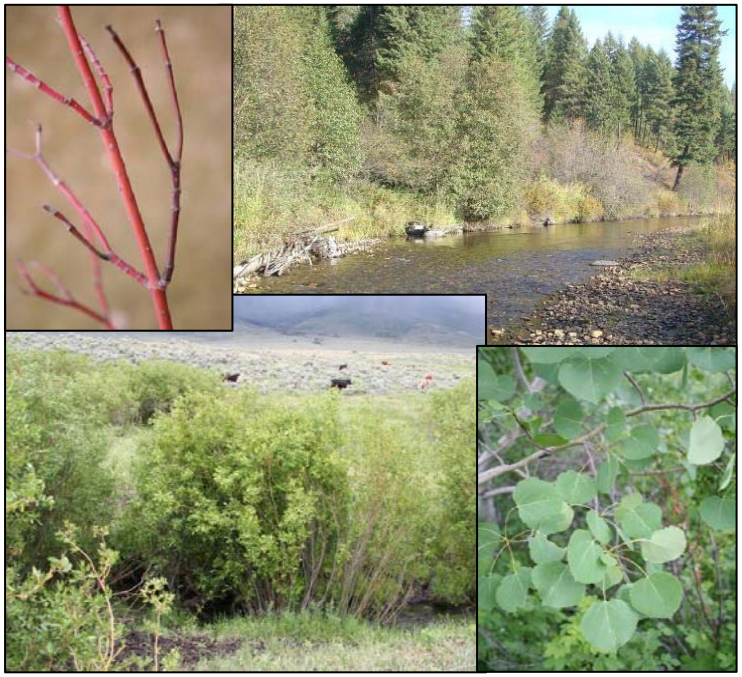
Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions



Chris Hoag, Wetland Plant Ecologist
Derek Tilley, Range Conservationist
Dale Darris, Conservation Agronomist
Kathy Pendergrass, Plant Materials Specialist

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

NOTES:

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Prepared by

Chris Hoag, Wetland Plant Ecologist
USDA-NRCS Plant Materials Center
P.O. Box 296, Aberdeen ID 83210

Derek Tilley, Range Conservationist
USDA-NRCS Plant Materials Center
P.O. Box 296, Aberdeen ID 83210

Dale Darris, Conservation Agronomist
USDA-NRCS Plant Materials Center
3415 NE Granger Ave, Corvallis, OR 97330

Kathy Pendergrass, Plant Materials Specialist
USDA-NRCS, 1201 NE Lloyd Blvd., Suite 900
Portland, OR 97232

Produced: February, 2008

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

This Field Guide is intended as a pocket field guide for the identification of many of the common native woody plants that are found in riparian areas in the Intermountain West and Pacific Northwestern regions of the United States. Identifying common riparian woody plants in the summer is relatively easy with a good dichotomous key. Conversely, identifying plants in winter, when there are no leaves or flowering parts, is not an easy task. This guide is intended to provide a few simple identification characteristics of these woody plants in both the summer and winter. It is neither inclusive nor exhaustive. Many publications are available which provide more detail on these as well as other species. The user is encouraged to review this and other publications for additional taxonomic characteristics.

The primary focus of this Field Guide is to provide information on the identification and collection of native riparian plant materials for practitioners of riparian restoration, particularly for streambank soil bioengineering. The species descriptions provide information on the use of native plant materials to reduce streambank erosion. Collection of propagation material (e.g. live cuttings and poles for streambank stabilization) for many of these plants should be completed in the dormant season, which is defined as the period between leaf fall and bud break. Dormant woody plants have few of the typical identification characteristics used to key the species in the summer. A number of field-tested traits have been listed to help with identification of these species during the winter months.

This Field Guide is small enough to fit in a field pack. The user is encouraged to take notes on the pages. The information in this guide is meant to provide a quick reference while in the field working on a project.

Photo Contributors:
Chris Hoag, Aberdeen PMC, ID
Dale Darris, Corvallis PMC, OR
Kathy Pendergrass. NRCS, Portland, OR
Derek Tilley, Aberdeen PMC, ID
Sonja Johnson, Corvallis PMC, OR
Karen J. Clause, NRCS, Pinedale, WY
Joe Scianna, Bridger PMC, MT
George Gamblin, NRCS, Buffalo, WY
Everet Bainter, NRCS, Casper, WY
Dan Ogle, NRCS, Boise, ID
Louis M. Landry, Calphotos
J.E. (Jed) and Bonnie McClellan, CA Academy of Sciences
Brother Alfred Brousseau, St. Mary's College of CA
Bud Kovalchik, Burke Museum of Natural History and Culture
Ben Legler, Burke Museum of Natural History and Culture
Dendrology Class, Dept. of Forestry, Virginia Tech, Virginia
Paul Slichter
Robert Flogaus-Faust
Thayne Tuason, Central Washington Native Plants
Mary Ellen (Mel) Harte, www.forestryimages.org
Dave Powell, USDA Forest Service, www.forestryimages.org
Gary A. Monroe. USA, NV, Washoe Co. 1981.
Susan McDougall. The Flora of Mt. Adams. USA, WA.
Jane Huber, San Francisco Bay Area Hiker, SF, CA, USA
James L. Reveal, Professor Emeritus, University of Maryland
Al Schneider, www.swcoloradowildflowers.com
Pat Breen, Oregon State University
John Hilty
Marion SWCD

California Polytechnic State University Biological Sciences Department
Paul and Bernice Noll
www.csupomona.edu
www.oakpointnursery.com
www.malag.aes.oregonstate.edu
www.csuchico.edu
www.ecnca.org
www.nativeplant.com
www.eiu.edu
www.fireflyforest.com
www.aeldrun.com
www.evergreen.ca

Table of Contents

Nomenclature and Style

The nomenclature and format of this publication is after the US Government Printing Office Style Manual, 29th edition, 2000, the American National Standards Institute, Inc. (ANSI) and the PLANTS database (2007).

Riparian Planting Zones

Streambank soil bioengineering and streamside stabilization plantings are dependent upon the establishment of plant species at the boundaries of a river or stream. Therefore, it is critical that practitioners understand the function and importance of this area.

A riparian zone is often described as the area between land and water. In the West, they are long linear areas along rivers and streams that are occasionally flooded by those bodies of water. They can be identified by having: 1) vegetation that requires free and unbound water or conditions more moist than normal and 2) saturated soil conditions. Simply stated, riparian areas are places where water saturates the soil more than adjacent areas and where water-loving vegetation is concentrated. Riparian zones are very important because they provide erosion control by regulating sediment transport and distribution, enhance water quality, produce organic matter for aquatic habitats, and provide fish and wildlife habitat.

It is important to properly identify the species of riparian woody plant that you are working with to ensure that the appropriate species is planted in the appropriate riparian planting zone (see below). Riparian vegetation is one of the main components of streambank soil bioengineering. Understanding riparian vegetation concepts is extremely important. The vegetation is adaptive and can withstand high flows if it is established in the correct planting zone. When establishing vegetation, success is dependent on many site specific conditions such as soil compaction, soil type, nutrient availability, salinity, ice load, debris load, predation, weed competition, sediment load, flooding, inundation time, water availability, drought, hydrology, plant availability and climate, to name a few.

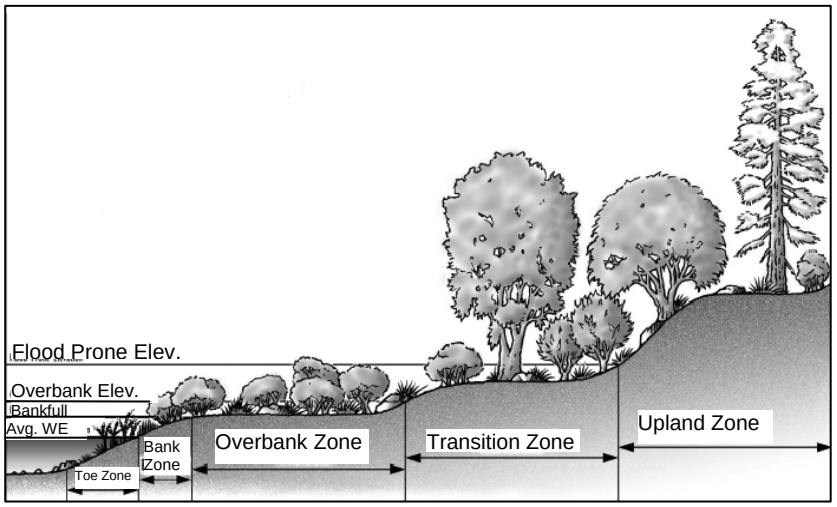


Figure 1. Riparian Planting Zones (Riparian/Wetland Project Information Series No. 16)

The success of streambank soil bioengineering treatments is dependent upon the establishment of riparian plant species. The success of the planting is, in turn, dependent upon the species used, their procurement, handling and establishment techniques, and their location relative to the stream. Therefore, it is important to observe the location and types of existing vegetation in and adjacent to the project area. Proposed streambank soil bioengineering should also be assessed and designed in terms of the relative location of the plants to the stream and water table. The elevation and lateral relationships can be visualized and described in terms of Riparian Planting Zones (Figure 1). Note: not all streams will exhibit all of these zones.

Toe Zone: This zone is located below the average water elevation or baseflow. The cross-sectional area at this discharge often defines the limiting biologic condition for aquatic organisms. Typically this is the zone of highest stress. It is vitally important to the success of any stabilization project that the toe is stabilized. Due to the long inundation, this zone will

rarely have any woody vegetation in it. Often stone, logs, or some inert protection is required for this zone depending upon stream size.

Bank Zone: The bank zone is located between the average water elevation and the bankfull discharge elevation. While it is generally in a less erosive environment than the toe zone, it is potentially exposed to wind generated waves, wet and dry cycles, ice scour, debris deposition, as well as freezing and thawing cycles. The bank zone is generally vegetated with early colonizing herbaceous species, flexible stemmed willows, and low shrubs. Sediment transport typically becomes an issue for flows in this zone, especially for alluvial channels.

Bankfull Channel Elevation: Bankfull stage is typically defined at a point where the width to depth ratio is at a minimum. Many practitioners also use other consistent morphological indices to aid in its identification. In many situations, the flow at the bankfull stage has a recurrence interval of one to five years (more often in the Pacific Northwest). Due to the high velocities and frequent inundation, many practitioners use rock or other hard structures in conjunction with streambank soil bioengineering treatments below this elevation.

A bankfull flow is often considered to be synonymous with channel-forming discharge in stable channels and is used in channel classification as well as for an initial determination of main channel dimensions, plan and profile. In many situations, the channel velocity begins to approach a maximum at bankfull stage. In some cases, on wide, flat floodplains, it has been observed that the channel velocity can drop as the stream overtops its bank and the flow spills onto the floodplain. In a situation such as this, it may be appropriate to use the bankfull hydraulic conditions to assess stability and to select and design streambank protection. However, when the floodplain is narrow or obstructed, channel velocities may continue to increase with rising stage. As a result, it may be appropriate to

also use a discharge greater than bankfull discharge to select and design streambank protection treatments.

Overbank Zone: This zone is located between the bankfull discharge elevation and the overbank elevation. This typically flat zone may be formed from sediment deposition with layered soils. It is sporadically flooded, usually about every two to five years. Vegetation found in this zone is generally flood tolerant and may have a high percentage of hydrophytic plants. Shrubby willows with flexible stems, dogwood, alder, birch and others may be found in this zone. Larger willows, cottonwoods and other trees may be found in the upper end of this zone.

Transition Zone: The transition zone is located between the overbank elevation and the flood prone elevation. This zone may be inundated every 50 years. It is not exposed to high velocities except during high water events. Hydrophytic species generally transcend to larger upland species in this zone. As a result, this is the first zone (from the channel invert) where tree-type species should be considered. The plants in this zone need not be flood tolerant.

Flood Prone Elevation: Many practitioners estimate the flood prone elevation at twice the maximum depth of the bankfull elevation. A calculation of an entrenchment ratio, which is defined as the ratio of the width of the channel at the flood prone elevation to the width of the bankfull channel, is used in channel classification. The area below this elevation may include the active floodplain and the low terrace.

Upland Zone: This zone is found above the flood prone elevation. Erosion in this zone is typically due to overland water flow, wind erosion, improper farming practices, logging, development, and improper grazing. The upland zone is typically vegetated with upland species. Drought tolerance may be one of the most important factors in species selection.

Choice of Plant Material

Most streambank soil bioengineering treatments involve material that is collected from adventitiously rootable stock

(plants that will easily root from a hardwood cutting). When possible, it is best to procure plants from areas that are similar in their location relative to the stream. Planting will be most successful where the soil, site, and species match a nearby stable site. If possible, harvest two or more species from different locations.

Most species should be harvested when the plants are dormant. This is typically in the late fall to early spring, after leaf fall and before the buds swell. Choose and harvest healthy material that is free of splits, rot, disease, and insect infestation. While it is often appropriate to include material that ranges in age up to four years, material should be harvested from plants that are at least two years old. In drier areas, one year old stock should not be used. This younger material is often too small and does not have enough stored energy for good root establishment. Harvesting of live material should leave at least one third of the parent plant intact. The equipment should be sharp enough to make clean cuts and should be periodically disinfected.

When collecting woody cuttings in the winter from dioecious (separate male and female plants) plants, it is important to get cuttings from both the male and female plants. This will ensure that once they are established, they can produce a plant community with the greatest possible genetic diversity and one that is also self-sustaining.

For better establishment success, soaking willows and cottonwoods in cool, aerated water before planting is recommended. Optimum time for soaking is 7 to 14 days for most willows and cottonwoods. Best results are obtained when the bottom half to two-thirds of the cutting is soaked. Cuttings should be planted before roots emerge through the bark to prevent damage to the fragile roots. You can also cut and plant the material on the same day as harvested if the planting hole is

wet. A dry hole will pull water out of the cutting and decrease your over all establishment success.

If it is necessary to harvest material significantly before installation, the cuttings should be stored dry at approximately 33 to 38º F. Live hardwood cuttings can last up to four months if refrigerated. If the material is refrigerated, it is important that they be soaked before planting. If the harvested material is stored under wet conditions for longer than 10 days, roots may start to grow. These initial roots are typically very tender making it difficult to use the material in many of the treatments without damaging them.

Hardwood cuttings can be divided into four general categories: whips, poles (sometimes referred to as stakes), posts, and bundles. Whips are typically one year old material. Because of their small size, they should not be used in drier areas or areas without consistent water. Pole cuttings can be made from shrub and tree species and usually range in diameter from ¾ to 3 *in*. Post plantings are from tree-type species and range in diameter from 3 to 6 *in*. Bundles are packages of smaller diameter cuttings from various species with the branches left intact.

In the PNW, when using containerized stock and hardwood cuttings, fall is the best season for planting followed by winter then early spring planting. This allows plants to develop a good root system using the winter and spring rains prior to the ensuing summer drought season. However, fall or winter plantings may be more vulnerable to washouts and floods.

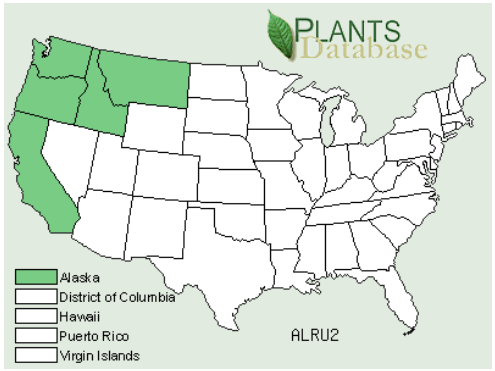
Bareroot materials are generally available in the winter months; plants are generally lifted from rooting beds from January into March. If plant sources are from both bareroot and container plants, planting is generally done during that January to March timeframe.

In the Intermountain Region, when using containerized stock, fall is the best season for planting followed by early spring planting. This allows plants to develop a good root system using the winter and spring moisture prior to the ensuing summer heat. Bareroot materials are generally available in the winter months; plants are generally lifted from rooting beds from February into April. If plant sources are from both bareroot and container plants, planting is generally done during that March to mid-April timeframe.

It is generally advisable to use plant materials from stocks whose genetic or natural origin is located as close as possible to your project location and, or at least, from the same ecological region as your project site. It is especially important to try to find plant stock from a similar elevation and site characteristics as your project site. If materials are not available from your ecological region, it is best to choose plants from the next closest ecological region (see **Regions** on page 14) and with similar elevation and site characteristics.

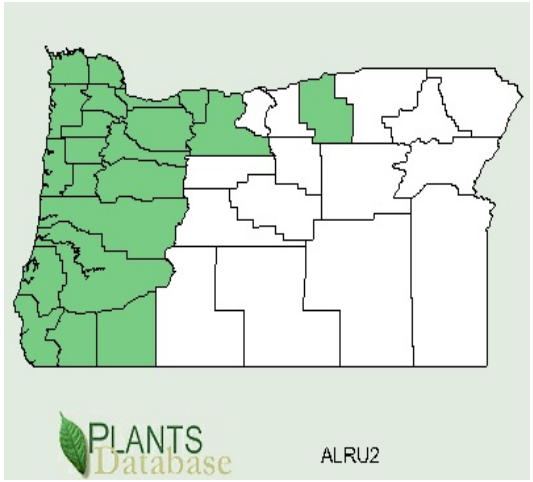
Distribution Range Map

A distribution range map has been included for each species. This map is from the PLANTS database (USDA, NRCS 2007). The map of the USA is only for general guidance and each species is not necessarily recommended for or found everywhere within a state just because it is green. For more detailed distribution information, visit the PLANTS website and click on the map that is shaded in for the state level distribution maps. These maps do not



necessarily indicate native range, only where specimens have been documented. Many species have undergone a range expansion due to cultivation, use as ornamentals, and unintentional introductions. However, the maps should provide a good indication of a species' adaptability to a general region.

If you are interested in a specific species, go to the species page in the PLANTS database. Scroll down to the distribution map and click on the state you are interested in. This will bring up a county map of the state and which counties the species has been found in. This will help you identify where the species has been found. Pay attention to where in the state the plant is found and where you want to plant it. In this example, you can see that red alder is found mainly on the west side of Oregon and trying to plant it on the east side would not be very successful.



Regions

The plants in this publication have been identified as species that occur in the Intermountain and Pacific Northwest regions. There are many different ideas as to which states are included in each of these regions. For the purposes of this publication, we have chosen to list the states that we consider to be the best representatives of the plant's area of adaptation. The regions as defined in this publication are as follows:

Intermountain Region
Southern Idaho
Eastern Oregon
Eastern Washington
Northeastern California
Nevada
Utah
Western Wyoming
Northern Arizona

Pacific Northwest Region
Western Washington
Western Oregon
Northwestern California
Northern Idaho

Using this Guide

For the convenience of the field user, the species in this book have been separated into manageable groups with common characteristics; trees or shrubs, plants with broad leaves versus narrow leaves, etc. The following key uses the "common" form of the character in question; however, due to the inherent variability found in nature, a species may show characteristics other than what is described here. For example many "tree" species can often have a shrubby growth form. Where variability is known, the species will also key out in an alternate group and is indicated by parenthesis and an asterix. Additionally, many willows can have either broad or narrow leaves, and the user is encouraged to follow both leads.

Terms used in the key

Shrubs. Plants typically less than 20 *ft* in height and often have multiple stems.

Trees. Plants growing larger than 20 *ft* normally with a single main trunk.

Simple. Undivided; not having lobes or leaflets.

Lobed. Having lobes or deep incisions.

Compound. Divided into leaflets.

Narrow. More than 3 times longer than wide

Broad. Less than 3 times longer than wide.

Opposite. Leaves and stems arising opposite each other, or 2 per node.

Alternate. Leaves and stems arising alternately, or one per node.

Smooth. Having an even surface; no indentations or divisions.

Toothed. Having a serrated or otherwise toothed margin.

