



United States Department of Agriculture

Natural Resources Conservation Service  
Washington

# Trees and Shrubs for Riparian Plantings

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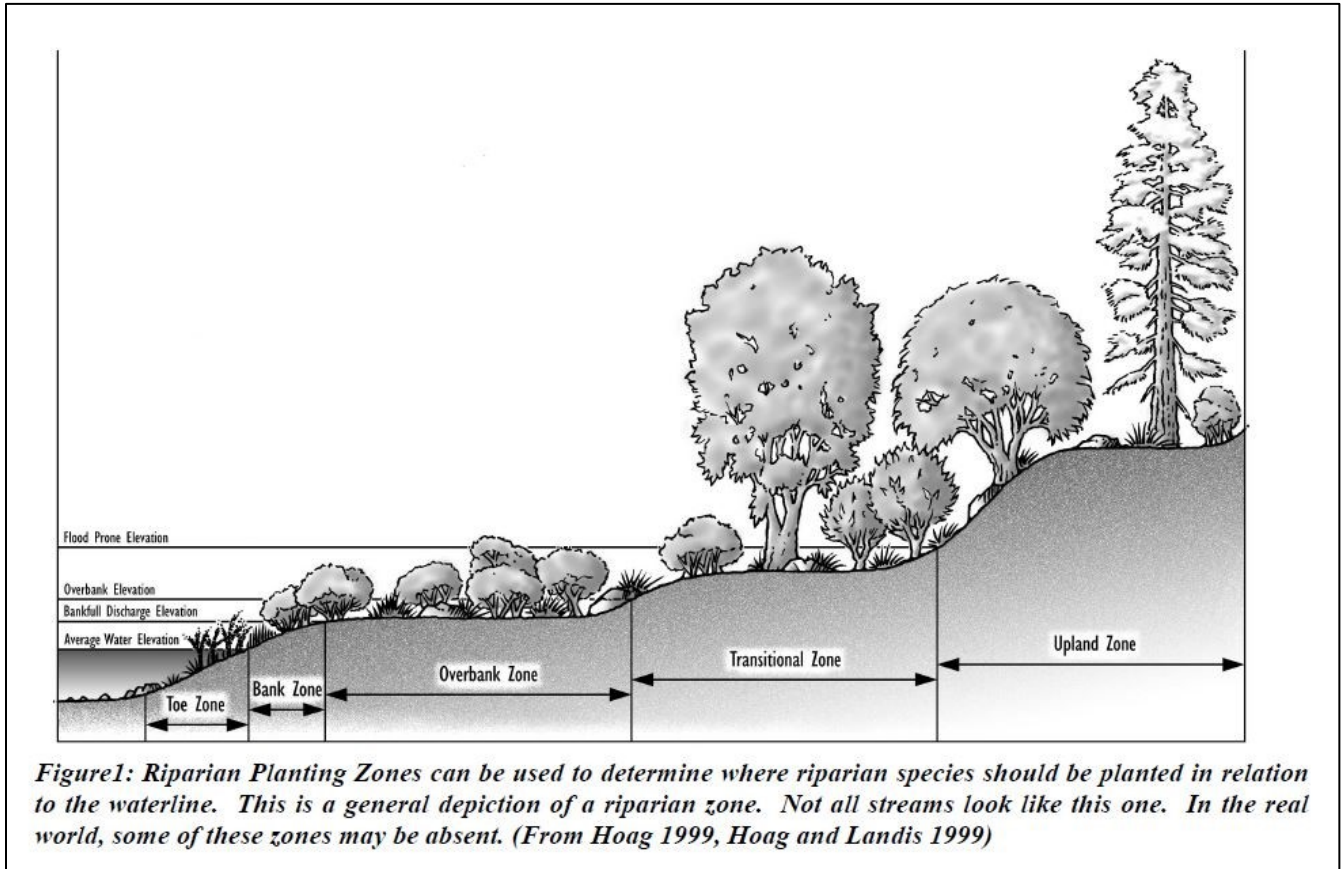
The following are lists of riparian trees and shrubs by Major Land Resource Areas (MLRAs) and contain relatively common species available from plant nurseries.

- The original source of plant materials should, if possible, come from the MLRA, ecoregion, or for conifers, the seed zone within which you are working.
- Base the species composition of your planting on a reference community. Reference communities may be found in the watershed or a watershed within the Common Resource Area (CRA). Reference communities should be well-functioning native communities and similar to the planting site in terms of streamflow, stream gradient, stream access to floodplain, soils, annual precipitation, and elevation. Percent deciduous species composition and percent conifer species composition should be similar to percent found in the reference community.
- If an adequate reference community cannot be found go to <http://www.dnr.wa.gov/NHPecoreports> for references describing riparian and wetland communities in Washington.
- Plants are ordered according to quantity of water use. Species are listed in descending order of water use (i.e. plants requiring more water inputs are listed before with plants requiring the least water (e.g. upland species) lower in the list.
- Not all project areas are identical. Each project area does not necessarily include all 5 Riparian Zones.
- For adequate bank protection shrubs planted in the bank zone may need to be planted closer than the given minimum spacing.
- Plants suited to the Overbank or the Transition Zone may need supplemental water until they develop sufficiently to utilize available ground water. Supplemental watering can also reduce overall mortality rates and improve growth of upland plants.
- The use of mulch for the upland plantings is strongly encouraged, particularly in dryer environments, as it protects soil moisture. Further, the appropriate mulch may reduce input costs.



*A riparian area in Washington State.*

# Riparian Planting Zones



## Toe Zone

The **toe zone** is the zone that is located **below** the average water elevation, also called the **baseflow**. The baseflow is that level where there is flow throughout summer months. The toe zone will rarely contain dense vegetation, due to its inundation with water for most of the year. Woody species, in particular, are very difficult to establish here, because of the abundant water levels. In some cases, common wetland plants such as cattails (*Typha*) and bulrush (*Scirpus*) can be established in the toe zone. However, be advised that wetland plants do not establish or survive well in areas where velocities are high. They are generally found in low energy streams or areas such as backwaters.

## Bank Zone

The bank zone is the area between the average water elevation and the **bankfull discharge elevation**. The bank zone will generally be vegetated with early seral or colonizing herbaceous species, flexible stemmed willows, and low shrub species. This zone will be inundated with water far less frequently than the toe zone. Soil moisture levels in this zone will be much lower after spring runoff.

**Bankfull Discharge** – The discharge corresponding to the stage at which the natural channel is full. This flow typically has a recurrence interval of 1.5 to 2 years.

