MZ, D	S, P	
Smooth-blue aster	<i>Aster laevis</i>	L	MZ, D	S, P	SW, SE
Sky-blue aster	<i>Aster oolentangiensis</i>	L	D	S, P	SE
Canada milkvetch	<i>Astragalus canadensis</i>	M	MZ, D	S, P	
Cream wild indigo	<i>Baptisia bracteata</i>	L	MZ, D	P	SE
Sideoats grama	<i>Bouteloua curtipendula</i>	L	MZ, D	S, P	
Blue grama	<i>Bouteloua gracilis</i>	L	MZ, D	S, P	
Kalm's brome	<i>Bromus kalmii</i>	M	MZ, D	S, P	
White prairie clover	<i>Dalea candidum</i>	M	MZ, D	S, P	

Purple prairie clover	<i>Dalea purpureum</i>	M	MZ, D	S, P	
Showy tick-trefoil	<i>Desmodium canadense</i>	M	MZ	S, P	
Narrow-leaved coneflower	<i>Echinacea angustifolia</i>	L	MZ, D	S, P	NW, SW
Canada wild rye	<i>Elymus canadensis</i>	M	MZ, D	S, P	SW, SE
Slender wheat grass	<i>Elymus trachycaulus</i>	M	MZ, D	S, P	
Prairie smoke	<i>Geum triflorum</i>	L	D	S, P	
Stiff sunflower	<i>Helianthus rigida</i>	M	MZ, D	S, P	
Early sunflower	<i>Heliopsis helianthoides</i>	M	MZ, D	S, P	
June grass	<i>Koeleria macrantha</i>	L	D	S, P	
Round-headed bushclover	<i>Lespedeza capitata</i>	M	MZ, D	S, P	NW, SW
Rough blazingstar	<i>Liatris aspera</i>	L	MZ, D	S, P	
Dotted blazingstar	<i>Liatris punctata</i>	L	D	S, P	
Wild Bergamot	<i>Monarda fistulosa</i>	M	D	S, P	NW, SW
Showy penstemon	<i>Penstemon grandiflorum</i>	L	D	S, P	
American plum	<i>Prunus americana</i>	M	MZ, D	P	
Pasque flower	<i>Pulsatilla nuttalliana</i>	L	D	P	
Pin oak	<i>Quercus ellipsoidalis</i>	L	D	S, P	
Bur oak	<i>Quercus macrocarpa</i>	L	D	S, P	
Columnar coneflower	<i>Ratibida columnifera</i>	M	MZ, D	S, P	
Grey-headed coneflower	<i>Ratibida pinnata</i>	M	MZ, D	S, P	SW, SE
Prairie rose	<i>Rosa arkansana</i>	L	MZ, D	S, P	
Black-eyed Susan	<i>Rudbeckia hirta</i>	E	MZ	S, P	
Little bluestem	<i>Schizachyrium scoparium</i>	L	MZ, D	S, P	
Stiff goldenrod	<i>Solidago rigida</i>	M	MZ, D	S, P	
Tall dropseed	<i>Sporobolus asper</i>	L	MZ, D	S, P	
Sand dropseed	<i>Sporobolus cryptandrus</i>	L	MZ, D	S, P	
Needle & thread grass	<i>Stipa comata</i>	L	D	P	
Porcupine grass	<i>Stipa pectinata</i>	L	D	P	
Green needle grass	<i>Stipa viridula</i>	M	MZ, D	S, P	NW, SW
Prairie spiderwort	<i>Tradescantia bracteata</i>	M	MZ, D	S, P	
Hoary vervain	<i>Verbena stricta</i>	M	D	S, P	
American vetch	<i>Vicia americana</i>	M	MZ	S, P	
Heart-leaved Alexanders	<i>Zizia aurea</i>	M	D	S, P	

**Prairie Communities** – Prairie establishment has become commonplace in the Midwest. Most prairies are established from seed. Seedlings can be used to supplement seed mixes to establish species that are not available as seed. Prairie seed mixes will vary somewhat because some species don't occur state-wide. Bluff prairies found in Southeast Minnesota are similar in species composition to western shortgrass prairies. General tallgrass and shortgrass prairie seed mixes are available for Northwest, Southwest and Southeast Minnesota.