Dichotomous Key to Groups

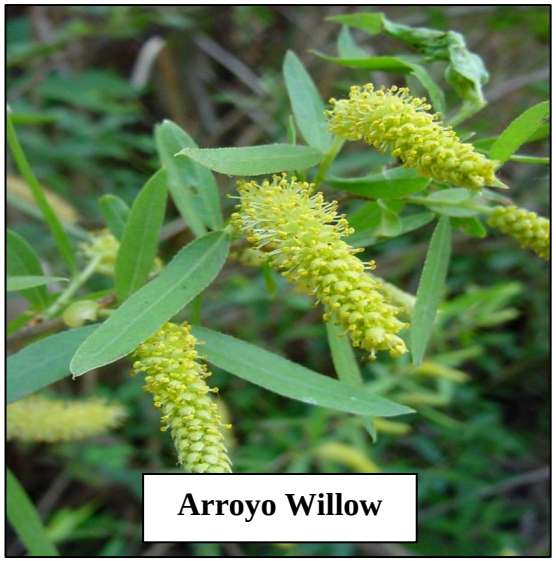
1. shrubs
  2. leaves simple
    3. leaves broad (less than 3 times longer than wide)
      4. leaves and small branches alternate
        5. leaf margins smooth.....Group 1
        5. leaf margins toothed.....Group 2
      4. leaves and small branches opposite
        6. leaf margins smooth.....Group 3
        (*Black twinberry)
        6. leaf margins toothed.....Group 4
    3. leaves narrow (more than 3 times longer than wide)
        7. leaves and small branches opposite…….....Group 5
        7. leaves and small branches alternate
          8. margins smooth.....Group 6
          8. margins toothed.....Group 7
  2. leaves compound or lobed
    9. leaves compound
      10. leaves and small branches alternate
        11. margins smooth.....Group 8
        11. margins toothed.....Group 9
      10. leaves and small branches opposite.....Group 10
    9. leaves lobed
      12. margins smooth.....Group 11
      (*common snowberry)
      12. margins toothed.....Group 12
1. trees
  13. leaves simple
    14. leaves broad (less than 3 times longer than wide)
      15. margins smooth.....Group 13
      15. margins toothed.....Group 14
      (*Scoulers willow, Black cottonwood)
    14. leaves narrow (more than 3 times longer than wide)
      16. margins smooth.....Group 15
      16. margins toothed.....Group 16

13. leaves compound or lobed
    17. leaves compound
      18. margins smooth.....Group 17
      18. margins toothed.....Group 18
    17. leaves lobed……Group 19

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Datasheets for common riparian woody plants of the Intermountain West and Pacific Northwest Regions



Arroyo Willow

NOTES:

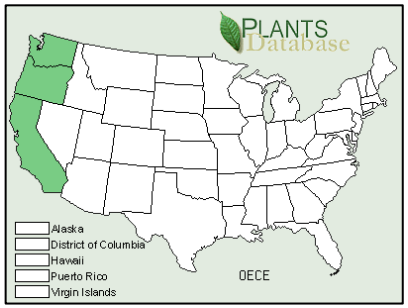
Group 1

Shrubs with simple, broad leaves, alternate branching and smooth leaf margins

- **Indian Plum or Oso Berry**
- **Bebb Willow**
- **Drummond Willow**
- **Hooker Willow**
- **Lemmon Willow**
- **Planeleaf Willow**
- **Sitka Willow**

Indian Plum or Oso Berry (*Oemleria cerasiformis*)

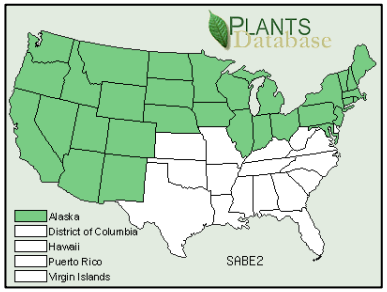
- Small tree to multi-stemmed deciduous shrub up to 15 *ft* height.
- Crushed leaves have a strong "cucumber" scent.
- Typically along moist streambanks although also found in dry to moist open woods and open places; fairly shade-tolerant.
- Prefers nutrient-rich soils.
- Commonly found with red elderberry.
- Generally found below 5,000 *ft* elevation and west of the Cascade Mountains in Oregon and Washington.
- Fruits are important food for birds.
- Summer Key – Leaves simple, entire, thin, paler below, 2 to 3 *in* long and 1 *in* wide, ovate to obovate, with smooth margins; one of the earliest flowering plants in western riparian areas (Jan-early March); male and female flowers usually on different plants, flowers typically emerge prior to the leaves; drooping racemes of greenish to creamy-white flowers mature into orange to purple drupes resembling small "plums".
- Winter Key – Alternate, round twigs; bark bitter, smooth and purplish brown with round pores; chambered pith (with partitions).
- Rooting success from hardwood cuttings is highly variable.
- Plant bareroot or container stock in the Overbank and Transition Zones.



Indian Plum or Oso Berry (*Oemleria cerasiformis*)

Bebb Willow (*Salix bebbiana*)

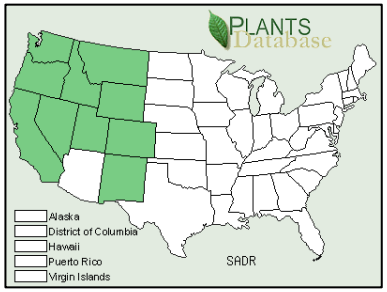
- Large shrub or small bushy tree; 10 to 25 *ft* tall with one to several stems.
- Roots are shallow and dense.
- Prefers sites in moist to wet soils, varying from heavily organic to silty, sandy or gravelly soil texture, to relatively dry riparian sites.
- Shade intolerant and grows best in full sunlight; drought tolerant; does not like standing water for long periods.
- A fast growing but short-lived species that occurs most commonly in sun in poor sites.
- Found in riparian and palustrine communities from 3,000 to 9,000 *ft*.
- Widespread in the United States and Canada except for the southeastern states. Generally found east of the Cascades in Oregon and Washington.
- Summer Key - Leaves 1 to 3 *in* long, hairy when young; smooth and strongly veined when old. Fruit a capsule, 0.2 to 0.3 *in* long, long beaked, and sparsely hairy.
- Winter Key - Bark is thin, reddish, olive-green, or gray tinged with red; smooth when young but becomes rough and furrowed with age. Twigs slender and branch at wide angles; thinly to densely hairy.
- Can be propagated from hardwood cuttings with good success.
- Plant from Bank to Overbank Zone at lower elevation and in the Transition and Upland Zones at higher elevation.



Bebb Willow (*Salix bebbiana*)

Drummond Willow (*Salix drummondiana*)

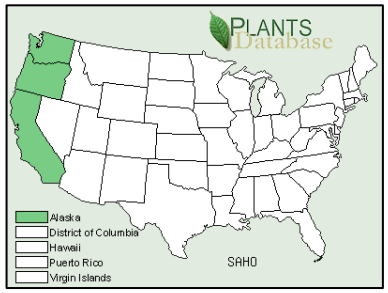
- Shrub with open growth form, up to 6 to 13 (20 *ft)* in height. Comparable to Geyers.
- Commonly associated with Engelmann spruce and subalpine fir on coarse textured soils that are moist and well aerated.
- Grows on moist, well-aerated mineral soils from cobbles and gravels immediately adjacent to waterways to sandy or clay loams in broad valleys
- Found along main drainages.
- Found where water tables vary from near the surface to about 39 *in* deep.
- Slightly higher elevations than Geyers. Found throughout region from 4,000 to 10,000 *ft*, abundant at higher elevations. This is an east-side species in Washington, Oregon and California.
- Summer Key – Leaves narrow at the base, widening out at the middle and rounded at the apex. Dark green on top. White hair on the back of the leaf that doesn't rub off. Edges of the leaves are rolled under.
- Winter Key – Green to reddish purple twigs that are covered with a whitish waxy bloom. Waxy substance is found on current and second year stems and will rub off with thumb. The stems are red underneath.
- Propagation by dormant hardwood cuttings is very successful.
- Plant in the Bank and Overbank Zone.



Drummond Willow (*Salix drummondiana*)

Hooker or Coast Willow (*Salix hookeriana*)

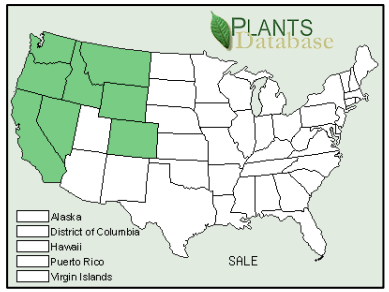
- Pipers willow (*Salix piperi*) now included as the same species.
- Large shrub to small tree-type willow from 10 to 20 (rarely 30) *ft* tall with a multi-branched crooked trunk.
- Variable form with upright, horizontal, and ascending branches.
- Prefers gravelly, sandy or mucky sites but tolerates nearly all soil textures where moisture is not limiting,
- Tolerates long term flooding and poor drainage.
- Prefers full sun and is generally shade intolerant.
- Found along streams, in coastal meadows and marshes, and on moist stabilized dunes near the Pacific Ocean; WA south to northern CA west of the Cascade Mtns.
- Occurs from sea level to 1500 *ft*, occasionally higher.
- Summer Key - Leaves broad, widest near the middle, tapering to the base; bright to dark, shiny green and sparsely hairy above with dense, velvety hairs beneath; underside lacks a white waxy coating; smooth along the margins. Twigs smooth to densely hairy, red to green, snapping off readily from the main stem.
- Winter Key – Buds mostly dark red to orange, occasionally with hairs, alternating on the stem. Twigs red, reddish-green or green and brittle at the base. Older limbs gray and smooth.
- Propagates easily from dormant hardwood and semi-hardwood cuttings.
- Plant as cuttings in the Bank and Overbank Zones. Suitable for moist areas within the Transition Zone as well.



Hooker or Coast Willow (*Salix hookeriana*)

Lemmon Willow (*Salix lemmonii*)

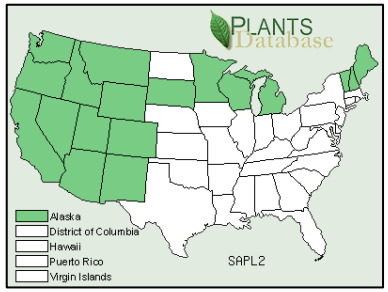
- Medium-sized, shrub-type willow about 3 to 10 *ft* (16 *ft*) tall with crooked stems.
- Tends to occupy drier portions of the riparian community
- Likes well drained gravely or sandy soils to deep, fine textured alluvium over subsurface soils from silt to silty clay loam.
- Commonly found from 4,000 to 8,000 *ft*; More common in the northern part of the region, slightly higher than Geyers.
- Distribution in British Columbia is coastal, eastern in Washington, Cascades to eastern in Oregon, Sierras to eastern in California
- Closely related to Geyers willow. Could be the same species.
- <u>Summer Key</u> – Leaves are long and narrow; shiny green with a pale, waxy bloom beneath, entire or inconspicuously toothed. Older leaves are finely hairy on both sides and partially or wholly red-tinged. Twigs are very dark gray. Young twigs are covered with a heavy waxy bloom.
- <u>Winter Key</u> – Heavy chalky substance on current and second season stems. Stems generally much darker than Drummond willow.
- Propagation by dormant unrooted hardwood cuttings is very successful.
- Plant in Overbank and lower Transition Zones.



Lemmon Willow (*Salix lemmonii*)

Planeleaf or Tea leaf willow (*Salix planifolia*)

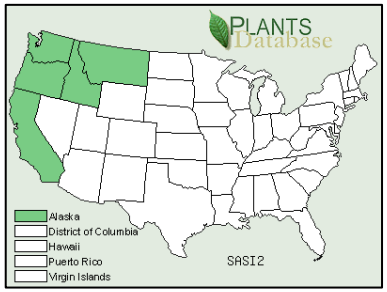
- Low, compact and rounded shrub, up to 3 to 4 *ft* in height.
- Occurs at upper elevations (7,500 to 11,000 *ft*) and latitudes through much of the United States. Restricted to mountainous terrain in the western US.
- Occurs with wolf willow (*Salix wolfii*) at higher elevations and booth willow at lower elevations. Grows in continually saturated, high organic soils.
- Slow growth and shade intolerant.
- Occurs on lake margins, wet meadows and streams.
- Forms relatively stable communities maintained by high water tables and high elevation climates.
- Summer Key – Leaves 1 to 2 *in* long, 0.25 to 0.75 *in* wide; dark, shiny green above with a waxy bloom underneath; margins are entire or slightly toothed; lateral veins are prominent.
- Winter Key - Older twigs are dark red without hairs. Bark is gray and smooth. Internodes often with exfoliating strips of bark. Branchlets typically black or purplish black.
- Moderate success from planting dormant unrooted hardwood cuttings. Roots along the entire stem; fair rooting ability.
- Plant in Bank and Overbank Zones.



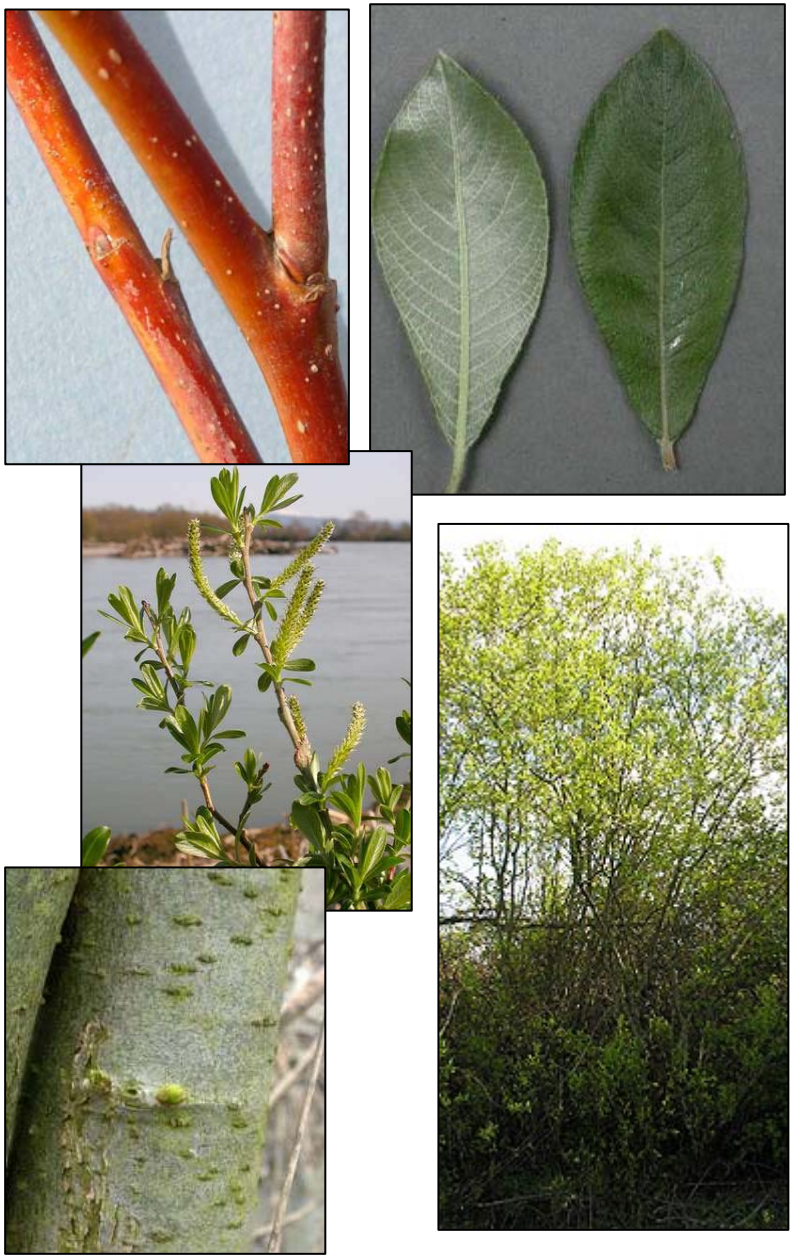
Planeleaf or Tea leaf willow (*Salix planifolia*)

Sitka Willow (*Salix sitchensis*)

- Medium shrub to small tree-type willow from 8 to 16 (rarely 24) *ft* tall with upright form and one to several near vertical main trunks.
- Prefers moist, sandy, or mucky sites and gravel bars but tolerates all soil textures where moisture is not limiting.
- Requires full sun.
- Occupies sites along streams, lakeshores, wetlands, beaches and moist forest clearings; withstands continuous soil saturation.
- Found from sea level to 7,000 *ft* in the mountains.
- Occurs from southwestern Alaska south to northern California; primarily west of the Cascades but occasionally inland to northern Idaho and western Montana.
- Summer Key - Leaves widest near the middle, tapering to the base; bright to dark, shiny green and sparsely hairy above with dense, velvety (satiny) compressed white hairs beneath; underside lacks a white waxy coating; margins smooth or with scattered teeth. Twigs smooth to hairy for the first two years, red to green; readily snap off from the main stem.
- Winter Key – Buds alternate, mostly dark red to orange, occasionally with hairs. Twigs red, reddish-green or green, generally lacking hairs after second year and brittle at the base. Older limbs gray-brown and smooth.
- Propagates readily from dormant hardwood.
- Plant in the Bank and Overbank Zones.



Sitka Willow (*Salix sitchensis*)



NOTES:

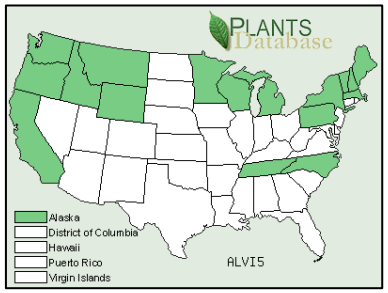
Group 2

Shrubs with simple, broad leaves, alternate branching and toothed leaf margins

- **Sitka Alder**
- **Coyote Brush Baccharis**
- **Common Choke Cherry**
- **Douglas Spiraea**
- **Booth Willow**
- **Yellow Willow**

Sitka Alder (*Alnus viridis* ssp. *sinuata*)

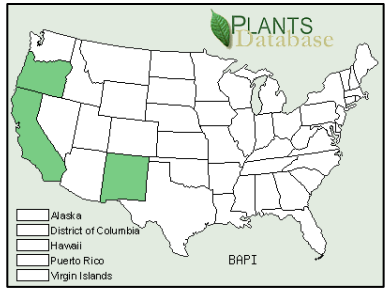
- Small to large shrub 3 to 20 *ft* tall, upright, multi-stemmed with a rounded crown. Rarely 35 *ft* and tree-like.
- Tolerates heavier clay but prefers coarse to medium textured soils. Adapted to rocky and nutritionally poor sites due to nitrogen fixation capabilities.
- Colonizes scoured streambanks, landslides, and other drastically disturbed areas near sea-level but more commonly at mid-elevations to 8,000 *ft* in the mountains.
- Occurs from northern California to Alaska, including Oregon, Washington, northern Idaho and northern Montana.
- Full sun to partial shade on sites with additional moisture; less tolerant of flooding or saturation than red alder.
- Produces separate elongate male flowers (catkins) and female flowers that form into small, oval, cone-like fruits.
- Summer Key - Leaves shiny green above and paler below, broadly oval, widest below the middle or near the base, and sharp pointed; margins wavy-lobed with fine teeth. New stems shiny brown to yellow-brown, often sticky, and smooth to slightly hairy.
- Winter Key - Buds sharp pointed, attached directly to the stem on young twigs; bud scales brownish-red to dark purple. Twigs brown to reddish brown or gray and slightly zigzag in appearance with conspicuous pores. Bark on older limbs and trunks thin, smooth, and gray with blotches. Clusters of woody cones persist in winter. Reddish-green immature male catkins hang from the end of twigs.
- Does not propagate from dormant hardwood cuttings.
- Plant as bareroot or container stock in Transition and Overbank Zones where drainage is better.