## Overbank Zone

The overbank zone is located between the **bankfull discharge elevation** and the **overbank elevation**. It is generally flat and sporadically flooded about every 2-5 years. Vegetation in the overbank zone should be flood tolerant. Normally, the vegetative composition is about 50% hydrophytic plants. Shrubby willows with flexible stems, dogwoods, alder, birch, in particular, will predominate here. Larger shrub type willows will generally occur on the higher end of the zone. Cottonwoods and tree type willows may survive well at the higher end of this zone. Species that have large inflexible stems should not be part of the planting plan in this zone. They can cause significant disruption to the stream dynamics.

### **Transitional Zone**

The transitional zone is located between the **overbank elevation** and the **flood prone elevation**. The flood prone elevation is flooded about every 50 years. The transitional zone will be where bulrush and other hydrophytic species will transition to upland species. For the most part, species in this zone are **not** flood or inundation tolerant. This is the zone where the larger tree species are typically found.

### **Upland Zone**

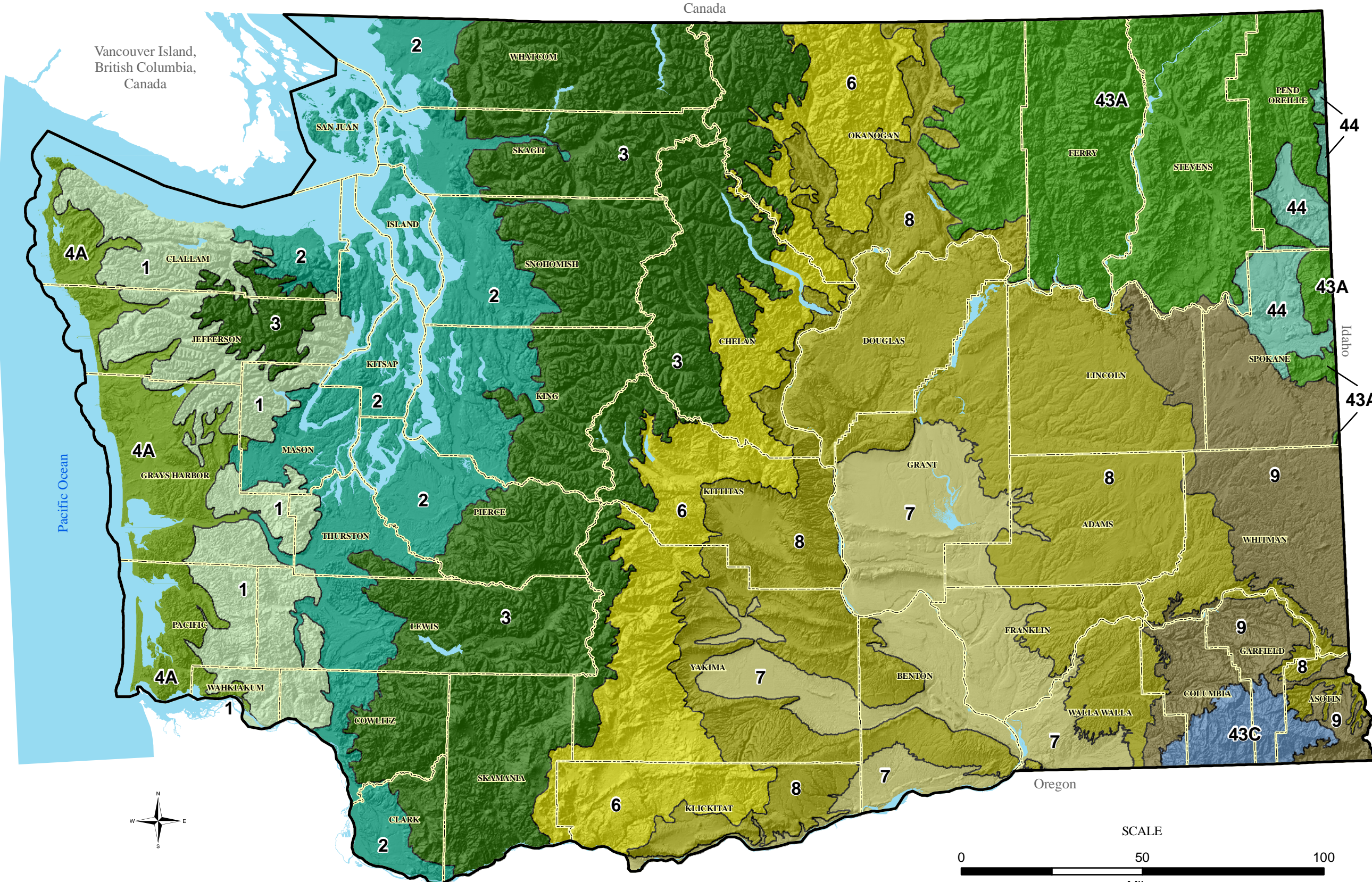
The upland zone is found **above the flood prone elevation**. As the name would suggest, vegetation in this zone is predominantly upland species. Drought tolerance is one of the most important factors when determining what species to plant here. In low precipitation areas, supplemental irrigation may be necessary for plant establishment. Soil moisture meters are a small investment to ensure that that supplemental irrigation inputs are employed appropriately, thereby eliminating over-use of limited, costly water resources.

*Definitions are taken from Hoag, J. Chris, Forrest E. Berg, Sandra K. Wyman, and Robert W. Sampson. Riparian/Wetland Project Information Series No. 16 March, 2001 (Revised),*



# Washington State

## WASHINGTON STATE MAJOR LAND RESOURCE AREAS (MLRA) MAP



### Legend

- State Boundary
  - County Boundaries
  - Open Water
- Major Land Resource Areas**
- MLRA 1 - Northern Pacific Coast Range, Foothills, and Valleys
  - MLRA 2 - Willamette and Puget Valleys
  - MLRA 3 - Olympic and Cascade Mountains
  - MLRA 4A - Sitka Spruce Belt
  - MLRA 6 - Cascade Mountains, Eastern Slope
  - MLRA 7 - Columbia Basin
  - MLRA 8 - Columbia Plateau
  - MLRA 9 - Palouse and Nez Perce Prairies
  - MLRA 43A - Northern Rocky Mountains
  - MLRA 43C - Blue and Seven Devils Mountains
  - MLRA 44 - Northern Rocky Mountain Valleys

SOURCE: National Coordinated Major Land Resource Area (MLRA) dataset, U.S. Department of Agriculture, National Soil Survey Center, 2004.

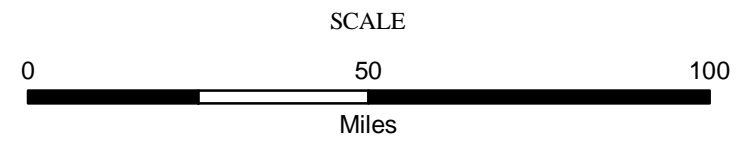
MLRAs are geographically associated land resource units (LRUs). Identification of these large areas is important in statewide agricultural planning and has value in interstate, regional, and national planning.