<b>Mesic Tallgrass Prairie Communities (generally mesic soils, dominated by warm-season grasses and forbs)</b>					
Common Name	Botanical Name	Succession	Zone	Installation	Range
Prairie onion	<i>Allium stellatum</i>	M	MZ, D	S, P	
Leadplant	<i>Amorpha canescens</i>	L	D	S, P	
Big bluestem	<i>Andropogon gerardi</i>	L	MZ, D	S, P	
Prairie sage	<i>Artemisia ludoviciana</i>	M	MZ, D	S, P	

Butterfly milkweed	<i>Asclepias tuberosa</i>	L	MZ, D	S, P	SW, SE
Whorled milkweed	<i>Asclepias verticillata</i>	L	MZ, D	P	
Heath aster	<i>Aster ericoides</i>	M	MZ, D	S, P	
Smooth-blue aster	<i>Aster laevis</i>	L	MZ, D	S, P	
Sky-blue aster	<i>Aster oolentangiensis</i>	L	MZ, D	S, P	
Silky aster	<i>Aster sericeus</i>	L	D	S, P	
Canada milkvetch	<i>Astragalus canadensis</i>	M	MZ, D	S, P	
Sideoats grama	<i>Bouteloua curtipendula</i>	L	MZ, D	S, P	
Kalm's brome	<i>Bromus kalmii</i>	M	MZ, D	S, P	
Partridge pea	<i>Chamaecrista fasciculata</i>	E	MZ, D	S	SW, SE
Prairie coreopsis	<i>Coreopsis palmata</i>	L	MZ, D	S, P	
White prairie clover	<i>Dalea candidum</i>	M	MZ, D	S, P	
Purple prairie clover	<i>Dalea purpureum</i>	M	MZ, D	S, P	
Showy tick-trefoil	<i>Desmodium canadense</i>	M	MZ	S, P	
Narrow-leaved coneflower	<i>Echinacea angustifolia</i>	L	MZ, D	S, P	NW, SW
Canada wild rye	<i>Elymus canadensis</i>	M	MZ, D	S, P	
Slender wheat grass	<i>Elymus trachycaulus</i>	M	MZ, D	S, P	
Western wheat grass	<i>Elytrigia smithii</i>	M	MZ, D	S, P	NW, SW
Flowering spurge	<i>Euphorbia corollata</i>	L	MZ, D	P	
Prairie smoke	<i>Geum triflorum</i>	L	D	S, P	
Maximillian's sunflower	<i>Helianthus maximilliani</i>	M	M, MZ	S, P	
Stiff sunflower	<i>Helianthus rigidus</i>	M	MZ, D	S, P	
Early sunflower	<i>Heliopsis helianthoides</i>	M	MZ, D	S, P	
Golden aster	<i>Heterotheca villosa</i>	L	D	P	
June grass	<i>Koeleria macrantha</i>	L	D	S, P	
Round-headed bushclover	<i>Lespedeza capitata</i>	M	MZ, D	S, P	
Rough blazingstar	<i>Liatris aspera</i>	L	MZ, D	S, P	
Tall blazingstar	<i>Liatris pycnostachya</i>	L	M, MZ	S, P	
Wild Bergamot	<i>Monarda fistulosa</i>	M	MZ, D	S, P	
Switch grass	<i>Panicum virgatum</i>	L	M, MZ	P	
Showy penstemon	<i>Penstemon grandiflorum</i>	L	D	S, P	
Prairie cinquefoil	<i>Potentilla arguta</i>	L	MZ, D	P	
Scurf pea	<i>Psoralea argophylla</i>	L	MZ, D	P	
Pasque flower	<i>Pulsatilla nuttaliana</i>	L	D	P	
Columnar coneflower	<i>Ratibida columnifera</i>	M	MZ, D	S, P	
Grey-headed coneflower	<i>Ratibida pinnata</i>	M	MZ	S, P	SW, SE
Prairie rose	<i>Rosa arkansana</i>	L	MZ, D	S, P	
Black-eyed Susan	<i>Rudbeckia hirta</i>	E	MZ	S, P	
Little bluestem	<i>Schizachyrium scoparium</i>	L	MZ, D	S, P	
Upland-white aster	<i>Solidago ptarmicoides</i>	L	MZ	S, P	
Stiff goldenrod	<i>Solidago rigida</i>	M	MZ, D	S, P	
Showy goldenrod	<i>Solidago speciosa</i>	M	MZ	S, P	
Indian grass	<i>Sorghastrum nutans</i>	L	MZ, D	S, P	
Tall dropseed	<i>Sporobolus asper</i>	L	MZ, D	S, P	
Sand dropseed	<i>Sporobolus cryptandrus</i>	L	MZ, D	S, P	
Tall dropseed	<i>Sporobolus heterolepis</i>	L	MZ	S, P	
Needle & thread grass	<i>Stipa comata</i>	L	D	P	