Sitka Alder (*Alnus viridis* ssp. *sinuata*)

Coyote Brush Baccharis (*Baccharis pilularis*)

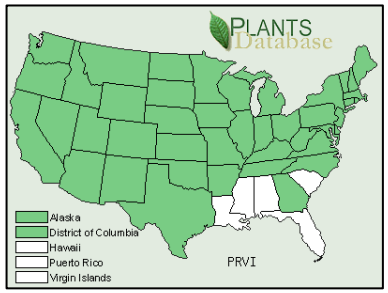
- Evergreen prostrate to rounded erect shrub to 10 *ft* tall.
- Adapted to alkali soils, sands, clays and coarse textured soils. Sometimes found on serpentine outcrops. Tolerates pH levels of 5.0 to 8.0.
- Ranges in elevation between 0 and 2,000 *ft*.
- Found growing in coastal bluffs to oak woodlands in California and Oregon.
- Drought tolerant but also tolerant of seasonal flooding.
- Coyote brush has been used as a fire retardant.
- Coyote brush become resinous (sticky) and fragrant on hot summer days. The fragrant oils are distasteful to browsers and may serve to protect the plant from predation.
- Summer Key - Leaves small, 0.25 to 2 *in* long and widest beyond the mid-point; alternate; bright yellowish-green, slightly toothed with a rounded tip. Flower heads born in leafy panicles. Male and female flowers found on separate plants (dioecious). Flowers are small and creamy white. Fruit is a tiny seed which hangs off a tuft of hair.
- Winter Key – Plants are evergreen. See summer key.
- Propagated by hardwood cuttings.
- Plant in the upper Overbank and Transition Zone.



Coyote Brush Baccharis (*Baccharis pilularis*)

Common Chokecherry (*Prunus virginiana*)

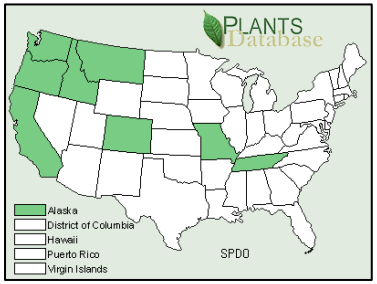
- Shrubs to small trees; 8 to 25 *ft* tall with irregular rounded crown.
- Silty to sandy soils, cannot tolerate prolonged flooding. Adapted to soils of pH 3.5 to 7.6.
- Not tolerant of poor drainage.
- Found in many plant communities from sagebrush zone to aspen communities but typically found along mountain streams and roadsides up to 9,000 *ft*.
- Widely distributed throughout southern Canada and much of the United States.
- Summer Key- Flowers and fruit arranged in racemes (elongated clusters) from 1.5 to 8 *in* long; the flowers have five white petals, and the fruit are black when ripe. Leaves are 0.75 to 4 *in* long, 0.5 to 2 *in* wide; serrate (with a saw-like margin or small, sharp teeth), oblong to ovate with a pointed tip. The petioles often have 2 gland-dots at the base of the leaf.
- Winter Key- Bark is brown to gray, becoming scaly with age.
- This species sprouts easily from rhizomes and root crowns. Does not propagate from hardwood cuttings.
- Plant in the Transition and lower Upland Zones.



Common Chokecherry (*Prunus virginiana*)

Douglas Spirea (*Spiraea douglasii*)

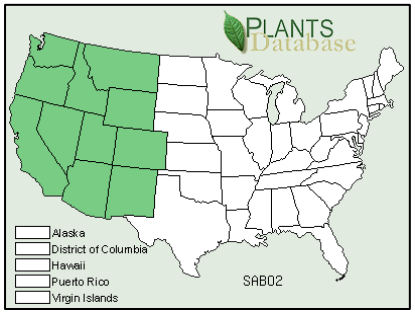
- Rhizomatous, deciduous shrub with erect, spreading, cane-like stems 3 to 6 *ft* tall
- Spreads readily from underground shoots (rhizomes) and prolific seedling production to form very dense thickets.
- Broadly adapted to gravelly sands, silts, loams, and heavy clay soils where sunlight and moisture are abundant.
- Occurs along streams and lakeshores as well as in bogs and swamps from near sea-level to 6,500 *ft* in the mountains.
- Found from Alaska south to northern California and east to western Montana.
- Tolerates poor drainage, flooding, and nearly year round water logged soils.
- Summer Key - Leaves oblong to oval, dark green above, paler and nearly hairless to wooly beneath; margins toothed above the middle. Twigs smooth and vary from reddish brown to tawny or brown.
- Winter Key – Buds small, oval and often distinctly tipped with white hairs reminiscent of wooly aphids crawling up a stem. Young twig very slender and often wire-like near the ends of branches. Bark very thin, smooth, reddish brown to golden brown, sometimes peeling to reveal lighter wood beneath. Upright, terminal clusters of dried brown seed heads remain during winter.
- Propagates easily from dormant hardwood cuttings or suckers division. Fall plant for best results.
- Plant within the Bank and Overbank Zones in full sun.
- Use sparingly as this species can be weedy.



Douglas Spirea (*Spiraea douglasii*)

Booth Willow (*Salix boothii*)

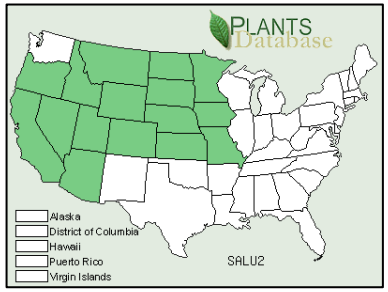
- Shrub-type willow, many branched with a rounded top. 6 to 10 (20) *ft*.
- Usually found with Geyers and Drummond willow. Elevation is 5300 to 9000 *ft*.
- Most common on wet, coarse soil, but will grow in fine-textured soils. Tolerates moderately alkaline soils but does poorly in strongly acidic or alkaline conditions; low shade tolerance; fire-tolerant shrub that has a short post-fire regeneration period.
- Transitional species between low-middle and middle-high elevations. Most common willow found at mid-elevations. In Oregon and Washington, a Cascade Mtn. or east-side species.
- Occupies riparian and wet meadow communities in all western states, east to the Rocky Mountains.
- Shade intolerant and grows best in full sunlight
- Wide range of adaptability and easy to establish.
- Summer Key – Green on both sides and slightly toothed. Slightly wider leaf and not as long as whiplash willow. Distinctive feature: Leaves lack a waxy bloom on underside and have few to no hairs.
- Winter Key – Numerous basal stems with a diameter of less than 2 *in*. Usually with bright yellow bark on new stems. Sometimes incorrectly called yellow willow.
- Roots well from hardwood cuttings, easy to propagate.
- Plant in the Bank or Overbank Zone.



Booth Willow (*Salix boothii*)

Yellow Willow (*Salix lutea*)

- Shrub-type willow, rounded shape, occasionally becoming a multi-stemmed tree, up to 23 *ft* in height.
- In a variety of sites from coarse cobble along streams to moist terraces with deep, fine textured soils.
- An east-side species in both Oregon and California.
- Generally low to moderate elevations, very common from 4,000 to 7,500 *ft*. Commonly found with Coyote willow and Pacific willow. Coyote stems will be mostly straight or columnar while yellow willow stems will be horizontally branched.
- Summer Key – Leaves are green above and pale with waxy bloom beneath. Margins are finely toothed especially near apex. Older leaves lack hairs. Stipules are somewhat persistent.
- Winter Key – Twigs yellowish white to gray, not hairy. Newer growth is almost a robin egg blue-gray color. Branches not in columnar form but rather more spread out and multiple fine branches.
- Propagation by dormant unrooted hardwood cuttings is very successful.
- Plant in the Bank or Overbank Zone.



Yellow Willow (*Salix lutea*)

NOTES:

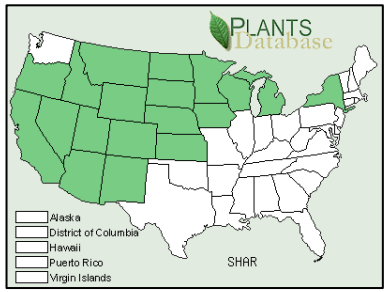
Group 3

Shrubs with simple, broad leaves, opposite branching and smooth leaf margins

- **Silver Buffaloberry**
- **Buttonbush**
- **Redosier Dogwood**
- **Common Snowberry**

Silver Buffaloberry (*Shepherdia argentea*)

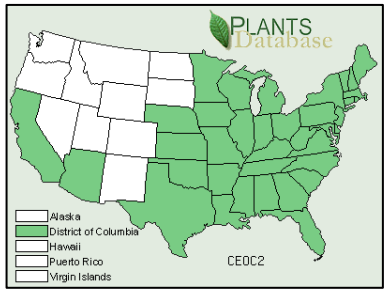
- Rounded shrubs to small trees 6 to 15 *ft* tall with spreading to ascending branches.
- Can be mistaken for Russian olive, but is easily discernable by its opposite branching and red fruit.
- Tolerant of full sun, alkali soils and limited flooding. Prefers sandy to coarse textured soils.
- Streambanks and moist areas 4,000 to 6,900 *ft*.
- Occurs in most western states from Canada south to Arizona and New Mexico.
- Summer Key- Leaves silvery, oblong 0.5 to 2.5 *in* long and 0.25 to 0.75 *in* wide; berries red when ripe in late summer. Male and female flowers on separate plants.
- Winter Key- Opposite branching; stems often have large thorns up to 2 *in* long. Bark is dull gray, thin, smooth when young, becoming ridged and shredding when older.
- Dormant unrooted hardwood cuttings are rarely successful; root cuttings have fair success.
- Plant in the Overbank zone and lower Transition zone.



Silver Buffaloberry (*Shepherdia argentea*)

Buttonbush (*Cephalanthus occidentalis*)

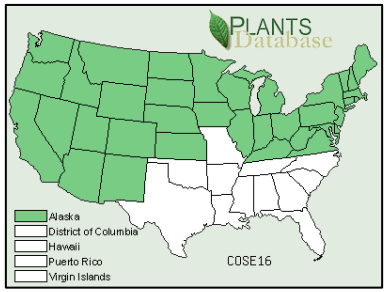
- Upright, multiple branching shrub, may reach 25 *ft* in height.
- Moderate drought and shade tolerance. Excellent flood tolerance. Likes moisture.
- Full sun to light shade
- Slow growth rate.
- Prefers sandy loam soils.
- Native throughout the eastern half of US. Found from TX through parts of NM, AZ and CA.
- Summer Key- Leaves opposite or whorled, elliptical, pointed tip, entire margins, 3 to 5 *in* long, shiny dark green above. White tubular flowers occur in a dense round (1 *in*) cluster at the end of a slender, 1 to 2 *in* stalk, appear mid-summer.
- Winter Key - Bark thin and smooth on young stems, becoming fissured and scaly. Twigs are slender to moderately stout, dark reddish brown, speckled with lighter, elongated lenticels; tips of twigs typically die back; lateral buds small and embedded in bark; leaf scar "D"-shaped or nearly round with a single "U"-shaped bundle scar.
- Hardwood cuttings root easily; sprouts from stumps.
- Plant in Overbank and lower Transition Zones.



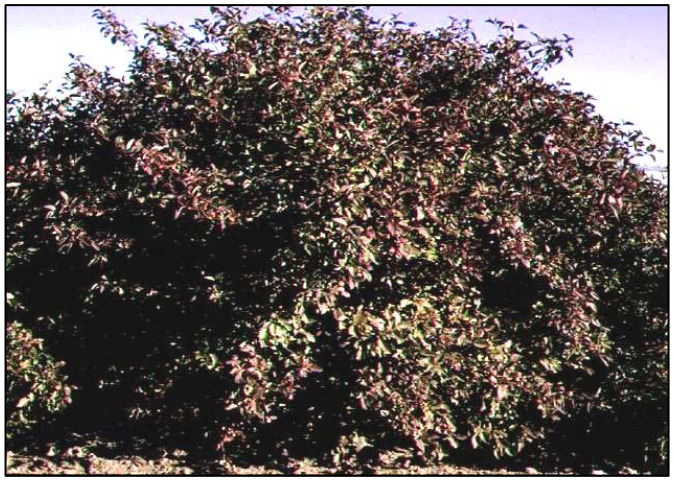
Buttonbush (*Cephalanthus occidentalis*)

Redosier Dogwood (*Cornus sericea*)

- Open, spreading, multi-stemmed medium to large shrub. Loose rounded form. Spreads by natural layering. Generally reaches 7 to 10 *ft* in height.
- Includes ssp. *occidentalis*, a western variant which grows up to 16 *ft* tall and occurs from near sea-level to mid-elevations in Oregon, Washington and northern California.
- Common from 500 to 7,000 *ft*.
- Often found on alluvial terraces, along creeks, in shrub swamps, and on canyon slopes.
- Soils are often poorly developed and coarse-textured. It likes moderately to well-drained soils and generally requires fresh, well-aerated water. Subspecies *occidentalis* does well on poorly drained, course to fine textured soils.
- Produces white, 4 petal flowers in dense, flat topped clusters at the ends of twigs. Fruit is a white berry with a "stone" inside.
- Summer Key - Leaves opposite (willows are alternate), dark green above and soft white hairs below when young. The leaves have 5 to 7 prominent upcurving and parallel veins that converge at tip.
- Winter Key - Branches opposite. Horizontal branches at the base. Bark is smooth and blood-red, with prominent white lenticels.
- Redosier dogwood cuttings generally will root at the cut. Use rooting hormones and wound the bark before planting. The subspecies *occidentalis* is easier to root from untreated dormant cuttings.
- Will grow in shade under a heavy overstory. Plant in upper Bank Zone and into the Overbank Zone.

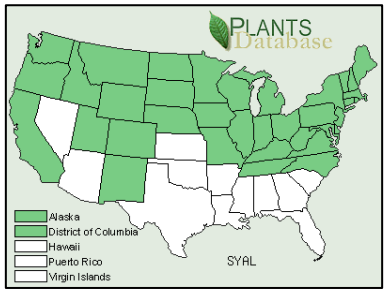


Redosier Dogwood (*Cornus sericea*)

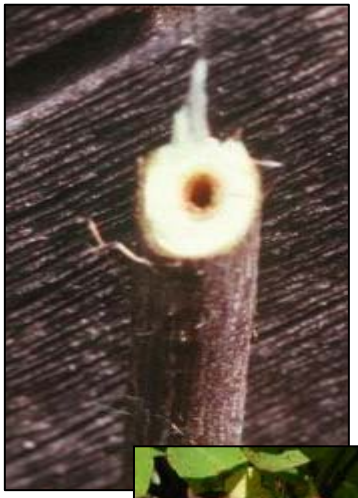


Common Snowberry (*Symphoricarpos albus*)

- Shrub from 2 to 5 *ft* tall comprised of slender, erect new shoots and highly branched older stems.
- Spreads from underground stems (rhizomes) to form dense thickets.
- Produces clusters of small white or pink bell-shaped flowers at the end of branches from May to July.
- Broadly adapted to open spaces or full shade in the understory of forests.
- Coarse sands to fine textured clays. Dry, well drained hillsides to moist seeps, streambanks, and wetland edges. Tolerates low to high nutrient levels.
- Occurs from sea-level to 4,000 *ft*; widespread across much of North America.
- Summer Key – Leaves opposite, small, round, broadly oval to elliptic, but occasionally lobed or irregularly shaped; margins smooth and uniform to wavy. New twigs golden or tawny while older ones are gray.
- Winter Key – Older stems with opposite twigs; very thin brittle and gray, tan or gold. Winter buds tiny, egg shaped with a tip, gray; red, light green or golden tan in color, and covered with small scales. Clusters of spongy, soft white berries persist over winter, turning yellow to brown with decay.
- Propagates readily from dormant cuttings made of younger or older stems. Insert on site in fall and mulch for best results.
- Plant as cuttings or any stock type in the Overbank, Transition and Upland Zones, including understory of trees or full sun.



Common Snowberry (*Symphoricarpos albus*)



NOTES:

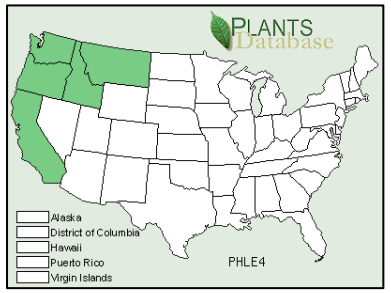
Group 4

Shrubs with simple, broad leaves, opposite branching and toothed leaf margins

- **Syringa or Lewis Mockorange**

Syringa or Lewis Mockorange (*Philadelphus lewisii*)

- Loosely branched shrub 4.5 to 8 (12) *ft* tall.
- Open forests and forest edges on moist rich sites to open brushy areas on dry, rocky soils; low to mid-elevation.
- Rocky hillsides, talus slopes and canyons in sagebrush, ponderosa, Douglas fir and redwood communities. Sunny locations along riparian communities on the western coast.
- Commonly occurs in northwestern United States and southern Canada. Elevation from sea level to 7,000 *ft*.
- Summer Key - Leaves opposite, simple, deciduous, ovate, 1 to 3 *in*. long, green above and paler below, margins nearly entire with a few glandular teeth on each side. Flowers 2 to 4 *in* across with 4 or 5 showy white petals, fragrant; numerous (25 to 50) stamens.
- Winter Key - Twigs slender, opposite, tan, and widely dichotomous. Bark light brown and shreddy.
- Propagates readily from hardwood cuttings; best in coarse to medium textured soils.
- Plant in the Overbank and Transition Zones.



Syringa or Lewis Mockorange (*Philadelphus lewisii*)

NOTES:

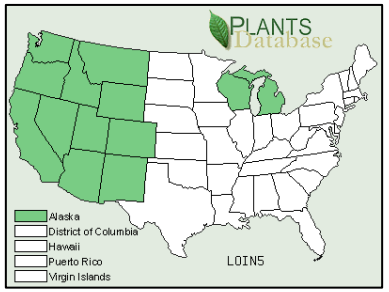
Group 5

Shrubs with simple, narrow leaves, opposite branching and smooth leaf margins

- **Black Twinberry**

Black Twinberry (*Lonicera involucrata*)

- Small to medium sized deciduous shrub 3 to 12 *ft* tall with an erect to straggly or arching form; remains more compact at higher elevations.
- Produces yellow honeysuckle (tubular) flowers and small shiny, purple-black berries in pairs.
- Occurs on rich, coarse to fine textured soils that are year round moist to saturated or flooded in winter and early spring.
- Ranges in elevation from sea-level to 9,000 *ft* in the mountains; southern Alaska south to Mexico.
- Prefers slight to moderate shade in forests or along streams and swampy areas, except near the coast where it is found on more open sites.
- Summer Key – Leaves thinner, more lance shaped and lighter green inland, versus thicker, more leathery, broadly elliptic, and darker green at the coast and higher elevations; margins smooth; lighter colored below and generally lack hairs. Twigs green in spring turning yellow-brown in fall. Small, shiny, double purple-black berries subtended by conspicuous reddish or maroon bracts.
- Winter Key – Young twigs golden-tawny to yellow-brown or tan in color, sometimes with 2 or 4 thin lengthwise ridges or ribs. Older stems silver-gray to gray-brown with thin flaking or shredding bark and a “dead” appearance. Buds covered by loose scales that match twig color.
- Propagates easily from dormant hardwood cuttings, including older stems. Plant in the fall for best results.
- Plant in the Bank or Overbank Zones.