The dominant physical characteristics of the major land resource areas are described briefly in Agriculture Handbook 296. The first paragraph lists the extent of each MLRA in each state and the total area. Major cities, highways, and culturally significant Federal- and state-owned lands within each MLRA are also listed. The remaining headings for each MLRA include: physiography, geology, climate, water, soils, biological resources, and land use.

Additional information can be found at:  
[soils.usda.gov/survey/geography/mlra/](http://soils.usda.gov/survey/geography/mlra/)

A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

Additional information can be found at:  
[soils.usda.gov/survey/geography/cra.html](http://soils.usda.gov/survey/geography/cra.html)



Coordinate System: HARN StatePlane Washington South  
Units: Feet, Datum: NAD 1983



## Shrub and Tree Species for Planting Riparian Areas in MLRA 1

### Major Land Resource Area 1

	early seral	often hydrophytic	mix of species	upland species
in the water	typically flooded	often flooded	rarely flooded	never flooded

### Riparian Zones

Common name	Scientific name	I = tree, S = shrub, T/S = short tree/ tall shrub	Minimum Spacing	Height (feet)	Riparian Zones					Notes
					Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	
redosier dogwood <sup>1</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10	Herbaceous Zone	x	x	x		
sweet Gale <sup>1</sup>	<i>Myrica gale</i>	S	4	↑5		x	x			lower elevation
salmonberry <sup>1</sup>	<i>Rubus spectabilis</i>	S	5	3-12			x	lower <sup>2</sup>		
dune willow (Hooker,Coast) <sup>1</sup>	<i>Salix hookeriana</i>	T/S	6	10-20		x	x			
Pacific willow <sup>1</sup>	<i>Salix lucida</i> ssp. <i>lasiandra</i>	T	8	20-60		x	x	x		
Northwest sandbar willow <sup>1</sup>	<i>Salix sessilifolia</i>	T/S	6	7-22		x	x			
Sitka willow <sup>1</sup>	<i>Salix sitchensis</i>	T/S	6	8-16		x	x			
rose (Douglas) spirea <sup>1</sup>	<i>Spiraea douglasii</i>	S	4	3-6		x	x			
vine maple	<i>Acer circinatum</i>	T/S	6	↑25			x	x	x	
bigleaf maple	<i>Acer macrophyllum</i>	T	8	↑110				x	x	
red alder	<i>Alnus rubra</i>	T	12	30-100			x	x	x	nitrogen fixer
Sitka alder <sup>1</sup>	<i>Alnus viridis</i> ssp. <i>sinuata</i>	T/S	6	3-20			x	x		higher elevation
black hawthorn	<i>Crataegus douglasii</i>	T/S	7	14-35			x	x	x	has thorns
cascara buckthorn	<i>Frangula purshiana</i>	T/S	8	↑50			x	x	x	
Oregon ash <sup>1</sup>	<i>Fraxinus latifolia</i>	T	10	↑80		x	x	x		lower elev., south of Jefferson Co.
Pacific crabapple <sup>1</sup>	<i>Malus fusca</i>	T/S	8	↑40	x	x	x			
Indian plum	<i>Oemleria cerasiformis</i>	T/S	5	↑15			x	x		

Pacific ninebark <sup>1</sup>	<i>Physocarpus capitatus</i>	S	6	6-14
Sitka spruce	<i>Picea sitchensis</i>	T	10	↑230
lodgepole pine (shore pine)	<i>Pinus contorta</i> var. <i>contorta</i>	T	12	↑65
black cottonwood	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	T	12	↑160
Nootka rose	<i>Rosa nutkana</i>	S	5	↑9
swamp rose (Pea fruit rose) <sup>1</sup>	<i>Rosa pisocarpa</i>	S	5	↑9
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
Saskatoon serviceberry (Pacific)	<i>Amelanchier alnifolia</i> var. <i>semiintegrifolia</i>	T/S	5	↑15
beaked hazelnut	<i>Corylus cornuta</i>	S	5	3-12
western white pine	<i>Pinus monticola</i>	T	12	↑200
bitter cherry	<i>Prunus emarginata</i>	T	5	↑50
chokecherry	<i>Prunus virginiana</i>	T/S	5	↑25
Douglas-fir	<i>Pseudotsuga menziesii</i>	T	12	↑200
redflower currant	<i>Ribes sanguineum</i>	S	5	↑9
dwarf rose	<i>Rosa gymnocarpa</i>	S	4	3
thimbleberry	<i>Rubus parviflorus</i>	S	4	2-10
red elderberry	<i>Sambucus racemosa</i>	T/S	6	10-30
western red cedar	<i>Thuja plicata</i>	T	10	↑200

Herbaceous Zone

	x	x		
	x	x	x	conifer
	x	x	x	conifer
	upper <sup>2</sup>	x	x	large tree
	x	x	x	
	x	x		
	x	x	x	rhizomes
		x	x	
		x	x	
		x	x	conifer
		x	x	Shrub on dry sites
		x	x	
		x		conifer
		x	x	
		x	x	
		x	x	
		x	x	conifer

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

See T, S & T/S footnote at the bottom of MLRA 2, 3 or 4

## Shrub and Tree Species for Planting Riparian Areas in MLRA 2

Major Land Resource Area 2						early seral	often hydrophytic	mix of species	upland species						
					in the water	typically flooded	often flooded	rarely flooded	never flooded						
Common name					Scientific name					Riparian Zones					Notes
										T = tree, S = shrub, T/S = short tree/ tall	Minimum Spacing	Height (feet)	Toe Zone	Bank Zone	
sweet Gale <sup>1</sup>	<i>Myrica gale</i>	S	4	↑5	Herbaceous Zone	x	x			lower elevations, Puget Sound area					
redosier dogwood <sup>1</sup>	<i>Cornus sericea ssp. sericea</i>	S	6	7-10		x	x	x							
Pacific willow <sup>1</sup>	<i>Salix lucida ssp. lasiandra</i>	T	8	20-60		x	x								
Northwest sandbar willow <sup>1</sup>	<i>Salix sessilifolia</i>	T/S	6	7-22		x	x								
dune willow (Hooker,Coast) <sup>1</sup>	<i>Salix hookeriana</i>	T/S	6	10-20		x	x			Puget Sound area only					
Sitka willow <sup>1</sup>	<i>Salix sitchensis</i>	T/S	6	8-16		x	x								
rose (Douglas) spirea <sup>1</sup>	<i>Spiraea douglasii</i>	S	4	3-6		x	x								
salmonberry <sup>1</sup>	<i>Rubus spectabilis</i>	S	5	3-12			x	lower <sup>2</sup>							
Sitka alder <sup>1</sup>	<i>Alnus viridis ssp. sinuata</i>	T/S	6	3-20			x	x		higher elevations					
Sitka mountain ash <sup>1</sup>	<i>Sorbus sitchensis</i>	T/S	5	3-12				x		higher elevations					
paper birch <sup>1</sup>	<i>Betula papyrifera</i>	T	8	↑100				x		northern counties					
vine maple	<i>Acer circinatum</i>	T/S	6	↑25				x	x						
bigleaf maple	<i>Acer macrophyllum</i>	T	8	↑110				x	x						
red alder	<i>Alnus rubra</i>	T	12	30-100			x	x	x						
black hawthorn <sup>1</sup>	<i>Crataegus douglasii</i>	T/S	7	14-35		x	x		has thorns						