Green needle grass	<i>Stipa viridula</i>	M	MZ	S, P	NW, SW
Prairie spiderwort	<i>Tradescantia bracteata</i>	M	MZ, D	S, P	
Blue vervain	<i>Verbena hastata</i>	M	M, MZ	S, P	
Hoary vervain	<i>Verbena stricta</i>	M	D	S, P	
American vetch	<i>Vicia americana</i>	M	MZ, D	S, P	
Golden Alexanders	<i>Zizia aurea</i>	M	M, MZ	S, P	

<b>Dry Shortgrass Prairie Communities (generally dry soils, dominated by warm-season grasses and forbs)</b>					
Common Name	Botanical Name	Succession	Zone	Installation	Range
Prairie onion	<i>Allium stellatum</i>	M	MZ, D	S, P	
Leadplant	<i>Amorpha canescens</i>	L	D	S, P	
Prairie sage	<i>Artemisia ludoviciana</i>	M	MZ, D	S, P	
Butterfly milkweed	<i>Asclepias tuberosa</i>	L	MZ, D	S, P	SW, SE
Whorled milkweed	<i>Asclepias verticillata</i>	L	MZ, D	P	
Heath aster	<i>Aster ericoides</i>	M	MZ, D	S, P	
Smooth-blue aster	<i>Aster laevis</i>	L	MZ, D	S, P	
Sky-blue aster	<i>Aster oolentangiensis</i>	L	MZ, D	S, P	
Silky aster	<i>Aster sericeus</i>	L	D	S, P	
Canada milkvetch	<i>Astragalus canadensis</i>	M	MZ, D	S, P	
Sideoats grama	<i>Bouteloua curtipendula</i>	L	MZ, D	S, P	
Blue grama	<i>Bouteloua gracilis</i>	L	D	S, P	
Kalm's brome	<i>Bromus kalmii</i>	M	MZ, D	S, P	
Buffalo grass	<i>Buchloe dactyloides</i>	L	D	S, P	SW, NW
Partridge pea	<i>Chamaecrista fasciculata</i>	E	MZ, D	S	SW, SE
Prairie coreopsis	<i>Coreopsis palmata</i>	L	MZ, D	S, P	
White prairie clover	<i>Dalea candidum</i>	M	MZ, D	S, P	
Purple prairie clover	<i>Dalea purpureum</i>	M	MZ, D	S, P	
Showy tick-trefoil	<i>Desmodium canadense</i>	M	MZ	S, P	
Narrow-leaved coneflower	<i>Echinacea angustifolia</i>	L	MZ, D	S, P	NW, SW
Canada wild rye	<i>Elymus canadensis</i>	M	MZ, D	S, P	
Slender wheat grass	<i>Elymus trachycaulus</i>	M	MZ, D	S, P	
Western wheat grass	<i>Elytrigia smithii</i>	M	MZ, D	S, P	NW, SW
Flowering spurge	<i>Euphorbia corollata</i>	L	MZ, D	P	
Prairie smoke	<i>Geum triflorum</i>	L	D	S, P	
Stiff sunflower	<i>Helianthus rigidus</i>	M	MZ, D	S, P	
Early sunflower	<i>Heliopsis helianthoides</i>	M	MZ, D	S, P	
Golden aster	<i>Heterotheca villosa</i>	L	D	P	
June grass	<i>Koeleria macrantha</i>	L	D	S, P	
Round-headed bushclover	<i>Lespedeza capitata</i>	M	MZ, D	S, P	
Rough blazingstar	<i>Liatis aspera</i>	L	MZ, D	S, P	
Dotted blazingstar	<i>Liatis punctata</i>	L	D	S, P	
Wild Bergamot	<i>Monarda fistulosa</i>	M	MZ, D	S, P	
Spotted bee-balm	<i>Monarda punctata</i>	M	D	S, P	
Foxglove beard-tongue	<i>Penstemon digitalis</i>	L	D	S, P	
Showy penstemon	<i>Penstemon grandiflorum</i>	L	D	S, P	
Prairie cinquefoil	<i>Potentilla arguta</i>	L	MZ, D	P	