Black Twinberry (*Lonicera involucrata*)

NOTES:

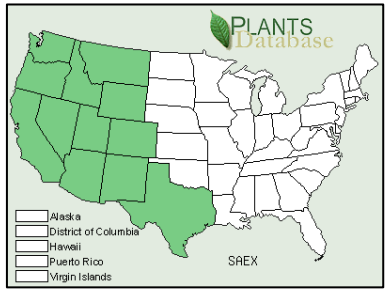
Group 6

Shrubs with simple, narrow leaves, alternate branching and smooth leaf margins

- **Coyote Willow**
- **Geyer Willow**
- **River or Northwest Willow**

Coyote Willow (*Salix exigua*)

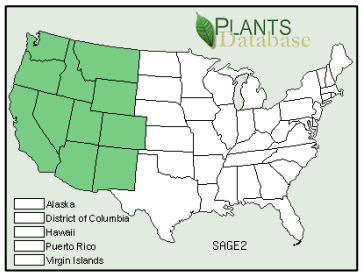
- Creeping-type willow, 3-15 (27) *ft*, with numerous slender stems.
- Also called sandbar, narrowleaf, and streambank willow.
- Heavy rhizomatous root system. Spreads easily and rapidly by these rhizomes. Will spread into sod-bound grasses, probably the only willow that will.
- Grows in large thickets, not clumps. Top growth of branches more narrow and columnar.
- Prefers coarse soils. Grows on moist soils, from gravel to silt. Often found on saline soils.
- Drought resistant and very tolerant of flooding; it can withstand flooding for periods of 2 or more growing seasons. Tolerant of low nutrient levels and disturbance
- Widespread in the western U.S. to 9,000 *ft*. Only willow growing in the lowest and hottest North American deserts provided the roots are in moist soil.
- Summer Key – Leaves long and narrow with short petioles, (green above and pale below). Silvery pubescence on young leaves wears off becoming dull, grayish green or dark green.
- Winter Key – Grows in thickets not clumps. No chalk on the stem. New twigs are reddish brown turning to ashy gray when older. Often found growing with yellow willow (*Salix lutea*).
- Easy to propagte from hardwood cuttings.
- Plant mainly in the Bank Zone and Overbank Zone.



Coyote Willow (*Salix exigua*)

Geyer Willow (*Salix geyeriana*)

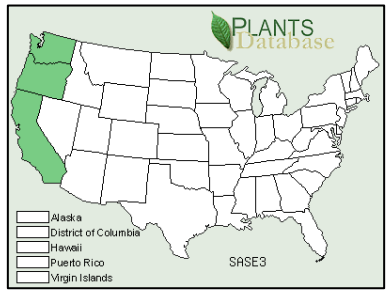
- Shrub with numerous straight branches, up to 10 to 15 (20) *ft* in height arising from a tight basal cluster.
- Roots grow as deep into the soil as top growth does in height.
- Usually found with Booth willow. Geyer willow occupies drier sites while Booth willow occupies wetter zones.
- Most common on deep, fine textured soils of alluvial origin.
- Found throughout this region from 3,000 to 8,000 *ft*. Often found on side drainages.
- Summer Key – Leaves are dark green and hairy above, with a waxy bloom underneath that can be rubbed off with your thumb.
- Winter Key – Has white chalky substance on current year and second year stems (more common on the youngest stems). The white chalky substance will rub off and under it the stem will be a yellow green color not red.
- Plant as rooted or unrooted cuttings. Two to seven year old wood will root along entire stem.
- Plant in Bank and Overbank Zones.



Geyer Willow (*Salix geyeriana*)

River or Northwest Sandbar Willow (*Salix sessilifolia*)

- River willow (*Salix fluviatilis*) now merged as the same species.
- Medium shrub to small tree from 7 to 22 *ft* tall with a narrow, upright, compact form and multiple branches at the base.
- Closely resembles coyote willow with which it may hybridize.
- Spreads by underground shoots (suckers, rhizomes) to form thickets or dense clumps.
- Performs best in full sun.
- Prefers moist sands, gravels and silts, but tolerates nearly all soil textures where moisture is not limiting; tolerates perpetual flooding.
- Colonizes sandbars and other sites along streams, ponds, and lakes.
- Low elevations from sea level to 700 *ft*; from southwestern British Columbia south to Washington and southern Oregon west of the Cascades.
- Summer Key - Leaves long and narrow, lance shaped or linear; pointed at the tip and tapered at the base; light green and sparsely to moderately hairy above and below; paler below with a whitish, slight waxy coating; margins smooth to many scattered teeth. Twigs brown to green and somewhat silky when young.
- Winter Key – Buds tan or light brown, sometimes with minute hairs at the base. Branchlets dull brown, to orange-red or tan color sometimes fuzzy when young. Bark of older limbs and trunks grayish-brown and scaly.
- Propagates easily from dormant hardwood.
- Plant as cuttings in the Bank and Overbank Zones.



River or Northwest Sandbar Willow (*Salix sessilifolia*)

NOTES:

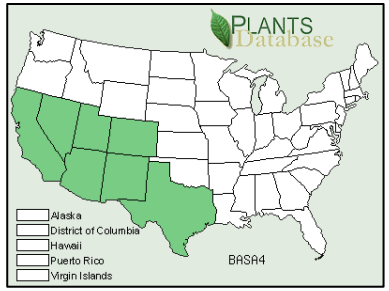
Group 7

Shrubs with simple, narrow leaves, alternate branching and toothed leaf margins

- **Mule Fat Baccharis**

Mule Fat Baccharis (*Baccharis salicifolia*)

- Syn- *Baccharis viminea*
- Other common names: seep-willow, water-wally.
- Native evergreen thicket forming shrub up to 10 *ft* in height with good growth rate.
- Stems upright, smooth, unbranched below, branched above. Branches short, spreading or ascending.
- Good flood tolerance.
- Medium drought and deposition tolerance.
- Found in dry stream beds and ditch banks below 4,100 *ft*.
- Occurs in hot, arid climates from California to South America, east to Texas.
- Prefers moist, well-drained soils. Grows in sandy, loamy or clay soils. Does not like shade.
- Summer Key - Alternate leaves up to 6 *in* long, up to 1 *in* wide, pointed at the tip, tapering to the base, without hairs; usually toothed; a pair of veins runs parallel to the leaf edges.
- Winter key – Evergreen, see summer key.
- Good success from hardwood cuttings.
- Plant in the upper Overbank and Transition Zone.



Mule Fat Baccharis (*Baccharis salicifolia*)

NOTES:

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

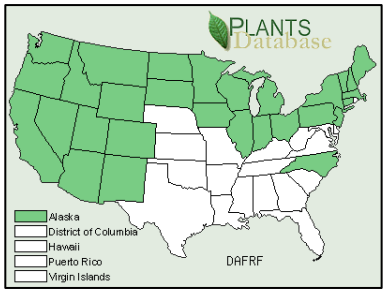
Group 8

Shrubs with compound, broad leaves, alternate branching and smooth leaf margins

- **Shrubby Cinquefoil**

Shrubby Cinquefoil (*Dasiphora fruticosa* ssp. *floribunda*)

- Syn.- *Pentaphylloides floribunda* and *Potentilla floribunda*.
- Deciduous, multi-stemmed, many branched shrub, reaching heights of 1 to 6.5 *ft*. Occurs as a low mat and as an erect shrub.
- Fair to weakly moderate drought tolerance. Prefers open sites, but will grow in light shade. It is cold tolerant and winter hardy.
- Soils may be poor to well-drained. Likes clay, fine loam, sandy loam, and loamy skeletal soils to coarse textured soils. Does not grow well on dense clay and loose sand.
- Tolerant of wet conditions and flooding, calcareous substrates; weakly saline and moderately acid to moderately basic soils; often found on calcareous sites.
- Occurs on a wide variety of sites in northern and western North America. Low valleys to mountain peaks, growing in riparian communities, around springs, wetland sites, upland sites and rock ledges from 2800 to 10,000 *ft*.
- Summer Key - Flowers terminal, occasionally solitary but usually with many flowers in close clusters. Flowers yellow and rose-like, with 5 petals. Numerous alternate leaves with 3 to 9 leaflets with long white hairs on both surfaces.
- Winter Key - Branches covered with fine short hairs in the first year, becoming brown and smooth in the second year. Bark becoming fibrous with age.
- Plant as containerized stock.
- Plant in the upper Overbank zone and Transition zone.



Shrubby Cinquefoil (*Dasiphora fruticosa* ssp. *floribunda*)

NOTES:

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

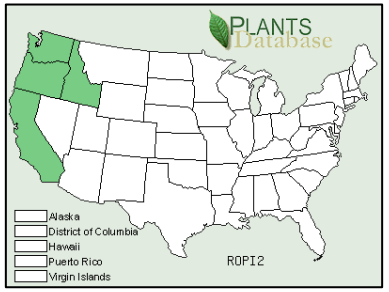
Group 9

Shrubs with compound, broad leaves, alternate branching and toothed leaf margins

- **Cluster or Swamp Rose**
- **Nutka or Nootka Rose**
- **Woods Rose**
- **Salmonberry**

Cluster or Swamp Rose (*Rosa pisocarpa*)

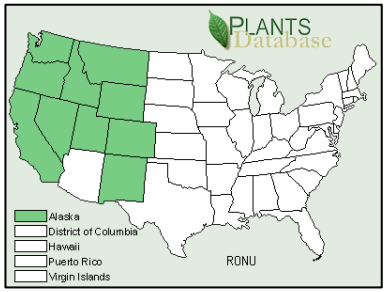
- Deciduous shrub up to 9 *ft* in height.
- Generally low to moderate elevations, 90-6,000 *ft*.
- Occurs in wetter habitat than other native roses. Prefers moist thickets, streambanks, and swamps; is shade tolerant.
- A good source of food and cover for many wildlife species.
- Summer Key – Leaves odd-pinnately compound (leaflets opposite of each other along the long central axis), 5 to 9 leaflets, serrate to doubly serrate, with minute hairs but not glandular; flowers deep pink and up to 2 *in* diameter (generally smaller than Nutka rose), flowers generally in clusters of 2 to 10 flowers; sepals persist on hips.
- Winter Key – Rose hips elongate, oval about 0.5 *in* wide (and smaller than Nutka rose), born in clusters; prickles, if present, gray, slender, and straight.
- This species intergrades with California rose (*Rosa californica*), Wood rose and Nutka rose.
- Variable success from hardwood cuttings; plant as containerized stock.
- Plant bareroot or container stock in the seasonal floodplain.
- Plant in the Overbank and Transition Zones.



Cluster or Swamp Rose (*Rosa pisocarpa*)

Nutka or Nootka Rose (*Rosa nutkana*)

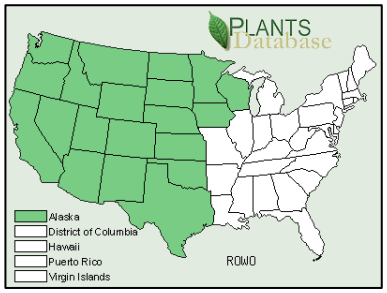
- Deciduous shrub up to 9 *ft* tall.
- A widely distributed rose growing in moist and open lowland habitats in western states. Variety *nutkana* is found chiefly west of Cascades, leaflets with doubly-serrate margins with glands on tooth tips and; variety *hispida* is found chiefly east of Cascades, has leaflets single-toothed, not glandular.
- Generally low to moderate elevations, below 2,100 *ft*.
- Common in moist locations in the Willamette Valley; in arid habitats, can be the common rose in snowberry and ninebark shrublands.
- This species interbreeds with sweetbrier rose (a non-native), cluster rose, wood rose, and bald-hip rose.
- Summer Key – Leaves pinnately compound, 5 to 9 leaflets; leaflets elliptic or ovate, 3 *in* long by 2 *in* wide; leaves vary depending on variety (see above); flowers large (up to 3 *in* diameter), deep pink born singly on petioles on branch ends (not in clusters); sepals green and as long as petals.
- Winter Key – Rose hips large and round up to 0.75 *in* diameter, sepals persist on hips, hips generally born singly on petioles; prickles gray, straight to slightly curved, often in pairs opposite of each other below the nodes.
- Variable success from hardwood cuttings; use containerized stock.
- Plant bareroot or container stock in the Overbank and Transition Zones.



Nutka or Nootka Rose (*Rosa nutkana*)

Woods Rose (*Rosa woodsii*)

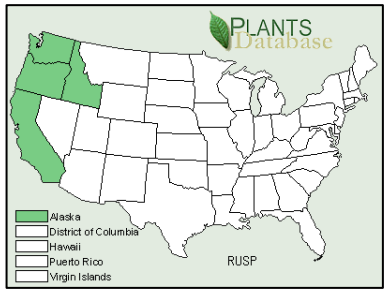
- Creeping-type shrub. Native, cool-season, fast-growing, long-lived perennial bushy, 1.5 to 6 *ft* tall.
- Woods rose has extensive rhizomes and shallow, fibrous roots that branch frequently.
- Can be found throughout western North America east to Texas and Wisconsin. Elevation is between 2,600 and 11,000 *ft*.
- Commonly a dominant species on riparian and wetland sites. Grows on moderately fertile, well-drained clay loam, sandy loam, or sandy soils.
- Use for revegetation on high pH and lime soils.
- Intermediately tolerant of seasonal flooding. Roots produce few new roots or will be dormant during the flooded period.
- Roots will reach from 3 to 6 *ft.*
- Summer Key - Flowers in cluster at the stem tip, petals 5, pink to lilac-pink, or lavender. Leaves are pinnately compound (leaflets opposite of each other along the long central axis); leaflets 5 to 7, 0.5 to 1.5 *in* long, finely toothed toward tip.
- Winter Key - Stems have prickles which are straight or slightly curved and 0.2 *in* long.
- Use containerized plants or clumps.
- Plant in Overbank Zone.



Woods Rose (*Rosa woodsii*)

Salmonberry (*Rubus spectabilis*)

- Small to medium shrub 3 to 12 *ft* tall comprised of erect to arching, long lived, branched and branchless canes (stems).
- Spreads by underground stems (rhizomes) often forming dense thickets.
- Occurs on a wide range of soils from clay loams to fast draining gravels and peat.
- Shade tolerant understory species found along streams, in woods, and near wetlands from southeast Alaska to coastal central California and east to Idaho and Montana from sea-level to 4,000 *ft*.
- Forms fleshy, raspberry-like, yellow, golden-orange, or scarlet colored edible fruit in late spring.
- Summer Key - Leaves with 3 to 5 leaflets; dark green, oval, tapering to a point, often wavy or wrinkled; margins sharply toothed. Canes (stems) golden brown to rust red with various amounts of prickles, especially near the base; thorns brittle and easily detached. Flowers large deep pink, magenta, or bright red.
- Winter Key - Buds covered with red-brown scales, pointed, and singular but sometimes in threes on more vigorous or older stems. Youngest twigs smooth, hairless, and often thornless with distinct zigzag pattern; reddish brown to golden brown. Older stems with more thorns; bark tan colored, flaky or shredding. Outer “onion-skin” layer peels back to reveal smooth, golden red bark beneath.
- Propagates best from dormant cuttings of one year old stems. Rooting diminishes with age. Insert in fall for best results.
- Plant in the Overbank Zone and lower Transition Zone where drainage and shade are most favorable.



Salmonberry (*Rubus spectabilis*)

NOTES:

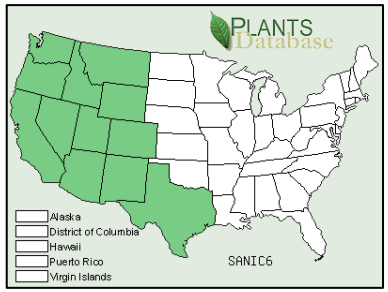
Group 10

Shrubs with compound, broad leaves, opposite branching and toothed leaf margins

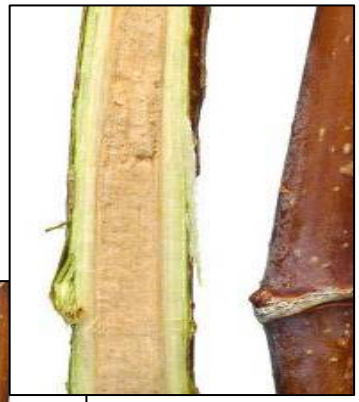
- **Blue Elderberry**
- **Common Elderberry**
- **Red Elderberry**

Blue Elderberry (*Sambucus nigra* ssp. *cerulea*)

- Deciduous shrub to small tree up to 25 *ft* tall with stout spreading branches that form a round-topped crown.
- Occurs in all western states
- Found below 9,500 *ft* elevation.
- Soils from gravelly or stony to heavy clay loam. Prefers moist, well-drained, sunny sites.
- Occurs on streambanks and other moist, fairly open habitats; often in upland habitats on west-side of Cascade Mountains.
- Provides food for a variety of wildlife species. All parts of the plant are toxic - don't use this one to make roasting sticks! Cooking the berries removes toxins thus often used to make jelly and wine.
- Summer Key – Leaves opposite, deciduous, pinnately divided with 3 to 9 leaflets up to 8 *in* long, sharply serrate; flat-topped clusters (6 in diameter) of creamy-white flowers turning into blue to black berries (these with a white powdery bloom).
- Winter Key – Opposite branching; bark thin, brown, often red-tinged, furrowed, ridged in older plants; twigs stout, lenticels large and numerous, orange, slightly raised, pith very large, white, or discolored in water sprouts; lingering flat-topped berry cluster may be present.
- Rooting trials from hardwood cuttings have been variable so use of direct cuttings is not recommended for this sub-species; use bareroot or containerized stock.
- Plant in the Transition and Upland Zones.

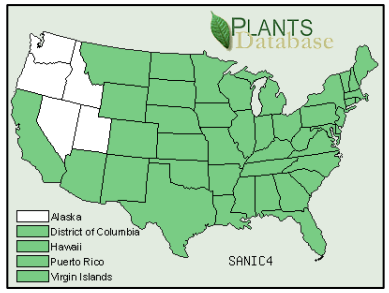


Blue Elderberry (*Sambucus nigra* ssp. *cerulea*)



Common Elderberry (*Sambucus nigra* ssp. *canadensis*)

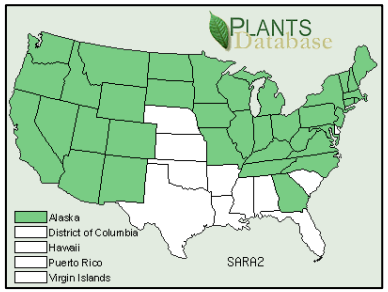
- Shrub or small tree 6 to 12 *ft* tall,
- Grows best in full sunlight.
- Prefers well-drained, slightly acid soil bordering streams, and in the adjacent bottomlands, but also grows on gray forest soils and muck.
- Spreads by stolons.
- Has a moderate growth rate.
- Shrub is widespread and abundant.
- New growth of common elderberry contains a glucoside that can be fatal to livestock.
- Summer Key – Leaves pinnately compound with 5 to 11 oval to lance shaped leaflets. Leaflets oval to lance-shaped, up to 6 *in* long and 2.5 *in* wide, with finely serrated margins, abruptly narrowed at the tip and lopsidedly narrowed or rounded at the base. Fruits ripen from late July into September; fruit is a round, slightly bitter, edible purple-black berry with crimson juice.
- Winter Key – Dark purple to black berries may persist on stems into winter. Young stems smooth, yellowish-gray with white pith.
- Good rooting ability. Propagated from one-year-old hardwood with at least three sets of buds.
- Plant in the Transition Zone.