Oregon ash <sup>1</sup>	<i>Fraxinus latifolia</i>	T	10	↑80
Pacific crabapple <sup>1</sup>	<i>Malus fusca</i>	T/S	8	↑40
Scouler's willow	<i>Salix scouleriana</i>	T/S	6	20-40
black twinberry <sup>1</sup>	<i>Lonicera involucrata</i>	S	5	6-12
Indian plum	<i>Oemleria cerasiformis</i>	T/S	5	↑15
Pacific ninebark <sup>1</sup>	<i>Physocarpus capitatus</i>	S	6	6-14
Nootka rose	<i>Rosa nutkana</i>	S	5	↑9
swamp rose (Pea fruit rose) <sup>1</sup>	<i>Rosa pisocarpa</i>	S	5	↑9
red elderberry	<i>Sambucus racemosa</i>	T/S	6	10-30
black cottonwood	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	T	12	↑160
cascara buckthorn	<i>Frangula purshiana</i>	T/S	8	↑50
lodgepole pine (shore pine)	<i>Pinus contorta</i> var. <i>contorta</i>	T	12	↑65
Sitka spruce	<i>Picea sitchensis</i>	T	10	↑230
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
Pacific rhododendron	<i>Rhododendron macrophyllum</i>	S	8	↑25
salal	<i>Gaultheria shallon</i>	S	3	1-15
grand fir	<i>Abies grandis</i>	T	10	↑260
western hemlock	<i>Tsuga heterophylla</i>	T	10	↑200
tall Oregon grape	<i>Mahonia aquifolium</i>	S	5	6-12
mock orange	<i>Philadelphus lewisii</i>	S	5	6-12
Douglas-fir (West Side)	<i>Pseudotsuga menziesii</i>	T	12	↑230
dwarf rose	<i>Rosa gymnocarpa</i>	S	4	3
Saskatoon serviceberry (Pacific)	<i>Amelanchier alnifolia</i> var. <i>semiintegrifolia</i>	T/S	5	↑15
beaked hazelnut	<i>Corylus cornuta</i>	S	5	3-12
western white pine	<i>Pinus monticola</i>	T	12	↑200
bitter cherry	<i>Prunus emarginata</i>	T/S	5	↑50
chokecherry	<i>Prunus virginiana</i>	T/S	5	8-25
redflower currant	<i>Ribes sanguineum</i>	S	5	↑9
thimbleberry	<i>Rubus parviflorus</i>	S	4	2-10

Herbaceous Zone

Herbaceous Zone

x	x	x		
x	x	x		
	x	x		
x	x	x		
		x	x	
x	x	x		
	x	x	x	
	x	x		
		x	x	
	x	x	x	large tree
	x	x	x	
	x	x	x	conifer
	x	x	x	conifer
	x	x	x	rhizomes
			x	slow growing
		x	x	
		x	x	conifer
		x	x	conifer
		x	x	
		x	x	conifer
		x	x	
		x	x	
		x	x	conifer
		x	x	may be hard to find
		x	x	conifer
		x	x	
		x	x	Tree on moist sites
		x	x	
		x	x	

blue elderberry	<i>Sambucus nigra</i> ssp. <i>cerulea</i>	T/S	6	↑25						
western red cedar	<i>Thuja plicata</i>	T	10	↑200			x	x	x	less common than red elderberry
oceanspray	<i>Holodiscus discolor</i>	S	8	5-15				x	x	conifer

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

For this document T, S and T/S is about canopy structure (location within the canopy), growth habit, growth form, and orientation

Title 440, part 502 definition of a tree is 13' in height and single stemmed (See forest land definition).

T/S designation is used when shrubs (generally erect, multi-stemmed species) have a common height range within >8' and <50';

and for trees (generally erect, single stemmed species) that have common height ranges within > 13' and <35'.

When trees have a height range between 35'-50', then they may be considered T/S or T depending on whether they are commonly overstory or mid-story.

## Shrub and Tree Species for Planting Riparian Areas in MLRA 3

### Major Land Resource Area 3

						early seral	often hydro- phytic	mix of species	upland species	
					in the water	typically flooded	often flooded	rarely flooded	never flooded	
					Riparian Zones					
					Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	Notes
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall shrub	Minimum Spacing	Height (feet)						
redosier dogwood <sup>1</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10		x	x			
Geyer's willow <sup>1</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x			
Sitka willow <sup>1</sup>	<i>Salix sitchensis</i>	T/S	6	8-16		x	x			
Pacific willow <sup>1</sup>	<i>Salix lucida</i> ssp. <i>lasiandra</i>	T	8	20-60		x	x	x		
rose (Douglas) spirea <sup>1</sup>	<i>Spiraea douglasii</i>	S	4	3-6		x	x			
Sitka alder <sup>1</sup>	<i>Alnus viridis</i> ssp. <i>sinuata</i>	T/S	6	3-20			x	x		higher elevations
Alaska cedar	<i>Chamaecyparis nootkatensis</i>	T	10	↑130			x	x	x	higher elevations
red alder	<i>Alnus rubra</i>	T	12	30-100			x	x	x	
Nootka rose	<i>Rosa nutkana</i>	S	5	↑9			x	x	x	
red elderberry	<i>Sambucus racemosa</i>	T/S	6	10-30				x	x	
salmonberry <sup>1</sup>	<i>Rubus spectabilis</i>	S	5	3-12			x	lower <sup>2</sup>		
cascara buckthorn	<i>Frangula purshiana</i>	T/S	8	↑50			x	x	x	
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5			x	x	x	rhizomes
black cottonwood <sup>1</sup>	<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i>	T	12	↑160			Upper <sup>2</sup>	x		large tree
huckleberry	<i>Vaccinium</i> sp.	S	4	2-8				x	x	higher elevations
noble fir	<i>Abies procera</i>	T	12	↑260				x	x	conifer, higher elevations
western white pine	<i>Pinus monticola</i>	T	12	↑200				x	x	conifer

