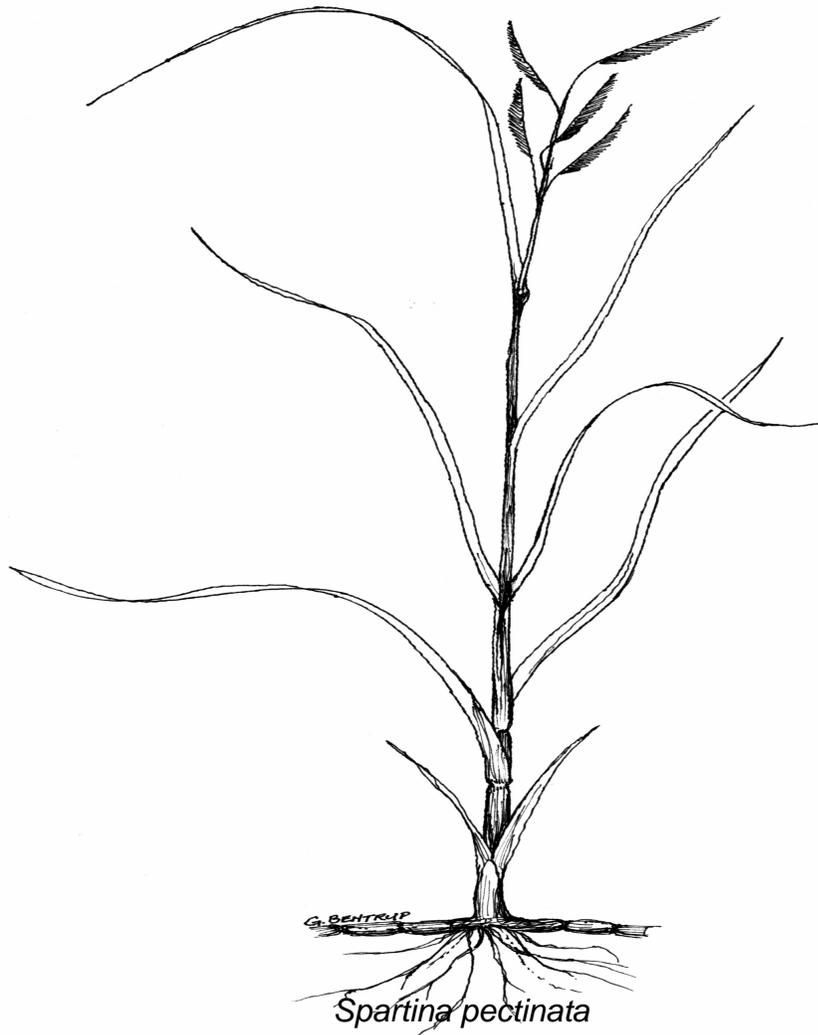


APPENDIX A

CHARACTERISTICS OF HERBACEOUS SPECIES FOR RIPARIAN REVEGETATION IN INTERMOUNTAIN WEST

(Bentrup and Hoag, 1998)

(Ogle and Hoag 2000)