Common Elderberry – (*Sambucus nigra* ssp. *canadensis)*

Red Elderberry (*Sambucus racemosa*)

- Deciduous shrub or small tree 10 to 30 *ft* tall; broad arching form with cane-like stems. Old specimens have large, multiple trunks.
- Streambanks, ravines, forest openings, disturbed sites, and around wetlands from sea level to 9,500 *ft*.
- Occurrence is widespread across North America.
- Favors deeper, loamy sands and silts and nutrient rich sites with good drainage and moisture.
- Sun and shade tolerant, but prefers forest edges and margins.
- Abundant, small, creamy white flowers borne in large, conical or pyramidal shaped clusters develop into small, bright red, berries in summer.
- Summer Key - Leaves divided into 5 to 7 pointed, lance shaped leaflets; sometimes hairy beneath; margins finely toothed. Foliage has a strong, distinctive odor. Twigs dark red, deep purple to reddish-brown in color; covered with raised pores and lines; light weight, pith filled.
- Winter Key – Buds opposite, often large, egg shaped, and covered with green to purple scales. In milder climes, buds appear ready to break open in early winter. Older bark grayish brown to dark gray, becoming thick, fissured, and rope-like with age. Dead twigs common on branches.
- Propagates easily from dormant hardwood cuttings with at least 2 sets of buds. Fall planting is preferred, but can be planted year-round. One-year old stems often too soft for live cuttings.
- Plant in better drained parts of the Overbank and Transition Zones.



Red Elderberry (*Sambucus racemosa*)

NOTES:

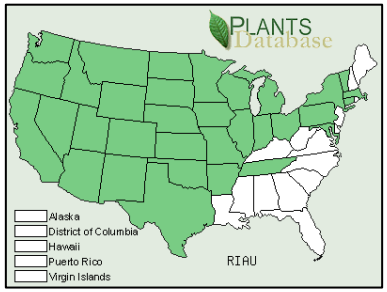
Group 11

Shrubs with lobed, broad leaves, alternate branching and smooth leaf margins

- **Golden Currant**

Golden Currant (*Ribes aureum*)

- An erect wide spreading shrub up to 8 *ft* tall.
- Occurs along streams, rivers and lake margins from 3,600 to 8,000 *ft*; greasewood communities to Douglas fir communities.
- Prefers fine to coarse textured loams, sandy habitats, or rocky slopes and ravines.
- First riparian shrub (east of Cascades) to flower in the spring.
- Likes sun to part shade. Tolerates seasonal standing water to drought. Also tolerant of fire.
- Occurs throughout North America with the exception of the southeastern states.
- Summer Key- Leaves alternate, simple, deciduous, distinctly 3 lobed with a few coarse teeth near ends of lobes, 1 to 2 *in* long, somewhat thickened, glossy green above, paler below. Flowers have five petals and are bright yellow, fading to red with age. The fruit berry from 0.3 to 0.5 *in* and may be red, purple, black, orange or translucent golden.
- Winter Key- Twigs moderately stout, stiff, red-gray, no spines; reddish brown, pointed buds. Bark dark silvery gray with numerous raised lenticels.
- Easily propagated from hardwood cuttings in June or September; bareroot plants are best planted when leafless in the spring or fall.
- Plant in the transition zone and lower upland zone.



Golden Currant (*Ribes aureum*)

NOTES:

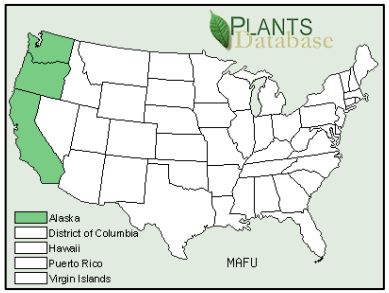
Group 12

Shrubs with lobed, broad leaves, alternate branching and toothed leaf margins

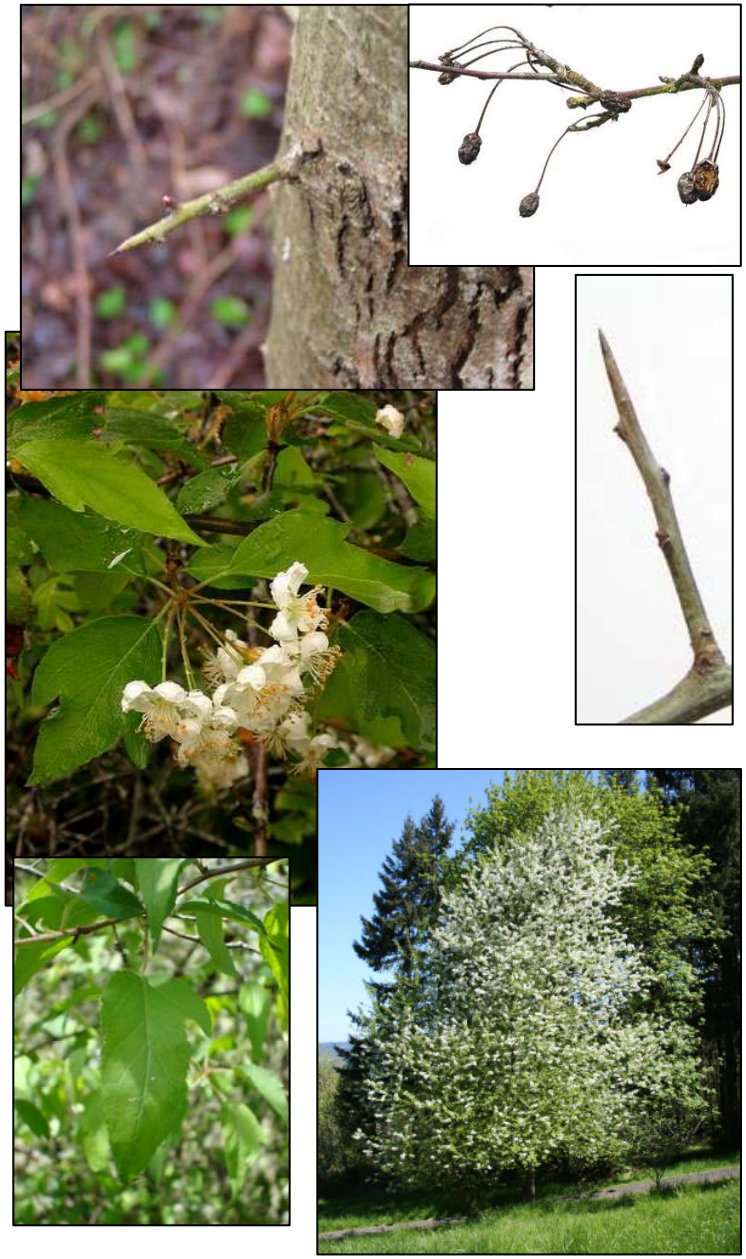
- **Oregon or Western Crabapple**
- **Red Flowering Currant**
- **Wax or Squaw Currant**
- **Whitestem Gooseberry**
- **Black Hawthorne**
- **Mallow-leaved Ninebark**
- **Pacific Ninebark**
- **Oceanspray or Creambush**
- **Skunkbush Sumac**

Oregon or Western Crabapple (*Malus fusca*)

- A deciduous shrub to small tree up to 40 *ft* tall; dense, intertwining branches can form a dense thicket.
- Southern Alaska southward to coastal NW California
- Common in moist, wooded areas from the coast to the foothills of the western Cascades to 3,000 *ft*; found at edge of standing and flowing water.
- Prefers sun to part shade.
- Fruitless plants can be easily confused with black hawthorn and feral domestic apples but look for mitten-lobed leaves, spurs (not true thorns) and oblong fruits
- Summer Key – Leaves simple, ovate up to 4 *in* long, dark green above and paler below, upper surface hairy, at least some leaves with "mitten-like" lobes; white apple-like clustered fragrant blossoms during April to June; fruit small (about 0.5 *in* long) egg-shaped apples, yellowish to reddish (sometimes to purplish).
- Winter Key – Bark dark-colored becoming much fissured in older trees; twigs with short, blunt spurs that can be confused with thorns.
- Use bareroot or containerized stock.
- Plant in Overbank to Upland Zones.



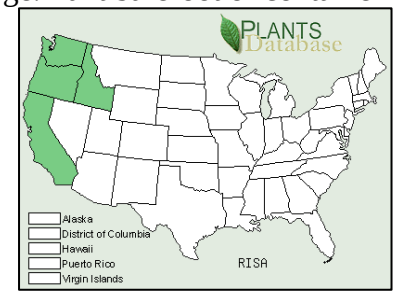
Oregon or Western Crabapple (*Malus fusca*)



Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Red flower or Red-flowering Currant (*Ribes sanguineum*)

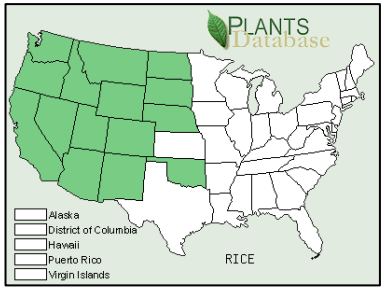
- Deciduous, thornless shrub with upright to spreading form, up to 9 *ft*.
- Occurs in open woods, rocky slopes and disturbed sites; found more typically in upland locations with well-drained soils. Best in sunny and well-drained locations
- Occurs from the coast to the east slopes of the Cascade Mountains in Oregon, but only found west of the Cascades in Washington; sea level to 7,000 *ft*.
- Used extensively in landscaping with numerous varieties available in the landscape market.
- Important nectar source for hummingbirds.
- Summer Key - Leaves simple, deciduous, alternate, 3 to 5 palmately lobed, nearly round 1 to 3 *in* across with irregular toothed margin, conspicuously veined, lower leaf surface paler and can be densely hairy; flower – clusters of pale pink (rarely white) to deep red flowers that emerge before leaves; berries blue-black.
- Winter Key - Bark thin, gray-brown and peels off in thin fragments; alternate twigs slender, young twigs orange or red-tinted, older twigs gray-brown and may have gray short hairs, spurs many and short; buds rosy red and up to 0.5 *in* long; remnant fruit stalks may be present.
- Propagation success from hardwood cuttings variable; requires excellent drainage.Plant bareroot or container stock
- Plant in the Transition and Upland Zones adjacent to wetland areas.



Red Flower or Red Flowering Currant (*Ribes sanguineum*)

Wax or Squaw Currant (*Ribes cereum*)

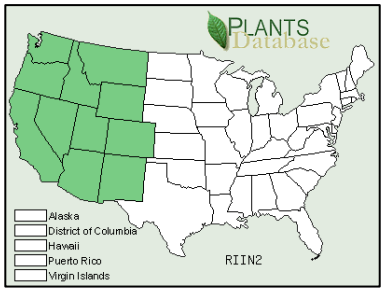
- Fast growing shrub reaching 2 to 6 *ft* tall.
- Small branches with stalked glands and no spines.
- Adapted to well-drained soils of all textures.
- Occurs in riparian zones, canyons and open hillsides in mountain plant communities from mountain brush to alpine zones from 4,500 to 8,000 *ft*.
- Found in all western states.
- Summer Key – Leaves can have a spicy odor; orbicular or kidney shaped with lobes crenate or dentate; blades approximately 1 *in* long. Flowers whitish or pinkish, in groups of 2 or 3.
- Winter Key – Stems and bark lack spines; gray to reddish brown; stiff, multi-branched.
- Use containerized stock.
- Plant in Transition Zone and Upland Zone.



Wax or Squaw Currant (*Ribes cereum*)

Whitestem Gooseberry (*Ribes inerme*)

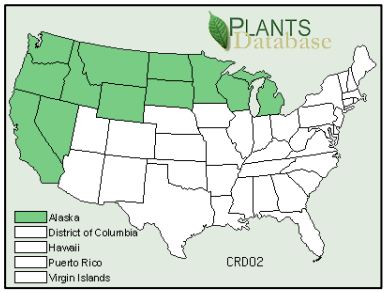
- Shrub to 6 *ft* having a rounded or scrambling growth habit.
- Distinguished from *R. aureum* and *R. cereum* by having one to three spines at each node.
- Grows best in sandy, loamy, and clay soils; requires well-drained moist soil.
- Occurs on acidic, neutral and alkaline soils.
- Grows in semi-shade (light woodland) or no shade.
- Forests, stream sides and meadow edges in all western states from 3,900 to 11,000 *ft.*
- Summer Key – Leaves 0.5 to 3 *in* long with 3 to 5 main lobes, these again lobed or toothed. Bears clusters of 1 to 4 small pink flowers followed by edible, tart, wine-red fruit, 0.25 to 0.5 *in* long.
- Winter Key - Whitish stems becoming reddish-brown and flaky; stems with spines at the nodes; internodes generally without hairs.
- Propagate using bareroot and containerized stock. Cutting propagation success varies.
- Plant in Transition to Upland Zones.



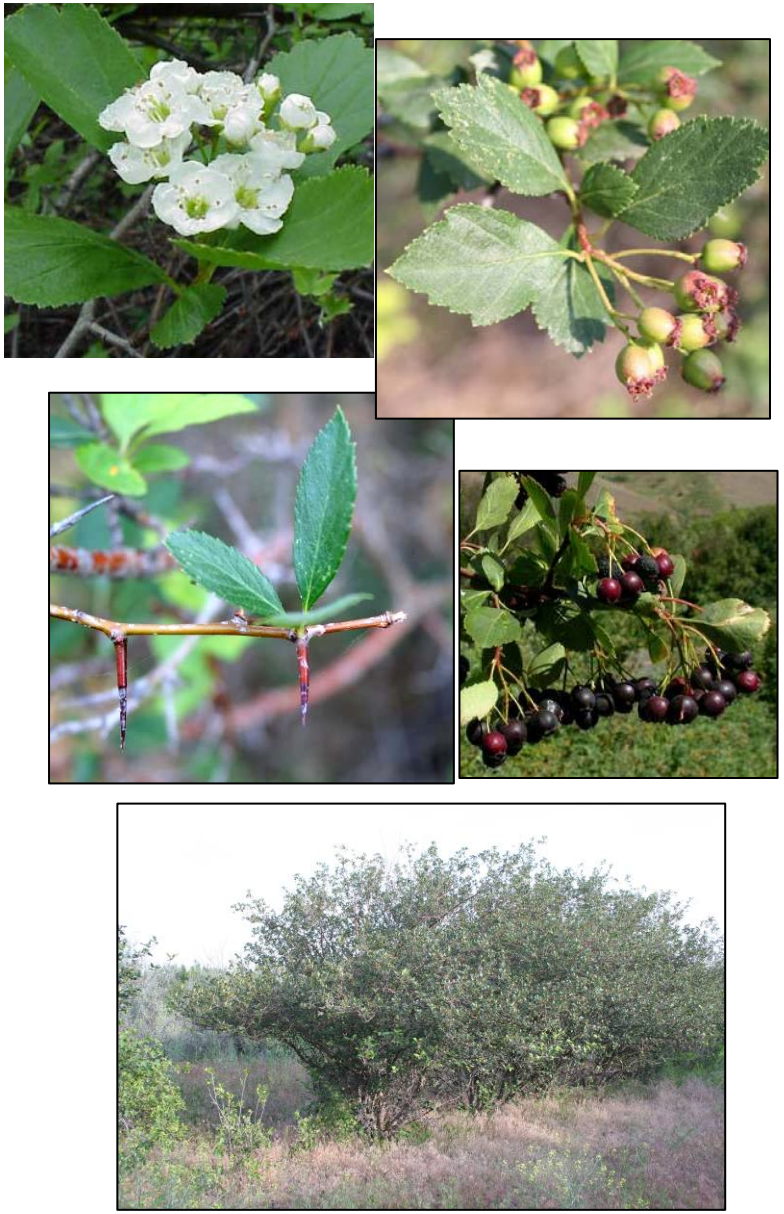
Whitestem Gooseberry (*Ribes inerme*)

Black Hawthorn (*Crataegus douglasii*)

- Deciduous, shrub or small tree 14 to 35 *ft* tall, with scraggly form and single or multiple trunks.
- Moist, nutrient rich, medium to fine textures soils with good drainage but tolerates periodic winter flooding on wetter sites. Water table is within 40 *in* of surface during runoff but drops later in the season. Does not tolerate saline soils.
- Grows in full sun to partial shade.
- Ranges in elevation from 2,000 to 5,500 *ft* in California and further inland to Colorado and Montana.
- Summer Key – Leaves alternate, oval, somewhat leathery, dark green above, paler below, broadest and shallowly 5 to 9 lobed at the middle and towards the tip; margins fine saw toothed. Twigs smooth and reddish-brown turning gray with age; armed with single, 1 *in* long thorns at right angles to the stem. Produces small clusters of 5 to 12 white flowers; small dark purple to black colored berries resembling miniature apples.
- Winter Key – Buds rounded and covered with smooth red or dark brown scales. New twigs grow in a slight zigzag pattern. Older branches armed with thorns. Bark smooth and gray but may become rough and scaly with age. Berries dry and persist into winter.
- Does not root from dormant hardwood cuttings. Plant as containerized or bareroot stock.
- Overbank Zone and into Transition Zone.

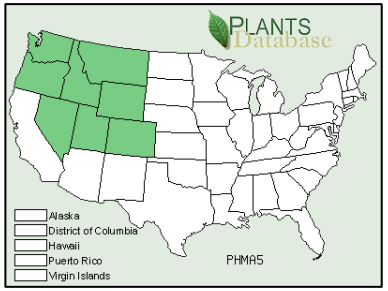


Black Hawthorn (*Crataegus douglasii*)



Mallow-leaved Ninebark (*Physocarpus malvaceus*)

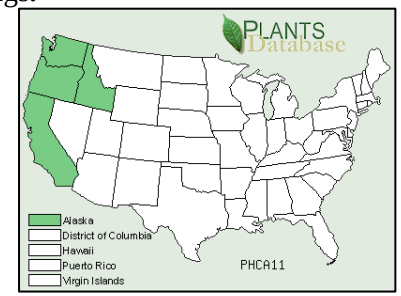
- Shrubs 3 to10 *ft* tall, with rounded growth form, often as broad as tall.
- Often in mixed conifer woodlands but can also be found along the banks of mountain streams from 3,500 to 10,000 *ft*.
- Sandy to coarse loamy soils.
- Occurs in the Intermountain and Rocky Mountain regions from Canada, south to Utah and Colorado. Canyon slopes and bottoms beneath Ponderosa pine and Douglas fir as well as non-forested shrub land sites.
- Summer Key- Leaves broad and lobed resembling those of common mallow (*Malva neglecta*). Leaf blades 1 to 3 *in* long and equally wide. Flowers borne in clusters at the end of the branches. Each flower has a hypanthium (a cup-shaped disk) five white petals and five sepals.
- Winter Key- Plants deciduous. The bark thin and yellow-orange-, or red-brown; shredding in long strips, especially on older stems. Younger twigs can be covered with star-shaped hairs.
- Vigorous and aggressive post-fire.
- Severe regeneration difficulty. Use containerized stock.
- Plant in the Transition and Upland Zones.



Mallow-leaved Ninebark (*Physocarpus malvaceus*)

Pacific Ninebark (*Physocarpus capitatus*)

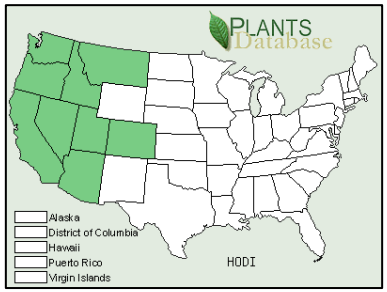
- Medium sized shrub from 6 to 14 *ft* tall; multi-branched from a central base; upright to arching form.
- Occurs along streambanks and margins of swamps, lakes and openings in moist woods from sea-level to 4,500 *ft*.
- Found from California to Alaska and primarily west of the Cascades in Oregon and Washington.
- Partial shade and moist, well drained, nutrient rich soils, but tolerates full sun, mineral soils, intermittent flooding in winter and fluctuating water tables, as well as drier sites.
- Produces dense, round clusters of small, creamy white flowers between May and July.
- Bears small fruits individually surrounded by red to reddish brown, bell-shaped bracts.
- Summer Key – Leaves three to five lobed, deeply veined, shiny-dark green above, lighter below with fine hairs; margins finely toothed. Thin layers of orange-red to reddish brown bark on newer shoots that easily splits and peels lengthwise.
- Winter Key –Young twigs with a paper thin layer of loose, dark red to brown bark that readily peels off on more vigorous shoots to reveal lighter wood. Older stems with multiple layers of shredding and peeling bark. Winter buds dark red or brown, pointed, and covered with layered scales. Dense, drooping clusters of empty, dark brown fruit bracts persist in winter.
- Propagates from dormant hardwood cuttings, including older stems inserted as live cuttings**.**
- Plant as cuttings or any stock type in better drained portions of the Overbank and Transition Zones. Suitable to Upland Zone in higher rainfall areas. Fall plant; mulch if possible.