Herbaceous Zone



bitter cherry	<i>Prunus emarginata</i>	T/S	5	↑50
Douglas-fir	<i>Pseudotsuga menziesii</i>	T	12	↑200
redflower currant	<i>Ribes sanguineum</i>	S	5	↑9
dwarf rose	<i>Rosa gymnocarpa</i>	S	4	3
thimbleberry	<i>Rubus parviflorus</i>	S	4	2-10
western red cedar	<i>Thuja plicata</i>	T	10	↑200
western hemlock	<i>Tsuga heterophylla</i>	T	10	↑200
grand fir	<i>Abies grandis</i>	T	10	↑260

		x	x	Tree on moist sites
		x	x	conifer
		x	x	
		x	x	
		x	x	conifer
		x	x	conifer
		x	x	conifer

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

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and for trees (generally erect, single stemmed species) that have common height ranges within > 13' and <35'.

When trees have a height range between 35'-50', then they may be considered T/S or T depending on whether they are commonly overstory or mid-story.

## Shrub and Tree Species for Planting Riparian Areas in MLRA 4A

### Major Land Resource Area 4A

						early seral	often hydro- phytic	mix of species	upland species	
					in the water	typically flooded	often flooded	rarely flooded	never flooded	
					Riparian Zones					
					Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall shrub	Minimum Spacing	Height (feet)						Notes
redosier dogwood <sup>1</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10	Herbaceous Zone	x	x	x		
Pacific willow <sup>1</sup>	<i>Salix lucida</i> ssp. <i>lasiandra</i>	T	8	20-60		x	x	x		
Northwest sandbar willow <sup>1</sup>	<i>Salix sessilifolia</i>	T/S	6	7-22		x	x			S. of Columbia R. only
dune willow (Hooker,Coast) <sup>1</sup>	<i>Salix hookeriana</i>	T/S	6	10-20		x	x			
Sitka willow <sup>1</sup>	<i>Salix sitchensis</i>	T/S	6	8-16		x	x			
rose (Douglas) spirea <sup>1</sup>	<i>Spiraea douglasii</i>	S	4	3-6		x	x			
sweet Gale <sup>1</sup>	<i>Myrica gale</i>	S	4	↑5		x	x	x		
salmonberry <sup>1</sup>	<i>Rubus spectabilis</i>	S	5	3-12			x	lower <sup>2</sup>		
Indian plum	<i>Oemleria cerasiformis</i>	T/S	5	↑15				x	x	
Oregon ash <sup>1</sup>	<i>Fraxinus latifolia</i>	T	10	↑80		x	x	x		south of Jefferson county
red elderberry	<i>Sambucus racemosa</i>	T/S	6	10-30				x	x	
black cottonwood	<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i>	T	12	↑160			Upper <sup>2</sup>	x	x	large tree
Nootka rose	<i>Rosa nutkana</i>	S	5	↑9			x	x	x	
Pacific ninebark	<i>Physocarpus capitatus</i>	S	6	6-14			x	x	x	
lodgepole pine (shore pine)	<i>Pinus contorta</i> var. <i>contorta</i>	T	12	↑65		x	x	x	x	conifer

Sitka spruce	<i>Picea sitchensis</i>	T	10	↑230
Pacific crabapple	<i>malus fusca</i>	T/S	10	↑40
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
salal	<i>Gaultheria shallon</i>	S	3	↑15
red alder	<i>Alnus rubra</i>	T	12	30-100
stink current	<i>Ribes bracteosum</i>	S	5	4-9
bitter cherry	<i>Prunus emarginata</i>	T	5	↑50
vine maple	<i>Acer circinatum</i>	T/S	6	↑25
bigleaf maple	<i>Acer macrophyllum</i>	T	8	↑110
Douglas-fir (West Side)	<i>Pseudotsuga menziesii</i>	T	12	↑230
western red cedar	<i>Thuja plicata</i>	T	10	↑200
western hemlock	<i>Tsuga heterophylla</i>	T	10	↑200

Herbaceous Zone

	x	x	x	conifer
	x	x	x	
	x	x	x	rhizomes
		x	x	
	x	x	x	
	x	x	x	
		x	x	
		x	x	
		x	x	conifer, east part of MLRA only
		x	x	conifer
		x	x	conifer

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

For this document T, S and T/S is about canopy structure (location within the canopy), growth habit, growth form, and orientation

Title 440, part 502 definition of a tree is 13' in height and single stemmed (See forest land definition).

T/S designation is used when shrubs (generally erect, multi-stemmed species) have a common height range within >8' and <50';

and for trees (generally erect, single stemmed species) that have common height ranges within > 13' and <35'.

When trees have a height range between 35'-50', then they may be considered T/S or T depending on whether they are commonly overstory or mid-story.



## Shrub and Tree Species for Planting Riparian Areas in MLRA 6

Major Land Resource Area 6						early seral	often hydro-phytic	mix of species	upland species	
					in the water	typically flooded	often flooded	rarely flooded	never flooded	
Common name					Riparian Zones					Notes
					Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	
Scientific name	T = tree, S = shrub, T/S = short tree/ tall shrub	Minimum Spacing	Height (feet)							
redosier dogwood <sup>1,4</sup>	<i>Cornus sericea</i>	S	6	7-10		x	x	x		
Drummond's willow <sup>3,4</sup>	<i>Salix drummondiana</i>	T/S	6	↑12		x	x			cuttings ok
coyote willow <sup>2,3,4</sup>	<i>Salix exigua</i>	T/S	4	3-15		x	x			cuttings ok
Geyer's willow <sup>3,4</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x			cuttings ok
Lemmon's willow <sup>3,4,9</sup>	<i>Salix lemmonii</i>	T/S	5	3-10		x	x	x		cuttings ok
planeleaf willow <sup>1,4</sup>	<i>Salix planifolia</i>	T/S	4	4		x	x			high elevation
thinleaf alder <sup>1</sup>	<i>Alnus incana ssp. tenuifolia</i>	T	8	↑40			x	x		nitrogen fixer
Sitka alder <sup>1</sup>	<i>Alnus viridis ssp. sinuata</i>	T/S	6	3-20			x	x		nitrogen fixer
water birch <sup>1</sup>	<i>Betula occidentalis</i>	T	8	↑50			x	x		
Mackenzie willow <sup>3,4</sup>	<i>Salix prolixa</i>	T/S	6	↑30			x			cuttings ok
black hawthorn <sup>1</sup>	<i>Crataegus douglasii</i>	T/S	7	14-35			x	x		has thorns
black cottonwood <sup>1,4</sup>	<i>Populus balsamifera ssp. Trichocarpa</i>	T	12	↑160				x		large tree
quaking aspen <sup>1</sup>	<i>Populus tremuloides</i>	T	8	30-45				x		
peachleaf willow <sup>3,4</sup>	<i>Salix amygdaloides</i>	T	8	20-40				x		cuttings ok
Engelmann spruce <sup>1</sup>	<i>Picea engelmannii</i>	T	12	↑120				x		for wetter sites, conifer
western white pine <sup>1</sup>	<i>Pinus monticola</i>	T	12	↑200				x		conifer