Description of Herbaceous Grass and Grass-Like Plants

Species	Elevation Range ¹	Root Type	Hydrologic Regime ²	Availability In Field ³	Commerical Availability ⁴
Herbaceous Grasses and Grass-Like Species					
<i>Agropyron cristatum</i> Crested wheatgrass	Low-Med.	Bunch Perennial	Well Drained	Introduced	Yes-Seed
<i>Agropyron desertorum</i> Crested wheatgrass	Low-Med.	Bunch Perennial	Well Drained	Introduced	Yes-Seed
<i>Agropyron sibericum</i> Siberian wheatgrass	Low- Med.	Bunch Perennial	Well Drained	Introduced	Yes-Seed
<i>Agrostis species</i> Redtop bentgrass	Low-Med.	Rhizomatous Perennial	Seasonally-Flooded	Introduced Common	Yes-Seed
<i>Alopecurus arundinacea</i> Creeping foxtail	Low-Med.	Rhizomatous Perennial	Seasonally-Flooded	Introduced	Yes-Seed
<i>Beckmannia syzigachne</i> Sloughgrass	Low-Mid.	Stoloniferous Annual	Seasonally-Flooded	Fairly Common	Yes-Seed & Plugs
<i>Bromus erectus</i> Meadow brome	Low-High	Rhizomatous Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Bromus inermis</i> Smooth brome	Low-High	Rhizomatous Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Calamagrostis canadensis</i> Blue-joint reed grass	Mid.-High	Rhizomatous Perennial	Seasonally-Saturated	Common	Yes-Seed & Plugs
<i>Carex aquatilis</i> Water sedge	Mid.-High	Rhizomatous Perennial	Up to 3" Water Depth	Fairly Common	Yes-Seed & Plugs
<i>Carex nebrascensis</i> Nebraska sedge	Low-High	Rhizomatous Perennial	Seasonally-Saturated	Common	Yes-Seed & Plugs
<i>Carex utriculata</i> Beaked sedge	Low-High	Rhizomatous Perennial	Seasonally-Saturated	Common	Yes-Plugs
<i>Dactylis glomerata</i> Orchardgrass	Low-Med.	Bunch Perennial	Well Drained	Introduced	Yes-Seed
<i>Deschampsia cespitosa</i> Tufted hairgrass	Mid.-High	Fibrous Perennial	Seasonally-Saturated	Common	Yes-Seed
<i>Distichlis stricta</i> Inland Saltgrass	Low-Mid.	Rhizomatous Perennial	Seasonally-Saturated	Very Common	Yes-Seed & Plugs
<i>Eleocharis palustris</i> Spikerush	Low-High	Rhizomatous Perennial	Seasonally-Flooded Up to 6" Water Depth	Very Common	Yes-Seed & Plugs
<i>Elymus lanceolatus</i> Streambank wheatgrass	Low-Med.	Rhizomatous Perennial	Seasonally-Saturated	Common	Yes-Seed
<i>Elymus lanceolatus</i> Thickspike wheatgrass	Low-Med.	Rhizomatous Perennial	Seasonally-Saturated	Common	Yes-Seed
<i>Elytrigia elongata</i> Tall Wheatgrass	Low-Med.	Bunch Perennial	Seasonally-Flooded	Introduced	Yes-Seed
<i>Elytrigia intermedia</i> Intermediate wheatgrass	Low-Med	Rhizomatous Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Elytrigia intermedia</i> Pubescent wheatgrass	Low-Med.	Rhizomatous Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Festuca arundinacea</i> Tall fescue	Low-Med.	Bunch	Seasonally-Flooded	Introduced	Yes-Seed
<i>Festuca ovina</i> Sheep fescue	Low-Med.	Bunch Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed

Description of Herbaceous Grass and Grass-Like Plants

Species	Height	Rate of Spread ⁵	Acidity Tolerance ⁶	Salinity Tolerance ⁷
Herbaceous Grasses and Grass-Like Species				
<i>Agropyron cristatum</i> Crested wheatgrass	12-24"	V. Slow	Low	Medium
<i>Agropyron desertorum</i> Crested wheatgrass	12-24"	V. Slow	Low	Medium
<i>Agropyron sibericum</i> Siberian wheatgrass	12-24"	V. Slow	Low	Medium
<i>Agrostis species</i> Redtop bentgrass	18-36"	Rapid	High	Low
<i>Alopecurus arundinacea</i> Creeping foxtail	24-48"	Rapid	Med.	Med.
<i>Beckmannia syzigachne</i> Sloughgrass	36"	Rapid	U	U
<i>Bromus erectus</i> Meadow brome	24-48"	Medium	Low	Low
<i>Bromus inermis</i> Smooth brome	18-36"	Rapid	Low	Low
<i>Calamagrostis canadensis</i> Blue-joint reed grass	24-36"	Medium	Med.	Low
<i>Carex aquatilis</i> Water sedge	10-24"	Medium	Med.	Low
<i>Carex nebrascensis</i> Nebraska sedge	10-24"	Medium	Low	Medium
<i>Carex utriculata</i> Beaked sedge	10-40"	Rapid	Med.	Low
<i>Dactylis glomerata</i> Orchardgrass	24-48"	Slow	Low	Low
<i>Deschampsia cespitosa</i> Tufted hairgrass	18-30"	Medium	Med.	Med.
<i>Distichlis stricta</i> Inland Saltgrass	12-18"	Medium	Low	High
<i>Eleocharis palustris</i> Spikerush	6-30"	Rapid	Low	Med.
<i>Elymus lanceolatus</i> Streambank wheatgrass	6-12"	Medium	Low	Med.
<i>Elymus lanceolatus</i> Thickspike wheatgrass	8-24"	Medium	Low	Med.
<i>Elytrigia elongata</i> Tall Wheatgrass	30-60"	Rapid	Low	High
<i>Elytrigia intermedia</i> Intermediate wheatgrass	24-48"	Rapid	Med.	Med.
<i>Elytrigia intermedia</i> Pubescent wheatgrass	24-48"	Rapid	Med.	Med.
<i>Festuca arundinacea</i> Tall fescue	24-48"	Rapid	High	High
<i>Festuca ovina</i> Sheep fescue	6-18"	Slow	Med.	Low