Scurf pea	<i>Psoralea argophylla</i>	L	MZ, D	P	
Pasque flower	<i>Pulsatilla nuttaliana</i>	L	D	P	
Columnar coneflower	<i>Ratibida columnifera</i>	M	MZ, D	S, P	
Grey-headed coneflower	<i>Ratibida pinnata</i>	M	MZ	S, P	SW, SE
Prairie rose	<i>Rosa arkansana</i>	L	MZ, D	S, P	
Black-eyed Susan	<i>Rudbeckia hirta</i>	E	MZ	S, P	
Little bluestem	<i>Schizachyrium scoparium</i>	L	MZ, D	S, P	
Upland-white aster	<i>Solidago ptarmicoides</i>	L	MZ	S, P	
Gray goldenrod	<i>Solidago nemoralis</i>	L	D	S, P	
Stiff goldenrod	<i>Solidago rigida</i>	M	MZ, D	S, P	
Tall dropseed	<i>Sporobolus asper</i>	L	MZ, D	S, P	
Sand dropseed	<i>Sporobolus cryptandrus</i>	L	MZ, D	S, P	
Tall dropseed	<i>Sporobolus heterolepis</i>	L	MZ	S, P	
Needle & thread grass	<i>Stipa comata</i>	L	D	P	
Green needle grass	<i>Stipa viridula</i>	M	MZ	S, P	NW, SW
Prairie spiderwort	<i>Tradescantia bracteata</i>	M	MZ, D	S, P	
Hoary vervain	<i>Verbena stricta</i>	M	D	S, P	
American vetch	<i>Vicia americana</i>	M	MZ, D	S, P	
Heart-leaved Alexanders	<i>Zizia aurea</i>	L	MZ, D	S, P	

### ***Nomenclature Notes***

The following are species that are frequently referred to by more than one name or have had recent nomenclature changes:

- Aster puniceus = Aster lucidulus = purple-stemmed or red-stemmed aster
- Aster simplex = Aster lanceolatus = paniced aster or lance-leaved aster
- Schoenoplectus tabernaemontani = Scirpus validus = soft-stem bulrush
- Symphyotricum novae-angliae = Aster novae-angliae = New England aster
- Doellingeria umbellatus = Aster umbellatus = flat-topped aster