Herbaceous Zone

ocean spray <sup>1</sup>	<i>Holodiscus discolor</i>	S	8	5-15
bitter cherry <sup>1</sup>	<i>Prunus emarginata</i>	T/S	5	↑50
Nootka rose <sup>1</sup>	<i>Rosa nutkana</i>	S	5	↑9
Douglas-fir <sup>1</sup>	<i>Pseudotsuga menziesii</i>	T	12	↑110
mockorange	<i>Philadelphus lewisii</i>	S	5	4-8
serviceberry	<i>Amelanchier alnifolia</i>	T/S	5	↑15
blue elderberry	<i>Sambucus nigra ssp. Cerulea</i>	T/S	6	↑23
red elderberry	<i>Sambucus racemosa</i>	T/S	6	10-30
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
ponderosa pine	<i>Pinus ponderosa</i>	T	14	↑223
chokecherry	<i>Prunus virginiana</i>	T/S	5	↑25
golden currant	<i>Ribes aureum</i>	S	5	↑10
wax current	<i>Ribes cereum</i>	S	4	2-6
Woods' rose	<i>Rosa woodsii</i>	S	5	2-6
smooth sumac	<i>Rhus glabra</i>	S	6	↑12
Siberian peashrub <sup>6</sup>	<i>Caragana arborescens</i>	S	6	↑14
Rocky Mt. Juniper	<i>Juniperus scopulorum</i>	T	6	↑50
Oregon Grape, Tall	<i>Mahonia aquafolium</i>	S	4	↑8

Herbaceous Zone

		x		
		x		Tree on moist sites
		x		
		x		conifer
		x	x	
		x	x	
		x	x	
		x	x	rhizomes
		x	x	conifer
		x	x	
		x	x	
		x	x	
		x	x	
			x	non native
			x	slow growing, conifer
			x	evergreen

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

See T, S & T/S footnote at the botom of MLRA 7, 9 or 43,44



## Shrub and Tree Species for Planting Riparian Areas in MLRA 7

### Major Land Resource Area 7

							early seral	often hydrophytic	mix of species	upland species	
						in the water	typically flooded	often flooded	rarely flooded	never flooded	
						Riparian Zones					
						Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall	Minimum Spacing	Height (feet)						Notes	
redosier dogwood <sup>1</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10	Herbaceous Zone	x	x				very common
coyote willow <sup>3,4,8</sup>	<i>Salix exigua</i>	T/S	4	3-15		x	x				cuttings ok
yellow willow <sup>1,4</sup>	<i>Salix lutea</i>	T/S	6	↑23		x	x				
Geyer's willow <sup>3,4</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x				cuttings ok
Mackenzie willow <sup>3,4</sup>	<i>Salix prolixa</i>	T/S	6	↑30			x				cuttings ok
common snowberry <sup>1</sup>	<i>Symphoricarpos albus</i>	S	4	2-5			x				rhizomes
golden currant <sup>1</sup>	<i>Ribes aureum</i>	S	5	↑10			x				
white alder <sup>1</sup>	<i>Alnus rhombifolia</i>	T	8	50-80			x	x			nitrogen fixer
peachleaf willow <sup>3,4</sup>	<i>Salix amygdaloides</i>	T	8	20-40					x		cuttings ok
black cottonwood <sup>1,4</sup>	<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i>	T	12	↑160					x		large tree
Woods' rose <sup>1</sup>	<i>Rosa woodsii</i>	S	5	2-6					x		
wax current <sup>1</sup>	<i>Ribes cereum</i>	S	4	2-6					x		
big sagebrush	<i>Artemisia tridentata</i>	S	4	4						x	
rubber rabbitbrush	<i>Ericameria nauseosa</i>	S	4	3						x	
yellow rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	S	4	3						x	
antelope bitterbrush	<i>Purshia tridentata</i>	S	5	↑6						x	
purple sage	<i>Salvia dorrii</i>	S	4	3						x	
snow buckwheat	<i>Eriogonum niveum</i>	S	3	2						x	small subshrub

round-headed buckwheat	<i>Eriogonum sphaerocephalum</i>	S	3	2				x	small subshrub
Siberian peashrub <sup>5,6</sup>	<i>Caragana arborescens</i>	S	6	↑14				x	non native
Rocky Mt. Juniper <sup>5</sup>	<i>Juniperus scopulorum</i>	T	6	↑50				x	slow growing, conifer
fourwing saltbush	<i>Atriplex canescens</i>	S	4	↑9				x	

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

For this document T, S and T/S is about canopy structure (location within the canopy), growth habit, growth form, and orientation

Title 440, part 502 definition of a tree is 13' in height and single stemmed (See forest land definition).

T/S designation is used when shrubs (generally erect, multi-stemmed species) have a common height range within >8' and <50';

and for trees (generally erect, single stemmed species) that have common height ranges within > 13' and <35'.

When trees have a height range between 35'-50', then they may be considered T/S or T depending on whether they are commonly overstory or mid-story.