Description of Herbaceous Grass and Grass-Like Plants

Species	Wildlife Value	Notes	Use in Hydrologic Zone ⁸	Flood Tolerance ⁹	Plant Ind. Status ¹⁰
Herbaceous Grasses and Grass-Like Species					
<i>Agropyron cristatum</i> Crested wheatgrass		Drought tolerant	6	L	Upland
<i>Agropyron desertorum</i> Crested wheatgrass		Drought tolerant	6	L	Upland
<i>Agropyron sibiricum</i> Siberian wheatgrass		Very drought tolerant	6	L	Upland
<i>Agrostis species</i> Redtop bentgrass	Waterfowl food	Good soil stabilizer	3,4,5	H	FACW
<i>Alopecurus arundinacea</i> Creeping foxtail	Waterfowl, small mammal, and big game food	Excellent soil stabilizer Slow initial establishment	3,4,5,6	H	FACW
<i>Beckmannia syzigachne</i> Sloughgrass	Waterfowl and small mammal food	Palatable forage grass	3,4,5	H	OBL
<i>Bromus erectus</i> Meadow brome	Waterfowl, small mammal, and big game food	Excellent soil stabilizer	4,5,6	H	FACU
<i>Bromus inermis</i> Smooth brome	Waterfowl, small mammal, and big game food	Excellent soil stabilizer	4,5,6	H	FACU
<i>Calamagrostis canadensis</i> Blue-joint reed grass	Small mammal food and upland bird cover	Excellent soil stabilizer	3,4,5	H	FACW+
<i>Carex aquatilis</i> Water sedge	Waterfowl food and cover		2,3,4	H	OBL
<i>Carex nebrascensis</i> Nebraska sedge	Waterfowl food and cover, small mammal cover	Tolerates heat if provided with adequate moisture	2,3,4	H	OBL
<i>Carex utriculata</i> Beaked sedge	Waterfowl and small mammal food	Also known as <i>C. rostrata</i>	2,3,4	H	OBL
<i>Dactylis glomerata</i> Orchardgrass	Waterfowl, small mammal, and big game food		5,6	L	FACU
<i>Deschampsia cespitosa</i> Tufted hairgrass	Small mammal cover		3,4	H	FACW
<i>Distichlis stricta</i> Inland Saltgrass	Waterfowl food		3,4,5	H	FACW
<i>Eleocharis palustris</i> Spikerush	Waterfowl food	Excellent soil stabilizer	2,3,4,5	H	OBL
<i>Elymus lanceolatus</i> Streambank wheatgrass		Good soil stabilizer, low growth form, drought tol.	5,6	M	FACU
<i>Elymus lanceolatus</i> Thickspike wheatgrass		Good soil stabilizer and very drought tolerant	5,6	M	FACU
<i>Elytrigia elongata</i> Tall Wheatgrass		Good soil stabilizer and very saline tolerant	3,4,5,6	H	FAC
<i>Elytrigia intermedia</i> Intermediate wheatgrass	Small mammal and big game food	Excellent soil stabilizer	5,6	M	FACU
<i>Elytrigia intermedia</i> Pubescent wheatgrass	Small mammal and big game food	Excellent soil stabilizer	5,6	M	FACU
<i>Festuca arundinacea</i> Tall fescue		Excellent soil stabilizer	2,3,4,5,6	H	FAC
<i>Festuca ovina</i> Sheep fescue		Excellent soil stabilizer	5,6	M	FACU