Pacific Ninebark (*Physocarpus capitatus*)

Oceanspray or Creambush (*Holodiscus discolor*)

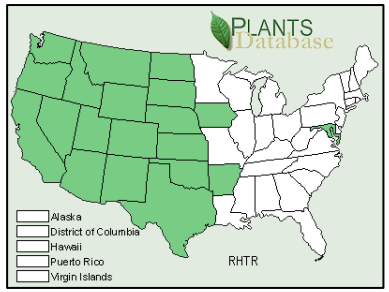
- Medium to large shrub 5 to 15 *ft* tall with an erect, vase shaped or arching form and multiple stems arising from a central base.
- Adapted to shallow, rocky, gravelly, and sandy soils as well as medium textured loams, silts, and clay loams.
- Habitats include dry, rocky slopes and upland woods along with moist, well drained streambanks and open forests.
- Full sun to partly shaded areas from sea-level to 6,000 *ft*.
- Occurs from British Columbia south to southern California and west to western Montana.
- Produces profuse, small, creamy white flowers held in large, finely branched, terminal clusters that are open, drooping, and lilac-like in appearance.
- Summer Key - Leaves oval to triangular in shape with a wedge shaped base, dull green above and often whitish and hairy below; margins with small lobes and fine teeth. Young twigs smooth to hairy, ribbed and dark red, tan, or light brown in color.
- Winter Key – Buds moderately small and pointed, reddish, and covered with fine, dense hairs. Bark from reddish-brown to brownish gray, sometimes peeling off in narrow strips with age. Twigs brittle and often hairy with 3 ridges extending downward from each bud creating a striped appearance. Skeletal remains of spent flower clusters persist in winter along with star shaped seed capsules.
- Propagation from dormant cuttings is variable and often unsatifactory.
- Plant as container or bareroot stock in the Transition and Upland Zones. Fall is usually best.



Oceanspray or Creambush (*Holodiscus discolor*)

Skunkbush Sumac (*Rhus trilobata*)

- Shrubs 2 to 8 *ft* tall; often forming dense thickets from rhizomes.
- Can be found on rocky hillsides, canyon bottoms, stabilized sands, and also along streambanks and slopes, most often in riparian communities from 2,000 to 7,000 *ft*.
- Plants prefer coarse textured, gravelly to sandy soils; well-drained sites. Grow best in full sun or partial shade.
- Plants are moderately drought tolerant; intolerant of flooding and high water tables
- Found in all western states, east to Iowa and south to Texas and into Mexico.
- Summer Key- Leaves typically tri-foliate and lobed, but are sometimes simple and deeply palmately lobed (leaflets attach to one base point); each leaflet may be 0.25 to 1.5 *in* long. Small yellowish flowers grow in clusters and develop in early spring before the leaves emerge. The fruit is a red or orange drupe (1 seeded berry).
- Winter Key- Deciduous. Fruit may remain on stems into winter months. In early spring look for flower clusters on the stems before leaves appear.
- Plant as containerized stock.
- Plant in the Transition Zone.



Skunkbush Sumac (*Rhus trilobata*)

NOTES:

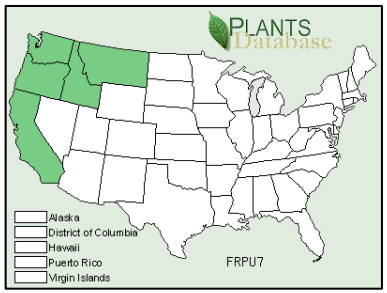
Group 13

Trees with simple, broad leaves, alternate branching and smooth leaf margins

- **Cascara Buckthorn**
- **Black Cottonwood**
- **Scoulers Willow**

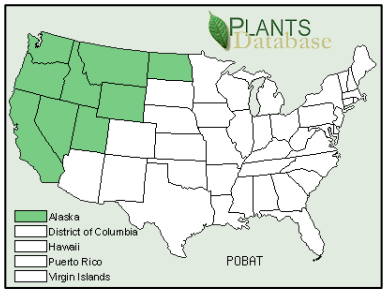
Cascara Buckthorn (*Frangula[Rhamnus] purshiana*)

- Small deciduous tree or shrub up to 50 *ft* tall and 20 *in* diameter.
- Prefers moist, well-drained soils.
- Occurs in low to middle elevations (to 3,000 *ft*), common west of the Cascades from northern California to British Columbia, also in moist canyons in eastern Washington, Idaho and Montana.
- Occurs in dry to wet, often shady sites; commonly associated with red alder and vine maple in moist bottomlands. Also associated with Douglas fir, grand fir, western hemlock, western red cedar, white alder and Bigleaf maple.
- Summer Key – Leaves dark glossy green above, paler below, broadly ovate, 2 to 6 *in* long, pointed at tip and slightly heart-shaped at base, the veins conspicuously deep and parallel; flower clusters greenish-yellow and inconspicuous; fruit small, fleshy and egg-shaped, maturing to purplish-black color, 0.25 to 0.5 *in*.
- Winter Key –Leaves may remain on tree late into fall; bark thin, smooth, silver-gray and very bitter; inner bark yellow; winter buds lack bud scales (naked new leaves) and are covered with dense, rust-colored hairs; fruit clusters may be persistent.
- Use bareroot or containerized stock.
- Plant in Overbank to Upland Zones.

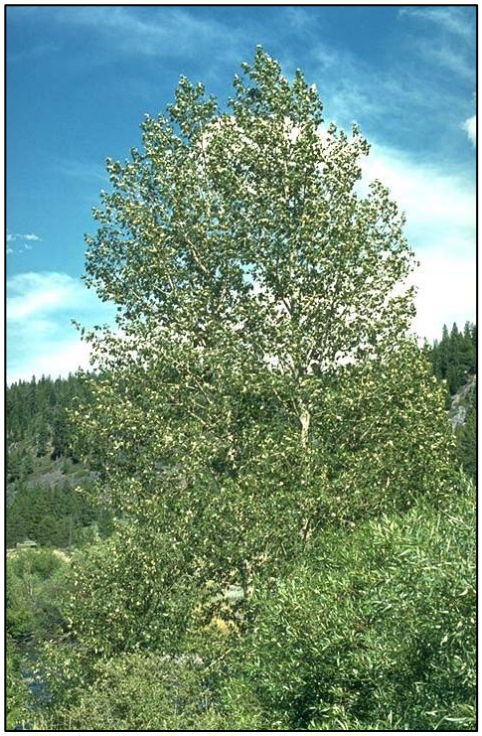


Cascara Buckthorn (*Frangula purshiana*)

- Very tall tree with narrow, rounded, open to pointed crown, up to 160 *ft* in height. Trunk from 2 to 5 *ft* in diameter. Largest of all North American cottonwoods.
- Grows well on moist fertile to dry sterile coarse soils that are flooded. Grows best when soils are well-drained.
- Found in deep river soils to drier valleys and canyons. Common to 5,000 *ft*, more common in the northern part of the region.
- Can cross with several other cottonwoods so pure stands are not as commonly found.
- Summer Key – Leaves elliptical 3 to 4 *in* long and 2 to 3 *in* wide; alternate, smooth, thick, hairless, wedge shaped at the base, and finely round-toothed; broadest near the rounded or wedge-shaped base; pointed at tip; dark green and smooth above and silvery or pale green with rust colored spots beneath. Leaf stalks are round with a pair of glands at the base of the leaf.
- Winter Key – Large tree with narrow or pointed crown. Trunk straight and tall. Young bark is smooth, thin, and older bark is thick, grayish-brown, and deeply furrowed with scaly ridges. Younger stems and twigs are yellow-gray.
- Roots easily along entire stem. Use hardwood cuttings from smooth bark sections rather than older, deep furrowed sections.
- Plant in the Upper Overbank and Transition Zone.

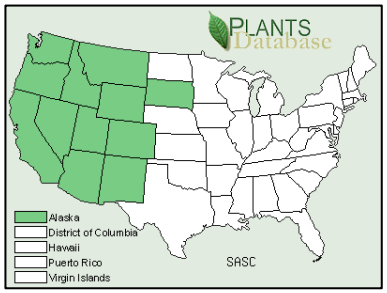


Black Cottonwood (*Populus balsamifera* ssp. *trichocarpa*)



Scoulers Willow (*Salix scouleriana*)

- A large deciduous, upland willow 6 to 35 *ft* (65 *ft*) tall.
- Nonrhizomatous with a deep, extensive root system; may be multistemmed or have one main trunk with branches spreading or ascending.
- Occurs from sea level up to 9,000 *ft* elevation; Alaska to California, east to Manitoba and New Mexico. A widespread and common species.
- Soils from shallow to moderately deep, moderately to well-drained, fine textured to gravelly – found on both moist lowland and dry upland soils.
- Intolerant of standing water and shade.
- One of a few willows that will commonly occur in upland habitat, although it can be found in wetland habitats with other willows. Occurs along rivers (sometimes on gravel bars), around bogs and lakes, and in cut-over forest lands.
- Summer Key - Young stems sparsely to densely gray hairy; stipules large and leaf-like on young shoots, generally inconspicuous on older branches; older branches brownish black. Leaves 1 to 4 *in* long, 2 to 3 times as long as wide, shiny green on the top, becoming leathery when mature. Underside of young leaves with dense, white hairs, persisting along veins, becoming rusty colored on mature leaves; larger leaves generally widest above the middle of the blade, tip often spoon-shaped, margins entire to serrate and rolled under.
- Winter Key - Bark smooth, greenish-gray; yellow-brown to reddish-brown as it matures. Buds pointed and tightly pressed against stem. Freshly stripped bark may have a skunk-like odor.
- Propagate from hardwood cuttings in the Bank Zone to Upland Zone.



Scoulers Willow (*Salix scouleriana*)

NOTES:

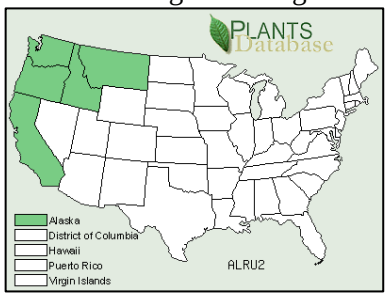
Group 14

Trees with simple, broad leaves, alternate branching and smooth leaf margins

- **Red Alder**
- **Thin Leafed Alder**
- **White Alder**
- **Quaking Aspen**
- **Black or Water Birch**
- **Bitter Cherry**
- **Eastern Cottonwood**
- **Fremont Cottonwood**
- **Pacific or Whiplash Willow**
- **Red Willow**
- **White Willow**

Red Alder (*Alnus rubra*)

- Medium to large tree from 30 to 100 *ft* tall with a single trunk and pyramidal form.
- Produces separate elongate male flowers (catkins) and female flowers that develop into small, oval, cone-like fruits. Both appear before the leaves.
- Grows on gravels and sands and clays, but makes its best growth on deep, well drained loams and silts. Can tolerate poorly drained soils, shallow water tables, and prolonged flooding. Found along streams, in floodplains, and on wet bottomlands.
- Readily colonizes soil exposed by fire and other drastic disturbances. Plant is a nitrogen fixer.
- Found in full sunlight at elevations below 3,300 *ft* in forested regions of the Pacific Northwest and northern Idaho and Montana.
- Most common hardwood in the Pacific Northwest; mostly found within 125 *mi* of the ocean and below 2,400 *ft*.
- Summer Key - Leaves broadly elliptic (shaped like an oval) and sharp pointed; shiny, deep green above and paler gray-green below; margins slightly rolled under and singly or doubly toothed. New twigs reddish-green with vertical ribs and prominent pores.
- Winter Key - Buds large, round tipped, attached to the stem on short stalks, and covered with greenish pink to red scales. Bark on trunk and older branches smooth, brownish-gray to blue-gray, often with light spots or blotches. Clusters of dried, brown cones may persist into winter. Groups of red to greenish-brown immature male catkins hang from twigs.
- Does not propagate from dormant hardwood cuttings.
- Plant in the Overbank and Transition Zones as bareroot or container stock.

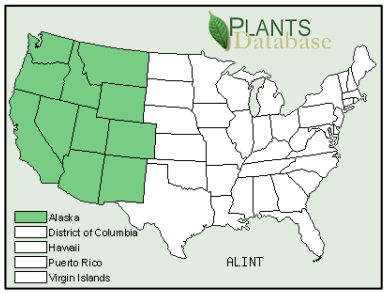


Red Alder (*Alnus rubra*)

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

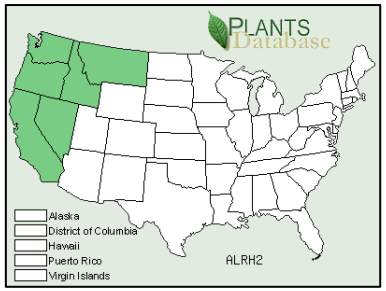
Thin leafed Alder (*Alnus incana* ssp. *tenuifolia*)

- A large deciduous shrub or tree up to 40 *ft* tall with rounded crown.
- Common species occurring at elevations from 2,000 to 7,000 *ft*.
- A nitrogen fixing species
- Found in moist mountain woods and streambanks on coarse textured soils.
- Occurs in all western states from Alaska south to New Mexico and Arizona.
- Summer Key - Leaves alternate with double dentate margins, dull green on both sides and yellow-green on central vein, not sticky. Male flowers arranged in catkins, female fruit develops into a woody cone.
- Winter Key - Bark thin, smooth, dirty green-gray and tends to flake when older. Stems somewhat three-sided, sometimes with short rusty hairs. Pith turns rusty color when freshly cut. Cones persist through the winter.
- Plant as containerized stock.
- Plant in the upper end of the Overbank Zone and into the Transition Zone.



Thin leafed Alder (*Alnus incana* ssp. *tenuifolia*)

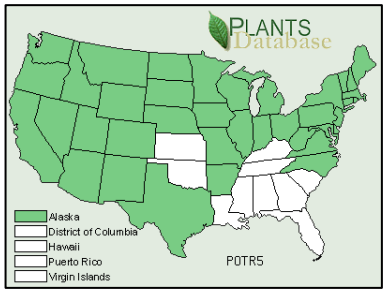
- Fast growing deciduous tree 50 to 80 *ft* tall, but can reach 115 *ft*. Grows to 20 *ft* in five to six years then much slower to 50 to 80 *ft*.
- This tree is a nitrogen fixing plant.
- Adapted to a wide variety of soil textures with a pH tolerance range of 4.0 to 8.0.
- Likes sun and water - is not drought tolerant. Native to moist canyons on the west coast. This tree will grow in the creek channel with the water flowing around it.
- Restricted to riparian woodland communities. It is often found with Fremont cottonwood, California sycamore, willows, ash, California live oak, valley oak, and Douglas-fir. Mostly restricted to the floodplain.
- Summer Key - Leaves 2 to 4 *in* long with coarsely double-toothed margins, dark green above and light green beneath.
- Winter Key - Bark is light gray, whitish, smooth or slightly rough on young trees becoming plated and reddish brown at maturity.
- Does not sprout from hardwood cuttings. Plant as containerized stock.
- Plant as containerized stock in the Bank and Overbank Zones and into the Transition Zone.



White Alder (*Alnus rhombifolia*)

Quaking Aspen (*Populus tremuloides*)

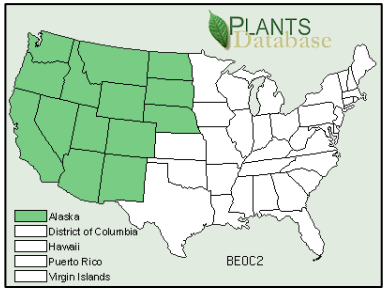
- Colonial trees growing 30-45 *ft* tall with trunk diameters reaching 1.5 *ft*; most often found in dense, pure stands.
- Trunks are covered with smooth white bark layered with a powdery white bloom; black scars are typical on the main trunk.
- Found on sandy to loamy soils.
- Grows along waterways, in canyons and mountain sides at 4,000 to 10,000 *ft*.
- Widespread throughout North America from Alaska to Northern Mexico.
- Favorite for beaver food and dam construction material.
- Summer Key- Petioles (leaf stalks) flattened laterally which makes leaves “quake” in wind giving the species its name. Leaves 1 to 2.5 *in* long and nearly circular with a pointed tip. The margins can be undulate to serrate.
- Winter Key- White and black splotched trunks very distinctive and easily identified.
- Propagates easily from roots.
- Does not propagate from hardwood cuttings. Use containerized stock.
- Plant in the Transition Zone.



Quaking Aspen (*Populus tremuloides*)

Water or Black Birch (*Betula occidentalis*)

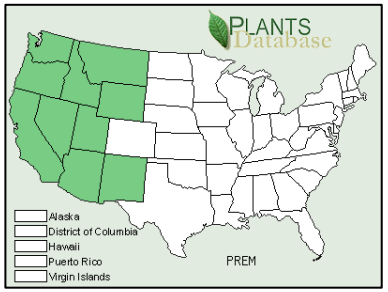
- A small tree or large shrub up to 30 *ft* tall with several trunks; frequently found in crowded dense thickets.
- Tree is slender, upright, covered with white lenticels (horizontal pores).
- Fairly common species that can be found at elevations from 4,500 to 10,000 *ft*.
- Found along rivers, streams, springs and moist locations on a variety of gravelly, cobbly to medium textured soils.
- Found in all western states from Alaska south to Arizona and New Mexico.
- Summer Key- Leaves alternate, deciduous, with rounded wedge shaped base and pointed tip. The entire base extending to double row of fine sharp-pointed teeth. Leaves are dark greenish-yellow and shiny above, paler and gland dotted below, sometimes tufts of hair at junctions of veins.
- Winter Key- Bark thin, smooth, and covered with white lenticels. It is almost black on young trees, but turns reddish-brown with age.
- Water birch does not root readily from hardwood cuttings. It is most successful when propagated from seed. Use containerized stock.
- Plant in Bank zone to Overbank zone.



Water or Black Birch (*Betula occidentalis*)

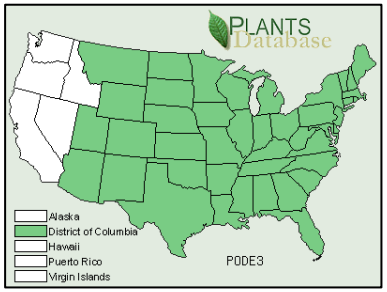
Bitter Cherry (*Prunus emarginata*)

- Multi-stemmed shrub to tree up to 50 *ft* tall and 1 *ft* diameter.
- Occurs in moist, open-wooded areas and along streams; often produces thickets.
- Sea level to 9,000 *ft.*
- Prefers open sandy or gravelly sites and stream banks.
- Often associated with Douglas fir, grand fir, bigleaf maple, and cascara; a pioneer species in logged areas and is often shaded out by other trees as forest matures.
- Berries are important food for birds.
- Summer Key – Leaves dark green above, paler beneath, alternate, simple, oblong to ovate, 1-3 *in* long, rounded at the tip, a pair of glands as the base, margins with fine teeth; flowers emerge with leaves in white, flat-topped clusters: fruits mature to bright red to purple, individual fruits ~0.25 *in*, bitter.
- Winter Key - Bark shiny reddish brown to gray with horizontal rows of pores (lenticels), bitter, odor strong; long, pointed buds.
- Use bareroot or containerized stock.
- Plant in Transition and Upland Zones.