## Shrub and Tree Species for Planting Riparian Areas in MLRA 8

### Major Land Resource Area 8

### Riparian Zones

							early seral	often hydrophytic	mix of species	upland species	
						in the water	typically flooded	often flooded	rarely flooded	never flooded	
Major Land Resource Area 8						Riparian Zones					
						Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall	Minimum Spacing	Height (feet)						Notes	
redosier dogwood <sup>1,4</sup>	<i>Cornus sericea ssp. sericea</i>	S	6	7-10	Herbaceous Zone	x	x	x			
coyote willow <sup>3,4,8</sup>	<i>Salix exigua</i>	T/S	4	3-15		x	x				cuttings ok
yellow willow <sup>1,4</sup>	<i>Salix lutea</i>	T/S	6	↑23		x	x				
Geyer's willow <sup>3,4</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x				cuttings ok
Mackenzie willow <sup>3</sup>	<i>Salix prolixa</i>	T/S	6	↑30			x	x			cuttings ok
thinleaf alder <sup>1</sup>	<i>Alnus incana ssp. tenuifolia</i>	T	8	↑40			x				nitrogen fixer
water birch <sup>1</sup>	<i>Betula occidentalis</i>	T	8	↑50			x				
common snowberry <sup>1</sup>	<i>Symphoricarpos albus</i>	S	4	2-5			x	x			
golden currant <sup>1</sup>	<i>Ribes aureum</i>	S	5	↑10			x	x			
Woods' rose <sup>1</sup>	<i>Rosa woodsii</i>	S	5	2-6			x	x			
peachleaf willow <sup>3,4</sup>	<i>Salix amygdaloides</i>	T	8	20-40					x		cuttings ok
black cottonwood <sup>1,4</sup>	<i>Populus balsamifera ssp. Trichocarpa</i>	T	12	↑160					x		large tree
wax current <sup>1</sup>	<i>Ribes cereum</i>	S	4	2-6					x		
mockorange <sup>1</sup>	<i>Philadelphus lewisii</i>	S	5	4-8					x		
chokecherry <sup>1</sup>	<i>Prunus virginiana</i>	T/S	5	↑25					x		
blue elderberry <sup>1</sup>	<i>Sambucus nigra ssp. cerulea</i>	T/S	6	↑25					x		
quaking aspen <sup>1</sup>	<i>Populus tremuloides</i>	T	8	30-45				x			

black hawthorn <sup>1</sup>	<i>Crataegus douglasii</i>	S	7	14-35
serviceberry <sup>1</sup>	<i>Amelanchier alnifolia</i>	S	5	↑15
ponderosa pine <sup>1,5</sup>	<i>Pinus ponderosa</i>	T	14	↑200
silver buffaloberry <sup>1</sup>	<i>Shepherdia argentea</i>	S	6	↑15
smooth sumac <sup>1</sup>	<i>Rhus glabra</i>	S	6	↑12
big sagebrush	<i>Artemisia tridentata</i>	S	4	4
spineless horse-brush	<i>Tetradymia canescens</i>	S	4	3
rubber rabbitbrush	<i>Ericameria nauseosa</i>	S	4	3
Siberian peashrub <sup>5,6</sup>	<i>Caragana arborescens</i>	S	6	↑14
Rocky Mt juniper <sup>5</sup>	<i>Juniperus scopulorum</i>	T	6	↑50
yellow rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	S	4	3
antelope bitterbrush	<i>Purshia tridentata</i>	S	5	↑6
Wyeth's buckwheat	<i>Eriogonum heracleoides</i>	S	3	2
snow buckwheat	<i>Eriogonum niveum</i>	S	3	2
sulphur buckwheat	<i>Eriogonum umbellatum</i>	S	3	2
purple sage	<i>Salvia dorrii</i>	S	4	3

Herbaceous Zone

		x		has thorns
		x		
		x		conifer
		x		
		x		
			x	
			x	
			x	
			x	non native
			x	slow growing, conifer
			x	
			x	
			x	small subshrub
			x	small subshrub
			x	small subshrub
			x	

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

See T, S & T/S footnote at the bottom of MLRA 7, 9 or 43,44

## Shrub and Tree Species for Planting Riparian Areas in MLRA 9

Major Land Recourse Area 9							early seral	often hydro- phytic	mix of species	upland species	
						in the water	typically flooded	often flooded	rarely flooded	never flooded	
						Riparian Zones					
						Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	Notes
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall shrub	Minimum Spacing	Height (feet)							
redosier dogwood <sup>1,4</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10	Herbaceous Zone	x	x	x			
coyote willow <sup>3,4,8</sup>	<i>Salix exigua</i>	T/S	4	3-15		x	x			cuttings ok	
yellow willow <sup>3,4</sup>	<i>Salix lutea</i>	T/S	6	↑23		x	x			cuttings ok	
Geyer's willow <sup>3,4</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x			cuttings ok	
thinleaf alder <sup>1</sup>	<i>Alnus incana</i> ssp. <i>tenuifolia</i>	T	8	↑40		x	x			nitrogen fixer	
water birch <sup>1</sup>	<i>Betula occidentalis</i>	T	8	↑50		x	x				
Utah honeysuckle <sup>1</sup>	<i>Lonicera utahensis</i>	S	3	5		x	x				
Mackenzie willow <sup>1,3,4</sup>	<i>Salix prolixa</i>	T/S	6	↑30			x			cuttings ok	
Bebb willow <sup>3,4</sup>	<i>Salix bebbiana</i>	T/S	5	10-25			x	x		cuttings ok	
peachleaf willow <sup>3,4</sup>	<i>Salix amygdaloides</i>	T	8	20-40			upper <sup>2</sup>	x		cuttings ok	
golden currant	<i>Ribes aureum</i>	S	5	↑10			x	x	x		
Woods' rose	<i>Rosa woodsii</i>	S	5	2-6			x	x	x		
bitter cherry <sup>1</sup>	<i>Prunus emarginata</i>	T/S	5	↑50			x	x			
black hawthorn <sup>1</sup>	<i>Crataegus douglasii</i>	T/S	7	14-35			x	x		has thorns	
chokecherry <sup>1</sup>	<i>Prunus virginiana</i>	T/S	5	↑25				x			
blue elderberry <sup>1</sup>	<i>Sambucus nigra</i> ssp. <i>cerulea</i>	T/S	6	↑25				x			
quaking aspen <sup>1</sup>	<i>Populus tremuloides</i>	T	8	30-45				x			
black cottonwood <sup>1,4</sup>	<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i>	T	12	↑160			x		large tree		



common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
ocean spray <sup>1</sup>	<i>Holodiscus discolor</i>	S	8	5-15
wax current	<i>Ribes cereum</i>	S	4	2-6
Nootka rose <sup>1</sup>	<i>Rosa nutkana</i>	S	5	↑9
silver buffaloberry	<i>Shepherdia argentea</i>	S	6	6-15
ponderosa pine	<i>Pinus ponderosa</i>	T	14	↑200
Siberian peashrub <sup>6</sup>	<i>Caragana arborescens</i>	S	6	↑14
Rocky Mt juniper	<i>Juniperus scopulorum</i>	T	6	↑50
serviceberry	<i>Amelanchier alnifolia</i>	T/S	5	↑15
mockorange	<i>Philadelphus lewisii</i>	S	5	4-8
Oregon grape	<i>Mahonia aquifolium</i>	S	4	↑8
smooth sumac	<i>Rhus glabra</i>	S	6	↑12
common lilac <sup>6</sup>	<i>Syringa vulgaris</i>	T/S	6	↑14

Herbaceous Zone

		x	x	rhizomes
		x		
		x	x	
		x		
		x	x	
		x	x	conifer
			x	non native
			x	slow growing, conifer
			x	
			x	
			x	
			x	non native

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

<sup>1</sup> Roots of all non-upland species need access to ground water for at least part of the growing season.