Description of Herbaceous Grass and Grass-Like Plants

Species	Elevation Range ¹	Root Type	Hydrologic Regime ²	Availability In Field ³	Commerical Availability ⁴
<i>Festuca ovina duriuscula</i> Hard fescue	Low-Med.	Bunch Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Festuca rubra</i> Red fescue	Low-Med.	Rhizomatous Perennial	Seasonally-Saturated Well Drained	Introduced	Yes-Seed
<i>Glyceria striata</i> Mannagrass	Mid.-High	Rhizomatous Perennial	Seasonally-Flooded	Fairly Common	Yes-Seed & Plugs
<i>Juncus balticus</i> Baltic rush	Low-High	Rhizomatous Perennial	Seasonally-Saturated	Very Common	Yes-Seed & Potted
<i>Juncus mertensianus</i> Merten's rush	Mid.-High	Rhizomatous Perennial	Saturated Seasonally-Saturated	Fairly Common	Yes-Seed & Plugs
<i>Juncus tenuis</i> Poverty rush	Mid.-High	Rhizomatous Perennial	Saturated Seasonally-Saturated	Fairly Common	Yes-Plugs
<i>Pascopyrum smithii</i> Western wheatgrass	Low- Med.	Rhizomatous Perennial	Seasonally-Flooded	Common	Yes-Seed
<i>Poa pratensis</i> Kentucky bluegrass	Low-High	Rhizomatous Perennial	Seasonnaly-Flooded Well Drained	Introduced	Yes-Seed
<i>Phalaris arundinacea</i> Reed canarygrass	Low-Mid.	Rhizomatous Perennial	Seasonally-Flooded	Common	Yes-Seed & Plugs
<i>Phleum pratensis</i> Timothy	Low-High	Rhizomatous Perennial	Seasonally-Flooded	Introduced	Yes-Seed
<i>P. spicata X E. repens</i> Newhy hybrid wheatgrass	Low-Med.	Weak Rhiz. Perennial	Seasonally-Saturated	Introduced	Yes-Seed
<i>Puccinellia nuttalliana</i> Alkali grass	Low-Mid.	Fibrous Perennial	Seasonally-Saturated	Common	Yes-Seed & Plugs
<i>Scirpus acutus</i> Hard-stem bulrush	Low-High	Rhizomatous Perennial	Up to 36" Water Depth	Very Common	Yes-Seed & Plugs
<i>Scirpus maritimus</i> Alkali bulrush	Low-Mid.	Rhizomatous Perennial	Up to 6" Water Depth	Common	Yes-Seed & Plugs
<i>Scirpus pungens</i> Three-square bulrush	Low-Mid.	Rhizomatous Perennial	Up to 6" Water Depth	Very Common	Yes-Seed & Plugs
<i>Spartina pectinata</i> Prairie cordgrass	Low-Mid.	Rhizomatous Perennial	Seasonally-Flooded	Fairly Common	Yes-Seed & Plugs
<i>Typha latifolia</i> Cattail	Low-Mid.	Rhizomatous Perennial	Up to 12" Water Depth	Very Common	Yes-Seed & Plugs
<i>Verbena hastata</i> Blue vervain	Low-Mid.	Fibrous Perennial	Seasonally-Saturated	Common	Yes-Seed & Plugs

Footnotes:

1. Elevation Range: for this region.

Low 2000-4500 feet

Middle 4500-7000 feet

High 7000-10000 feet

- 2. Hydrologic Regime:** This indicates optimal moisture conditions, although local conditions are the best benchmarks for design. Well-drained species may tolerate short periods of saturation. Seasonally saturated species prefer soil that is saturated early in the season but later dry out. Seasonally flooded species prefer flooding in the early portion of the season. Saturated indicates species that prefer very wet conditions all season. Others prefer standing water to the depths described.

- 3. Availability in the Field:** This refers to natural occurrences in the region. Introduced are not native species and are probably not available in field. The order of the ranking is from least to greatest:

Fairly Common Common Very Common

- 4. Commercial Availability:** This refers to whether the species is available in the seed or nursery trade.

- 5. Rate of Spread:** Refers to the horizontal rate of growth. These rates are only guidelines since rates will vary with growing season, elevation, soil, soil limitations, etc.