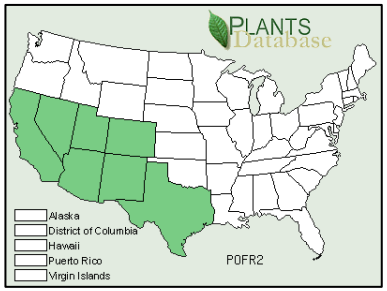
Eastern Cottonwood (*Populus deltoides*)

- Tall trees to 100 *ft* with a broad spreading crown; trunks can reach 3 *ft* in diameter.
- Deciduous, fast-growing, short lived.
- Prefers moist, well drained sands & silts. Trees have fair flood tolerance and good deposition tolerance.
- Survives heat and sunny areas, but has poor shade tolerance.
- Approximately 10% of trees in a population have potential for spreading by tillers.
- Found at elevations from sea level to 4,500 *ft*.
- Common throughout the eastern states and Midwest.
- Flowers are borne in catkins which appear before leaves emerge. Fruit is an elongated capsule filled with white cottony seeds.
- Summer Key- Leaves are broadly triangular to heart-shaped, 2 to 5 *in* long. The leaf margins are more finely toothed than those of Fremont cottonwood.
- Winter Key- Mature bark is deeply furrowed and gray when mature. Young stems are angled or winged. Buds conical, up to 0.75 *in* long, shiny and brown.
- Very good hardwood rooting. Propagates from poles, cuttings, and layering.
- Plant in the Overbank and Transition Zones.

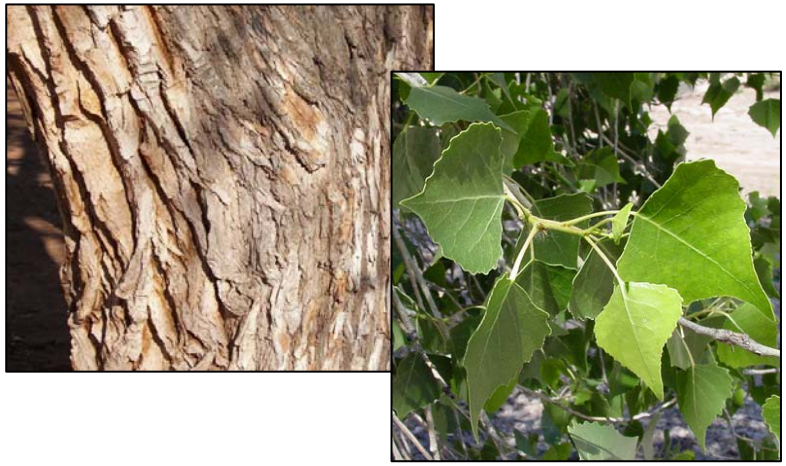


Eastern Cottonwood (*Populus deltoides*)

- Medium to tall tree with broad, open crown, usually 50 to 75 *ft* in height with a trunk diameter of 1 to 6 *ft*.
- Found in low to moderate elevations, usually in the southern part of the region from 2,000 to 6,500 *ft*.
- Prefers gravel to sandy soils that flood periodically but are well drained.
- Typically encountered near streams, rivers and ponds.
- Usually occurs with coyote willow. Does not tolerate prolonged inundation.
- This species does well in mildly saline areas.
- Summer Key: Triangular shaped leaf with broad base; very irregular and coarsely toothed; thick, shiny, green, without glands. The leaf stalk is flattened. Fruit is a 3-4 parted egg-shaped capsule clustered in catkins containing light brown seeds covered with silky hairs.
- Winter Key: Bark is smooth on younger trees, light gray to brownish to white; becoming thick, rough, dark gray-brown and splitting with age.
- Roots from hardwood cutting with medium ease.
- Plant in the Transition Zone.

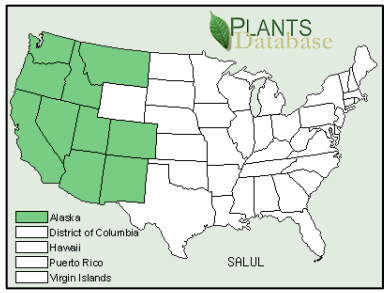


Fremont Cottonwood (*Populus fremontii*)



Pacific or Whiplash Willow (*Salix lucida* ssp. *lasiandra*)

- Tree-type willow with several main stems and a dense green crown, 20 to 60 *ft* in height.
- A very common and widespread willow.
- Multiple stems instead of a large single stem. Stem diameter often 4 to 12 *in*. Very brittle wood.
- Likes coarse-textured alluvial deposits of sand or gravel but textures range from sandy to clayey.
- Found at low to mid elevations (3,000 to 7,000 *ft*) and immediately adjacent to a stream's or river's edge. Sites typically have a high water table year-round. Often occurs with black cottonwood and yellow willow.
- Summer Key – Long pointed leaf with a fine-toothed margin. Leaves are green on both sides and lack a waxy bloom. Very shiny. Apex of leaf has a curving point, hence the name whiplash. Distinctive glands are found on the petioles at the base of the leaf. Stipules usually present and can be large.
- Winter Key – Twigs covered with a fine pubescence, Lower bark is furrowed, rough, and brown. Upper bark is smooth and usually light green.
- Easy to propagate from 2 to 4 year old stems, older stems root more slowly. Medium growth rate.
- Plant in the upper end of the Overbank Zone and into the Transition Zone (also the Bank Zone in western Oregon and western Washington).

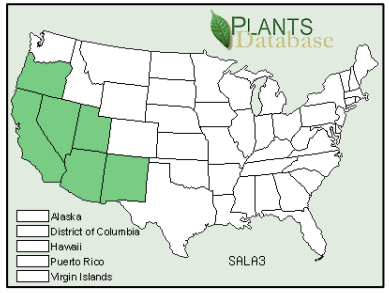


Pacific or Whiplash Willow (*Salix lucida* ssp. *lasiandra*)

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Red Willow (*Salix laevigata*)

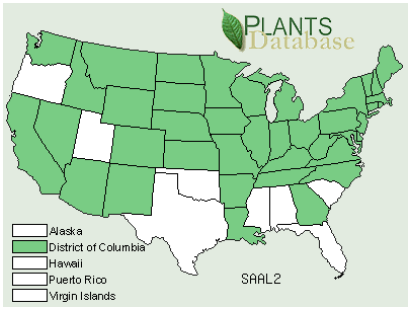
- Tree from 10 to 45 *ft* in height.
- Very common species to 5,000 *ft* in California, Arizona and Utah. Considered rare in Oregon; only found in Jackson and Klamath Counties.
- Found in seasonal streams, as well as seepage areas, canyons and ditches. Drought tolerant, but prefers full sun and water.
- Mostly occurring in arid portions of the southwest, but also found as far north as Oregon.
- Moderate growth rate.
- Summer Key – Leaves green on top, glaucous (white) underneath, broader at the base, tapering to a point; tip is long pointed; margins very finely toothed.
- Winter Key - Bark gray; rough and furrowed; young twigs are red to yellow brown. New growth is always red.
- Moderate to good success from planting dormant unrooted hardwood cuttings. Roots along entire stem. Very good rooting
- Plant in the upper Overbank and Transition Zone.



Red Willow (*Salix laevigata*)

White Willow (*Salix alba*)

- An upright tree-type willow capable of reaching 80 *ft* tall, with a wide spreading crown. Trunk often splits low to the ground.
- Introduced from Eurasia and naturalized in the Eastern United states.
- Planted as a shade and ornamental tree. Can be found growing in wet soils along streams in and near cities.
- Summer Key – Branching alternate. Leaves simple, lanceolate to narrow ovate, 2 to 4 *in* long, finely serrated, shiny green above, nearly white and silky below. Leaves lack stipules. Glands present at leaf bases. Twigs can be hairless to silky.
- Winter Key - Bark is grayish brown and irregularly furrowed, into rough narrow ridges. Twigs are very slender, smooth or slightly downy, yellowish brown (golden), flexible; buds are small, appressed and covered by a single, cap-like scale. Terminal buds are lacking.
- Propagation success by dormant unrooted hardwood cuttings is moderate to good.
- Plant in the Overbank and lower Transition Zones.



White Willow (*Salix alba*)

NOTES:

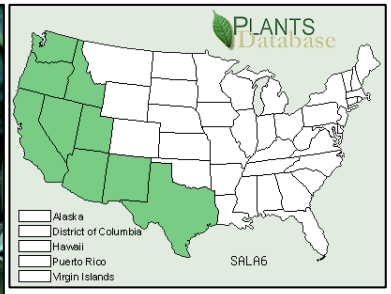
Group 15

Trees with simple, narrow leaves, alternate branching and toothed leaf margins

- **Arroyo Willow**

Arroyo Willow (*Salix lasiolepis*)

- Large shrub to small tree from 12 to 36 *ft* tall.
- Grows in coarse rocky soils, but tolerates finer textured substrates.
- Found at elevations below 8,000 *ft* from British Columbia south to Baja California, east to Idaho and Texas.
- Twigs and bark are yellow to reddish dark brown; softly hairy when young.
- Moderate to fast growth rate.
- Summer Key - Leaves up to 4.5 *in* long, more than 3 times longer than wide; margins entire; lower surfaces hairy with a waxy bloom. Stems slender, green to grayish brown, occasionally with have some fuzzy hairs.
- Winter Key – Bark is light gray and smooth, with lenticels when young,; with maturity splitting and developing reddish brown fissures and flat, light gray ridge tops.
- Roots easily from hardwood cuttings.
- Can be planted in upper Overbank, Transition and into the Upland Zones.



Arroyo Willow (*Salix lasiolepis*)

Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

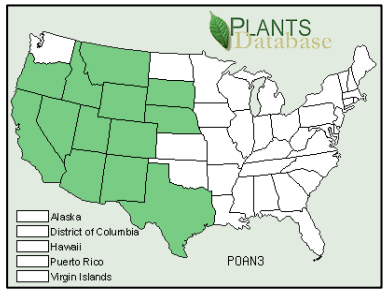
NOTES:

Group 16

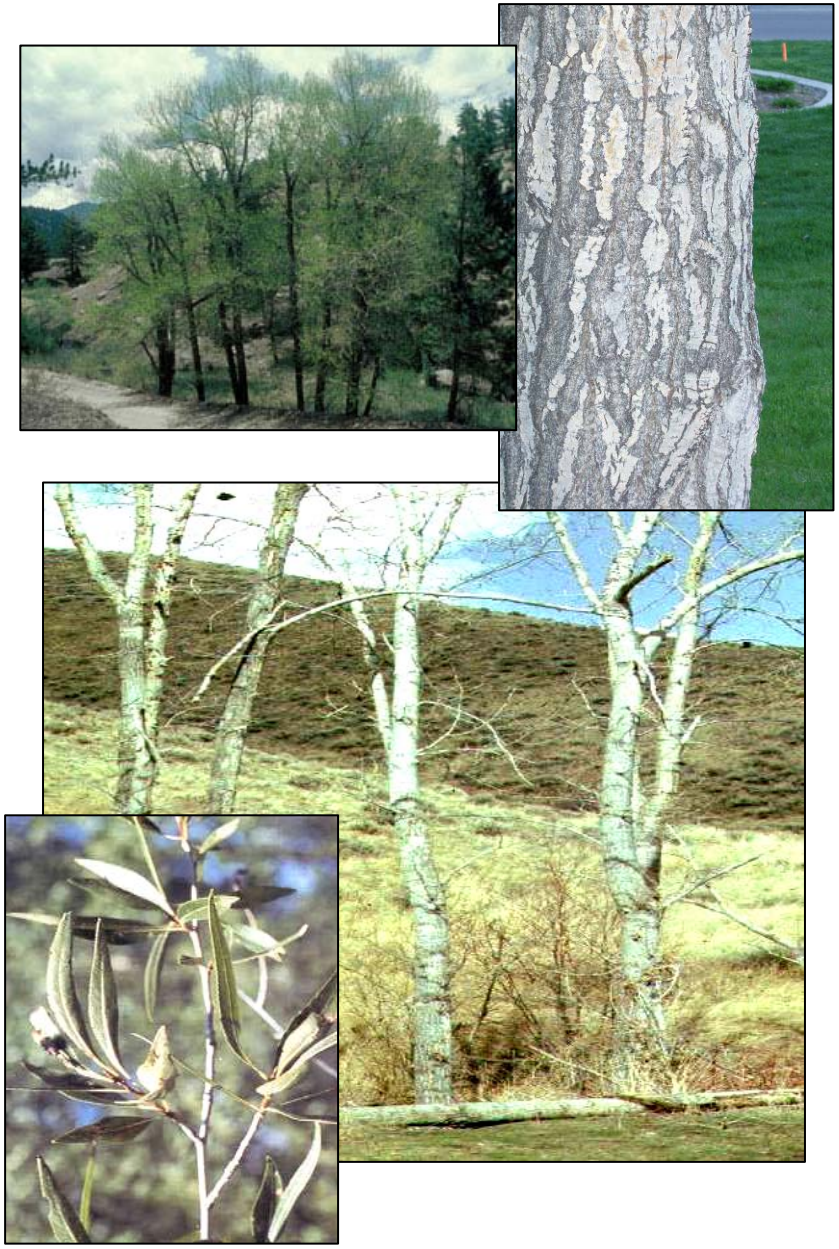
Trees with simple, narrow leaves, alternate branching and toothed leaf margins

- **Narrowleaf Cottonwood**
- **Gooding Willow**
- **Peachleaf Willow**

- Medium-sized tree with narrow, rounded crown, up to 60 *ft* in height with trunk diameters from 1 to 2 *ft*.
- Often associated with redosier dogwood and alder.
- Occupies coarse, cobbly soils that flood frequently but are well-drained.
- Does not tolerate prolonged inundation.
- Occurs in mountain valleys along fast moving streams. Found throughout the region from 4,000 to 7,000 *ft*.
- Grows rapidly but is short lived.
- Summer Key – Leaves long and narrow, broadest near the middle, tapering to a pointed tip with finely toothed margins; bright yellow-green above and pale below with a flattened leaf stalk.
- Winter Key – Generally a shorter cottonwood with a small trunk and narrow cone-shaped top. Bark is white to gray and smooth on younger stems and trunk, becoming darker and furrowed with age. Bark is shallowly fissured with broad, flat ridges.
- Roots easily from hardwood cuttings. Use smooth bark sections.
- Should be planted in the Transition Zone.

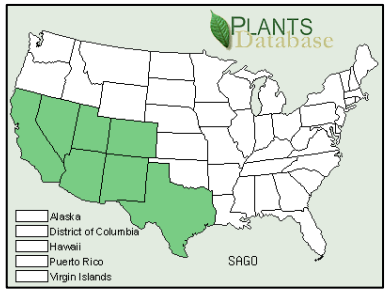


Narrowleaf Cottonwood (*Populus angustifolia*)



Goodding Willow (*Salix gooddingii*)

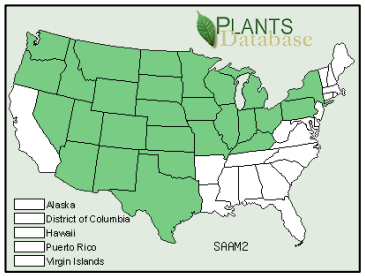
- A fast-growing, deciduous, dioecious (having separate male and female plants), native shrub or tree. It attains a height of 20 to 60 *ft* and has an average trunk diameter of 30 *in*.
- Distributed from northern CA to southern UT, southeast through NM to the TX panhandle, and west to AZ and southern CA. Some consider it to be the western *Salix nigra*.
- Has both abundant small surface roots and deeper main root branches. Root depths reach up to 7 *ft*.
- Sites are typically seasonally inundated by water and have shallow water tables and fine-grained alluvial soils.
- Tolerates flooding and long, hot growing seasons.
- Very low shade tolerance. It does not sprout beneath its own canopy.
- Goodding willow grows well in the pH range of 6 to 7 and tolerates alkaline desert soils.
- Summer Key - Leaves are narrow, 2 to 4 *in* long; lance shaped, finely toothed, and green on both sides.
- Winter Key - New twigs are yellow. Bark of trunks and older stems is thick, rough, and deeply furrowed.
- Gooding willow seedlings compete poorly with grasses.
- Good success with hardwood cuttings.
- Plant in the upper Overbank to Transition Zones.



Goodding Willow (*Salix gooddingii*)

Peachleaf Willow (*Salix amygdaloides*)

- Rapidly growing, short-lived, small- to medium-sized deciduous tree with one to several trunks that is typically from 20 to 40 *ft* tall; trunk up to 3 *ft*, more commonly 1.5 to 2 *ft* diameter, often smaller, occurring in clumps. Multiple stems often off a single base.
- Commonly associated with cottonwood and coyote willow. Typically found east of the Cascades in Washington and Oregon.
- Growth on gravel or dense clay is poor, on clay is fair, and on sand, sandy-loam, loam, clay-loam is good.
- Shade intolerant and requires canopy openings to survive. It is tolerant of poor drainage and prolonged flooding but extended immersion in water for a year or longer will cause most plants to die.
- Pioneer species that forms young stands. Found throughout the region, primarily at low elevations from 3,500 to 7,000 *ft*.
- Summer Key – Leaf is lanced-shaped with fine toothed edge, not shiny, 1 to 3 *in*; somewhat leathery with pale whitish bloom on the underside, hairless and without glands on either side of leafstalk near leaf base. Stipules are small or lacking. Twigs shiny, hairless, and red-brown or orange.
- Winter Key –Bark is thick, grayish brown, shallowly furrowed, and shaggy. Younger twigs and branches are smooth, shiny gray to red-brown to orange. Many of the new stems grow straight up from the old growth.
- Plant dormant cuttings of younger (2 to 3 year old) stems.
- Plant at the upper Overbank and Transitional Zone.