<sup>2</sup> Indicates the part of the riparian zone (either upper or lower) appropriate for the given species.

<sup>3</sup> Cuttings need to be planted deep enough so as to have at least 8 inches of the cuttings submerged into the mid-summer water table.

<sup>4</sup> Caution - Cottonwood, dogwood or other willows may or may not do well as cuttings.

<sup>5</sup> Mulch is particularly important for these species in this MLRA, as is first year supplemental water

<sup>6</sup> Non-native species, reserve use of these species for upland areas in agronomic landscapes. Limit to no more than 10% of total stems/acre.

<sup>7</sup> Northwest Puget sound and San Juan Is

<sup>8</sup> In certain situations may be appropriate to plant in the Toe Zone, confirm with Area or State Office Specialists.

<sup>9</sup> More common in Oregon

For this document T, S and T/S is about canopy structure (location within the canopy), growth habit, growth form, and orientation

Title 440, part 502 definition of a tree is 13' in height and single stemmed (See forest land definition).

T/S designation is used when shrubs (generally erect, multi-stemmed species) have a common height range within >8' and <50';

and for trees (generally erect, single stemmed species) that have common height ranges within > 13' and <35'.

When trees have a height range between 35'-50', then they may be considered T/S or T depending on whether they are commonly overstory or mid-story.

## Shrub and Tree Species for Planting Riparian Areas in MLRA 43, 44

### Major Land Recource Areas 43 & 44

					early seral	often hydro- phytic	mix of species	upland species				
					in the water	typically flooded	often flooded	rarely flooded	never flooded			
					Riparian Zones							
Common name	Scientific name	T = tree, S = shrub, T/S = short tree/ tall	Minimum Spacing	Height (feet)	Toe Zone	Bank Zone	Overbank Zone	Transition Zone	Upland Zone	Notes		
redosier dogwood <sup>1,4</sup>	<i>Cornus sericea</i> ssp. <i>sericea</i>	S	6	7-10	Herbaceous Zone	x	x	x		common		
coyote willow <sup>3,4,8</sup>	<i>Salix exigua</i>	T/S	4	3-15		x	x			cuttings ok		
Geyer's willow <sup>3,4</sup>	<i>Salix geyeriana</i>	T/S	6	10-15		x	x			cuttings ok		
Drummond's willow <sup>3,4</sup>	<i>Salix drummondiana</i>	T/S	6	6-13		x	x			cuttings ok		
thinleaf alder <sup>1</sup>	<i>Alnus incana</i> ssp. <i>tenuifolia</i>	T	8	↑40		x	x			nitrogen fixer		
water birch <sup>1</sup>	<i>Betula occidentalis</i>	T	8	↑50		x	x					
twinberry honeysuckle <sup>1</sup>	<i>Lonicera involucrata</i>	S	3	3-12		x	x					
Utah honeysuckle <sup>1</sup>	<i>Lonicera utahensis</i>	S	3	5		x	x					
black hawthorn <sup>1</sup>	<i>Crataegus douglasii</i>	S	7	14-35				x	x	has thorns		
Mackenzie willow <sup>3,4</sup>	<i>Salix prolixa</i>	T/S	6	↑30				x		cuttings ok		
Bebb willow <sup>1,4</sup>	<i>Salix bebbiana</i>	T/S	5	10-25				x	x			
Sitka alder <sup>1</sup>	<i>Alnus viridis</i> ssp. <i>sinuata</i>	T/S	6	↑15				x	x	nitrogen fixer		
golden currant	<i>Ribes aureum</i>	S	5	↑10				x	x	x		
peachleaf willow <sup>3,4</sup>	<i>Salix amygdaloides</i>	T	8	20-40				upper <sup>2</sup>	x		cuttings ok	
black cottonwood <sup>1,4</sup>	<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i>	T	12	↑160					x		large tree	
bitter cherry <sup>1</sup>	<i>Prunus emarginata</i>	T/S	5	↑50					x		Tree on moist sites	
thimbleberry <sup>1</sup>	<i>Rubus parviflorus</i>	S	4	4					x			

quaking aspen <sup>1</sup>	<i>Populus tremuloides</i>	T	8	30-45
ocean spray <sup>1</sup>	<i>Holodiscus discolor</i>	S	8	5-15
dwarf rose <sup>1</sup>	<i>Rosa gymnocarpa</i>	S	4	3
Nootka rose <sup>1</sup>	<i>Rosa nutkana</i>	S	5	↑9
shrubby cinuefoil <sup>1</sup>	<i>Dasiphora fruticosa</i>	S	4	3
red elderberry <sup>1</sup>	<i>Sambucus racemosa</i>	T/S	6	10-30
western red cedar <sup>1</sup>	<i>Thuja plicata</i>	T	10	↑150
Engelmann spruce <sup>1</sup>	<i>Picea engelmannii</i>	T	12	↑120
common snowberry	<i>Symphoricarpos albus</i>	S	4	2-5
wax current	<i>Ribes cereum</i>	S	4	2-6
chokecherry	<i>Prunus virginiana</i>	T/S	5	↑25
blue elderberry	<i>Sambucus nigra ssp. cerulea</i>	T/S	6	↑25
Woods' rose	<i>Rosa woodsii</i>	S	5	2-6
silver buffaloberry	<i>Shepherdia argentea</i>	S	6	6-15
western white pine	<i>Pinus monticola</i>	T	12	↑200
lodgepole pine	<i>Pinus contorta</i>	T	12	↑80
ponderosa pine	<i>Pinus ponderosa</i>	T	14	↑223
Douglas-fir	<i>Pseudotsuga menziesii</i>	T	12	↑110
Siberian peashrub <sup>6</sup>	<i>Caragana arborescens</i>	S	6	↑14
Rocky Mt juniper	<i>Juniperus scopulorum</i>	T	6	↑50
serviceberry	<i>Amelanchier alnifolia</i>	T/S	5	↑15
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Herbaceous Zone

		x		
		x		
		x		
		x		
		x		
		x		
		x		conifer
		x		conifer
		x	x	rhizomes
		x	x	
		x	x	
		x	x	
		x	x	
		x	x	conifer
		x	x	conifer
		Upper <sup>2</sup>	x	conifer
		Upper <sup>2</sup>	x	conifer
			x	non native
			x	slow growing, conifer
			x	
			x	evergreen
			x	
			x	non native

**For species not listed consult with Area or State Specialists.**

Base species composition of project planting on reference site species composition.

↑ Indicates species may grow up to the listed height

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## References

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