Rapid More than 1.0 feet per year

Medium About 0.5 feet per year

Slow About 0.2 feet per year

V. Slow Less than 0.2 feet per year

Description of Herbaceous Grass and Grass-Like Plants

Species	Height	Rate of Spread ⁵	Acidity Tolerance ⁶	Salinity Tolerance ⁷
<i>Festuca ovina duriuscula</i> Hard fescue	6-18"	Slow	Med.	Low
<i>Festuca rubra</i> Red fescue	6-12"	Medium	Med.	Low
<i>Glyceria striata</i> Mannagrass	24-36"	Rapid	U	Low
<i>Juncus balticus</i> Baltic rush	18-24"	Medium	Med.	Med.
<i>Juncus mertensianus</i> Merten's rush	4-16"	Medium	U	U
<i>Juncus tenuis</i> Poverty rush	6-12"	Medium	U	U
<i>Pascopyrum smithii</i> Western wheatgrass	6-12"	Rapid	Med.	Med.
<i>Poa pratensis</i> Kentucky bluegrass	6-18"	Rapid	Low	Low
<i>Phalaris arundinacea</i> Reed canarygrass	24-48"	Rapid	Low	Low
<i>Phleum pratensis</i> Timothy	24-48"	Medium	Med.	Low
<i>P. spicata</i> X <i>E. repens</i> Newhy hybrid wheatgrass	8-18"	Slow	Low	V. High
<i>Puccinellia nuttalliana</i> Alkali grass	6-12"	Medium	Low	High
<i>Scirpus acutus</i> Hard-stem bulrush	Up to 6'	Rapid	Low	Med.
<i>Scirpus maritimus</i> Alkali bulrush	24-36"	Medium	Low	High
<i>Scirpus pungens</i> Three-square bulrush	24-48"	Rapid	Low	Med.
<i>Spartina pectinata</i> Prairie cordgrass	24-48"	Rapid	Low	Med.
<i>Typha latifolia</i> Cattail	Up to 6'	Rapid	Med.	High
<i>Verbena hastata</i> Blue vervain	18-30"	Slow	U	Low

6. **Tolerance to Acidity:** Resistance to acidity relative to native vegetation on similar sites.

7. **Tolerance to Salinity:** Resistance to salinity relative to native vegetation on similar sites.

8. **Hyrologic Zone:** 1-Deep Water; 2-Shallow Bench; 3-Shallow Fringe; 4-Shoreline Fringe; 5-Terrace; 6-upland

9. **Flooding Tolerance:** (H)igh; (M)edium; (L)ow

10. **Plant Indicator Status for Occurrence in Wetlands:**

OBL = Obligate

FACW = Facultative Wet

FAC = Facultative

FACU = Facultative Upland

Upland = Upland

U Unknown

Description of Herbaceous Grass and Grass-Like Plants

Species	Wildlife Value	Notes	Use in Hydrologic Zone ⁸	Flood Tolerance ⁹	Plant Ind. Status ¹⁰
<i>Festuca ovina duriuscula</i> Hard fescue		Excellent soil stabilizer	5,6	M	FACU
<i>Festuca rubra</i> Red fescue		Excellent soil stabilizer	4,5,6	M	FAC
<i>Glyceria striata</i> Mannagrass	Waterfowl and big game food	Excellent soil stabilizer	3,4,5	H	OBL
<i>Juncus balticus</i> Baltic rush	Waterfowl food	Tolerates wide range of hydrologic conditions	2,3,4,5,6	H	OBL
<i>Juncus mertensianus</i> Merten's rush	U		3,4,5	H	OBL
<i>Juncus tenuis</i> Poverty rush	U		3,4,5	M	FAC
<i>Pascopyrum smithii</i> Western wheatgrass		Excellent soil stabilizer	4,5,6	H	FACU
<i>Poa pratensis</i> Kentucky bluegrass	Waterfowl, small mammal, and big game food	Excellent soil stabilizer	3,4,5,6	H	FACU
<i>Phalaris arundinacea</i> Reed canarygrass	Waterfowl food	Excellent soil stabilizer	2,3,4,5,6	H	FACW
<i>Phleum pratense</i> Timothy	Waterfowl, small mammal, and big game food	Excellent soil stabilizer Slow establishment	3,4,5,6	H	FACU
<i>P. spicata</i> X <i>E. repens</i> Newhy hybrid wheatgrass		Tolerates high salinity	3,4,5,6	H	FAC
<i>Puccinellia nuttalliana</i> Alkali grass	Small mammal cover	Tolerates high salinity	3,4,5,6	H	OBL
<i>Scirpus acutus</i> Hard-stem bulrush	Waterfowl food and cover, small mammal cover	Excellent soil stabilizer	2,3,4	H	OBL
<i>Scirpus maritimus</i> Alkali bulrush	Waterfowl cover and food	Tolerates high salinity	2,3,4,5	H	OBL
<i>Scirpus pungens</i> Three-square bulrush	Waterfowl food and cover, small mammal cover	Tolerates some hydrologic drawdown	2,3,4	H	OBL
<i>Spartina pectinata</i> Prairie cordgrass	Small game cover	Not palatable for livestock	2,3,4,5	H	FACW
<i>Typha latifolia</i> Cattail	Waterfowl food and cover, small mammal cover and food	Can be invasive	2,3,4	H	OBL
<i>Verbena hastata</i> Blue vervain	Upland bird food	Very fibrous root system	2,3,4	M	FACW