Peachleaf Willow (*Salix amygdaloides*)

NOTES:

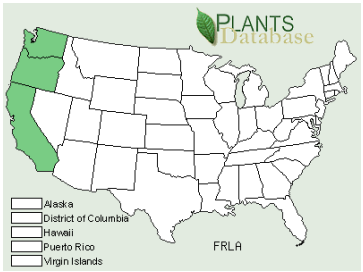
Group 17

Trees with compound, broad leaves, opposite branching and smooth leaf margins

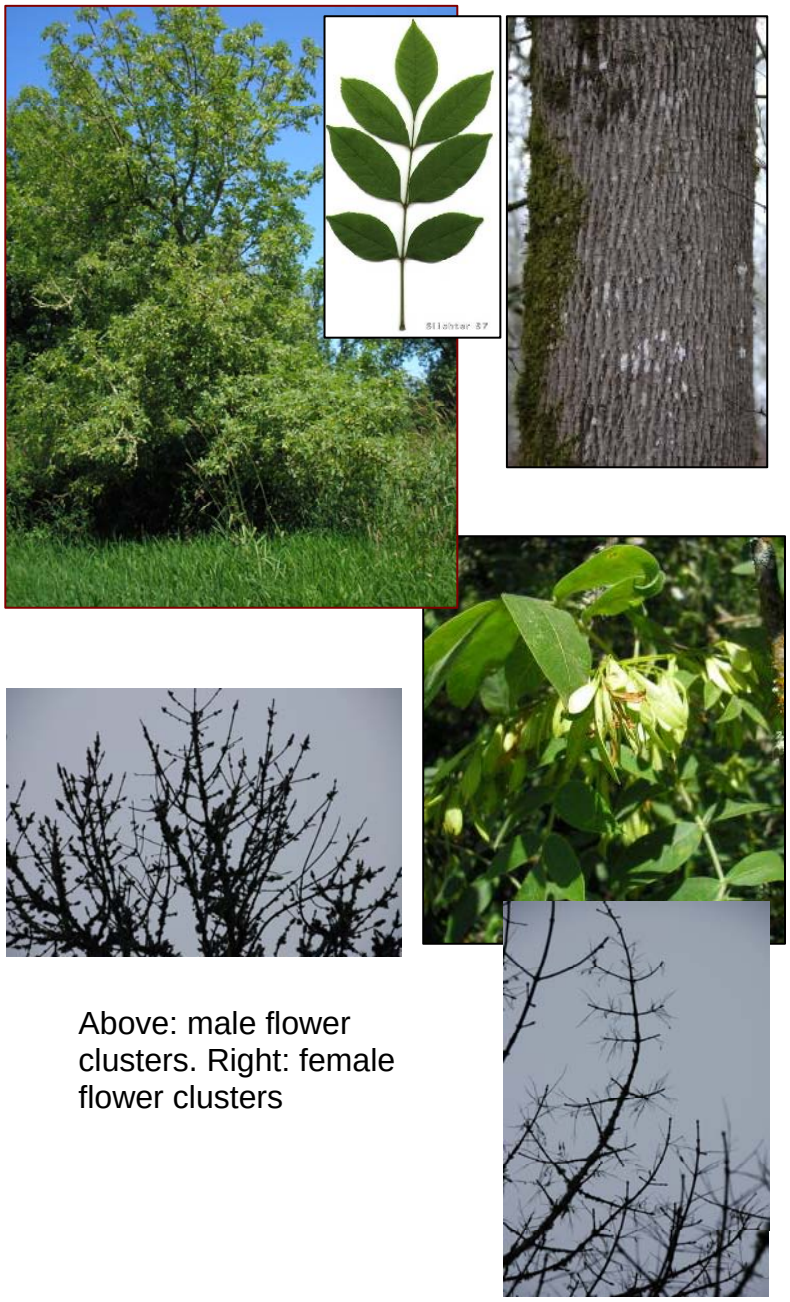
- **Oregon Ash**

Oregon Ash (*Fraxinus latifolia*)

- A large, deciduous tree up to 80 *ft* tall; rounded top when mature; trunk up to 3 *ft* in diameter
- Suited to deep, heavy soils and poorly drained areas.
- Male and female flowers on separate plants (dioecious).
- Generally found west of the Cascade Mountains in Oregon and Washington; dominant in many wetland plant communities; common along rivers and swales, trees seen in uplands generally associated with wet seeps. Common from sea level to 3,000 *ft*.
- Often co-occurs with black cottonwood, red alder, black hawthorn, cascara, redosier dogwood, Pacific ninebark, snowberry and willows.
- Summer Key - Leaves pinnately compound, 8 to 12 *in* long with 5 to 7 leaflets,light green above, paler below with smooth margins; flowers inconspicuous, yellowish (male) or greenish (female) born on separate trees (dioecious) emerge with or just ahead of the leaves March to May. Female trees with clusters of long single samaras (canoe-shaped seeds) produced during June.
- Winter Key - Opposite branching, twigs stout, often old samaras hanging on female trees, whispy clusters of hair-like fruit stalks where fruits were on female trees in previous year. Knobby clusters of male flowers in early spring. Decomposing leaves at base of trees may appear as simple leaves as leaflets separate from the leaf stem. Bark thick, grayish-brown, becoming deeply ridged forming diamond or diagonal pattern.
- Difficult to propagate from hardwood cuttings.
- Plant bareroot or containerized plants in the upper Overbank Zone and Transition Zone.



Oregon Ash (*Fraxinus latifolia*)



Above: male flower clusters. Right: female flower clusters

NOTES:

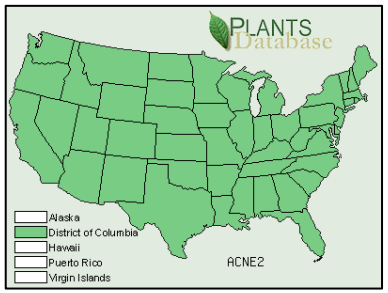
Group 18

Trees with compound, broad leaves, opposite branching and toothed leaf margins

- **Boxelder**

Boxelder (*Acer negundo*)

- Medium sized trees from 12 to 40 *ft* tall. Trees have short, stout trunks (to 2.5 *ft* diameter) and a broad, rounded canopy.
- Trees are dioecious, having male and female flowers on separate trees.
- Found in a wide range of soil types.
- Occurs in riparian and palustrine communities in wet or moist soils from 2,500 to 7,200 *ft* elevation.
- Widespread in the U.S. and Canada, south to Central America.
- Summer Key- Leaves pinnately compound (leaflets opposite of each other along the long central axis) with 3 (sometimes up to 7) leaflets, the leaflets each 2 to 4 *in* long and 1 to 1.5 *in* wide. Branching is opposite.
- Winter Key- Opposite branching is the most distinctive feature. The fruit is a 1 to 1.5 *in* paired samara or winged seed that often persists on the stems through the winter. Bark gray with pale gray fissures.
- Field propagation by dormant unrooted hardwood cuttings is rarely successful.
- Plant bareroot or containerized stock in the Transition Zone.



Boxelder (*Acer negundo*)

NOTES:

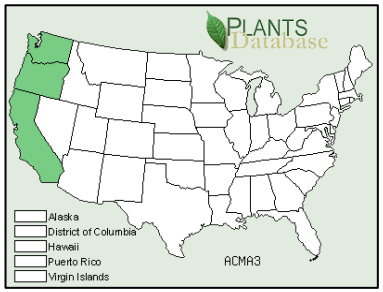
Group 19

Trees with lobed, broad leaves, opposite branching and toothed leaf margins

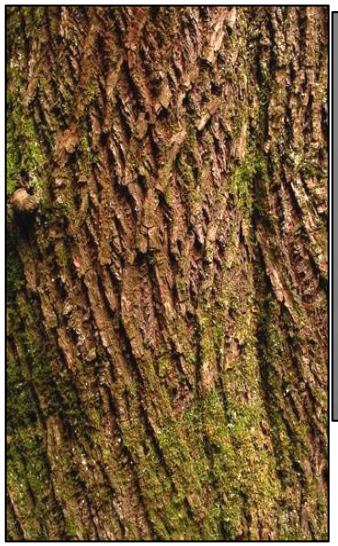
- **Bigleaf Maple**
- **Vine Maple**

Bigleaf Maple (*Acer macrophyllum*)

- Large deciduous tree 30 to 110 *ft* tall often with multiple trunks several feet above the base and a broad, spreading to rounded crown over 50 *ft* wide at maturity.
- Inhabits stream and lakeshores, floodplains, canyons, and transitional zones between wetlands and uplands; occasionally on drier sites but never on saturated ones.
- Deep loamy to well-drained soils, withstands periodic winter flooding and shallow rocky or gravelly sites; high nutrient requirements for growth.
- Favors full sun to partial shade, but has shade tolerance.
- Produces large, cylindrical, hanging clusters of greenish-yellow flowers at the end of twigs before leaves appear.
- Mature fruits v-shaped, paired, propeller-like, winged nutlets (samaras) golden-brown to tan in color with hairs.
- Often found with Douglas fir, often on sites disturbed by fire, clearing or logging; at low to mid-elevation.
- Summer Key – Large leaves up to 1 *ft* wide, shiny green above and paler below, somewhat leathery with 5 deep, pointed lobes; margins have a few irregular blunt teeth. Young twigs thick and green early on, becoming deep red then reddish Gray with age.
- Winter Key – Buds opposite, occasionally with sparse hairs, blunt tipped, and covered with deep red-green scales. Youngest twigs burgundy red, smooth and shiny with a waxy look and feel. Older bark gray; smooth to plated and eventually ridged or deeply furrowed. Older specimens often with mosses and other vegetation growing on the bark.
- Does not propagate from hardwood cuttings. Plant as salvaged seedlings or container stock.
- Plant in Overbank and Transition Zones where drainage is better.



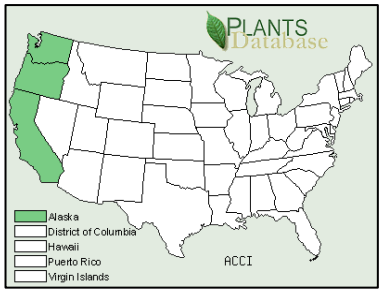
Bigleaf Maple (*Acer macrophyllum*)



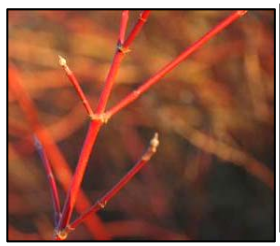
Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

Vine Maple (*Acer circinatum*)

- Tall shrub to small tree up to 25 *ft* tall and 12 *in* diameter trunk; often with multiple, sprawling (that might be rooting) to upright stems.
- Occupies a very wide range of habitats; generally indicates warm, well-drained, moist soils. A typical understory plant in forested habitats, becomes more upright and densely-branched when growing in open sites; sometimes forming dense thickets.
- Moist woods from sea level to mid-elevations in the mountains; found mostly below 3,000 *ft* in Washington and NW Oregon, and below 5,500 *ft* in SW Oregon and NW California.
- Preferred food for black-tailed deer and elk.
- <u>Summer Key</u> – Leaves opposite, palmately-lobed (maple-like) with seven (typical) to nine lobes; small reddish flowers on short lateral stems; fruits a smooth double samara with widely-spreading (180º) wings, at first red then becoming a tawny brown.
- <u>Winter Key</u> – Oppositely branched stems; bark is thin, green to gray, new twigs glossy red; remnant samaras may be present
- Does not propagate from hardwood cuttings.
- Use bareroot, container plants, or salvaged seedlings or saplings.
- Plant in the better-drained locations and into the uplands; tolerant of sunny and very shady locations; generally plant in the Transition and Upland Zones.



Vine Maple (*Acer circinatum*)



Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions

References

Burke Museum of Natural History & Culture. 2006. WTU Image Collection: Plants of Washington. University of Washington, Seattle, WA 98195

Brunsfeld, S.J. and F.D. Johnson. 1985. Field Guide to the Willows of East-Central Idaho. Idaho Forest, Wildlife and Range Expt. Sta. U. of Idaho, Moscow, ID. 95 p.

Calflora. 2006. UC Berkeley Digital Library research Project CalPhotos library of plant images. 1700 Shattuck Av #198, Berkeley, CA 94709.

Cooke, S.S. (editor). 1997. A field guide to the common wetland plants of western Washington and Northwestern Oregon. Seattle Audubon Society, Seattle, WA. 417p.

Dendrology Web pages (http://www.cnr.vt.edu/DENDRO/), Dept. of Forestry, College of Natural Resources, Virginia Tech, Blacksburg, VA 24061.

Elias, T.S. 1980. The complete trees of North America. Times Mirror Magazines Inc., New York, N.Y and Van Nostrand Reinhold Company, New York, N.Y. 948p.

Gilkey, H. M. and L.J. Dennis. 2001. (revised edition). Handbook of Northwestern Plants, Oregon State University Press. 494p.

Gilkey, H. M. and P. L. Packard. 2001 (revised edition). Winter Twigs; a wintertime key to deciduous trees and shrubs of Northwest Oregon and Western Washington. Oregon State University Press. Corvallis, Oregon. 118p.

Guard, J.B. 1995. Wetland plants of Oregon and Washington. Lone Pine Publishing. Redmond, WA, Vancouver, BC, and Edmonton, Alberta. 239p.

Guttman, E. and R. Thurman. 1999. Winter in the woods. A winter guide to deciduous native plants in Western Washington. Native Plant Salvage Project. Washington State University Cooperative Extension Service, Thurston County, WA. 49p.

Haeussler. S., D. Coates, and J. Mather. 1990. Autecology of common plants in British Columbia: a literature review. FRDA Report 158. B.C. Ministry of Forests and Forestry Canada. Canada BC Economics and Regional Development Agreement. Victoria, B.C. 272p.

Halverson, N.M., R.D. Lesher, R.H. McClure, J.Riley, C. Topik, A. Rodahorst. Major Indicator shrubs and herbs on National Forests of Western Oregon and Southwestern Washington. USDA Forest Service, Pacific Northwest Region. R6-TM-229-1986.

Hickman, J.C. (editor). 1993. The Jepson manual. Higher plants of California. University of California Press, Berkeley and Los Angeles, CA. 1400p.

Hitchcock, C.L., A. Cronquist, M. Owenby and J.W. Thompson. 1964. Vascular Plants of the Pacific Northwest; Part2: Salicaceae to Saxifragaceae. University of Washington Press, Seattle, WA. 597p.

Johnson, C.G. 1998. Common plants of the inland Pacific Northwest. R6-NR-ECOL-TP-04-98. USDA Forest Service. 394p.

Kozloff, E.N. Plants of Western Oregon, Washington and British Columbia. Timber Press 2005.

Kruckeberg, Arthur. Gardening with Native Plants of the Pacific Northwest; an Illustrated Guide. Seattle: University of Washington Press, 1982.

Leigh, M. 1999. Grow your own native landscape. A guide to identifying, propagating, and landscaping with Western Washington native plants. Native Plant Salvage Project. Washington State University Cooperative Extension Service, Thurston, County, WA. 116p.

Niemiec, S.S., G.R. Ahrens, S. Willits, and D.E. Hibbs. 1995. Hardwoods of the Pacific Northwest. Forest Research Laboratory, Oregon State University, Corvallis. Research Contribution 8. 115p. http://fcg.cof.orst.edu/rc/RC%208.pdf

Oregon Plant Atlas: distribution of plants in Oregon by reported sightings http://cladonia.nacse.org/platlas/jclass/OPAJava20.htm

Pojar, J. and A. MacKinnon (editors). 1994. Plants of the Pacific Northwest Coast. B.C. Ministry of Forests and Lone Pine Publishing. Redmond, WA, Vancouver, BC, and Edmonton, Alberta. 527p.

Turner, Mark and Gustafson, Phyllis. Wildflowers of the Pacific Northwest Timber Press, 2006.

USDA, NRCS. 2007. The PLANTS Database (http://plants.usda.gov, 15 February 2007). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

US Forest Service Fire Effects Information System: http://www.fs.fed.us/database/feis/index.html

Welsh, S.L., N.D. Atwood, S. Goodrich and L.C. Higgins. 2003. A Utah Flora. Brigham Young University. Provo, UT. 912p.

Acknowledgements

The following people provided invaluable assistance to the preparation of this field guide:

Jon Fripp, Stream Mechanics Civil Engineer, USDA-NRCS NDCSMC, Ft. Worth, TX

Peter Gonzalves, Biological Science Technician, USDA-NRCS Plant Materials Center, Corvallis, OR

Destina Johnson, Public Affairs Specialist, USDA-NRCS Boise, ID

Dan Ogle, Plant Materials Specialist, USDA-NRCS, Boise, ID

Sandy Wyman, Range Conservationist, National Riparian Team, BLM, Prineville, OR

Appendix A:

Species ability to root from live hardwood cuttings for use in soil bioengineering techniques[1]

Common Name	Scientific Name	Rooting Ability	Bioengineering Technique[2]
Coyote Brush Baccharis	*Baccharis pilularis*	fair	fascines, brush mattress, brush layering, live cuttings
Mule Fat Baccharis	*Baccharis salicifolia*	good	fascines, brush mattress, brush layering, live cuttings
Redosier Dogwood	*Cornus sericea*	fair to good	fascines, brush mattress, brush layering, live cuttings
Black Twinberry	*Lonicera involucrata*	good	live stakes ,fascines ,brush layering, live cuttings
Indian Plum	*Oemleria cerasiformis*	fair	fascines, brush mattress, brush layering, live cuttings
Syringa or Lewis Mockorange	*Philadelphus lewisii*	fair	fascines, live cuttings
Pacific Ninebark	*Physocarpus capitatus*	fair	fascines ,brush layering, live cuttings
Narrowleaf Cottonwood	*Populus angustifolia*	fair	pole, live cuttings
Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	very good	poles, live cuttings
Eastern Cottonwood	*Populus deltoides*	very good	poles, live cuttings
Fremont Cottonwood	*Populus fremontii*	fair	poles, live cuttings
Salmonberry	*Rubus*	fair	fascines, live cuttings

Common Name	Scientific Name	Rooting Ability	Bioengineering Technique[2]
	spectabilis		
Peachleaf Willow	*Salix amygdaloides*	very good	poles, posts, live cuttings
Bebb Willow	*Salix bebbiana*	fair	poles, live cuttings
Booth Willow	*Salix boothii*	excellent	fascines, poles, brush mattress, brush layering, live cuttings
Drummond Willow	*Salix drummondiana*	fair to very good	fascines, poles, brush mattress, brush layering, live cuttings
Coyote Willow	*Salix exigua*	good to very good	fascines, poles, brush mattress, brush layering, live cuttings
Geyers Willow	*Salix geyeriana*	very good	fascines, poles, brush mattress, brush layering, live cuttings
Gooddings Willow	*Salix gooddingii*	very good	poles, posts, live cuttings
Hooker or Coast Willow	*Salix hookeriana*	very good	fascines, poles, brush mattress, brush layering, live cuttings
Red Willow	*Salix laevigata*	very good	poles, live cuttings
Arroyo Willow	*Salix lasiolepis*	excellent	fascines, poles, brush mattress, brush layering, live cuttings
Lemmons Willow	*Salix lemmonii*	very good	fascines, poles, brush mattress, brush layering, live cuttings
Pacific or Whiplash Willow	*Salix lucida* ssp. *lasiandra*	excellent	Poles, live cuttings
Yellow Willow	*Salix lutea*	fair	fascines, poles, brush mattress, brush layering, live cuttings
Planeleaf Willow	*Salix planifolia*	fair	fascines, poles, brush mattress, brush layering, live cuttings

Common Name	Scientific Name	Rooting Ability	Bioengineering Technique[2]
Scoulers Willow	*Salix scouleriana*	fair	fascines, poles, brush mattress, brush layering, live cuttings
Northwest Sandbar or River Willow	*Salix sessilifolia*	very good	fascines, poles, brush mattress, brush layering, live cuttings
Sitka willow	*Salix sitchensis*	very good	fascines, poles, brush mattress, brush layering, live cuttings
Common Elderberry	*Sambucus nigra* ssp. *canadensis*	very good	fascines, brush mattress, brush layering, live cuttings
Red Elderberry	*Sambucus racemosa*	fair	Brush layering, live cuttings
Douglas Spirea	*Spiraea douglasii*	fair to good	fascines, brush mattress, brush layering, live cuttings
Common Snowberry	*Symphoricarpos albus*	fair to good	fascines, brush mattress, brush layering, live cuttings

1. Species in the booklet that root poorly from hardwood cuttings are not included in this table. They should only be planted as container or bareroot nursery stock.
2. See definitions.

Soil Bioengineering Treatment Definitions:

Live Fascines: Sausage-like bundles of live cut branches. The bundles are tied together about every 2 *ft* using biodegradable twine such as cotton twine (do not use jute twine). Adaptations include laying the branches with the tops and bottoms in different directions or laying the branches all in the same direction.

Live Cuttings (includes Live Stakes): Dormant un-rooted hardwood cuttings ranging in size from ½ to 1 *in*. Live cuttings range in length depending on the distance to sustainable moisture capable of supporting root and plant growth.

Live Poles: Live poles are dormant un-rooted hardwood cuttings ranging in diameter from 1 to 3 *in* with the length dependent on species and distance to sustainable moisture capable of supporting root and plant growth. Usually willow and cottonwood are used with this technique.

Live Posts: Dormant un-rooted hardwood cuttings ranging in diameter from 3 to 6 *in* with the length dependent on species and distance to sustainable moisture capable of supporting root and plant growth.

Brush Mattress: Dormant un-rooted branches (hardwood cuttings), placed vertically on a slope in combination with live fascines, tied down with wire or rope, and held in place with inert stakes.

Brush Layer: Alternating layers of live dormant un-rooted branches (hardwood cuttings) and earth. The tips of the branches protrude beyond the face of the slope 1-2 *ft*.

Index

Funding for this publication was provided in part by the Idaho office of The Nature Conservancy and the USDI Bureau of Reclamation

USDI Bureau of Reclamation,
Snake River Area, Burley, ID

Idaho office, Silver Creek Preserve