

Field key to *Salix* of Utah Based on Vegetative Features¹

Sherel Goodrich²

Goodrich, Sherel. 1992. Field key to *Salix* of Utah based on vegetative features. In: Landis, T.D., technical coordinator. Proceedings, Intermountain Forest Nursery Association; 1991 August 12-16; Park City, UT. General Technical Report RM-211. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station: 71-73. Available at: <http://www.fcnanet.org/proceedings/1991/goodrich.pdf>

Abstract.--A key to *Salix* of Utah based on vegetative features is presented.

INTRODUCTION

With increasing awareness of riparian and wet land values, interest in willows has increased in recent years. Willows contribute to streambank stability. They improve quality of fish habitat by shading and cooling temperatures of streams and by providing escape cover. They are important to many kinds of wildlife including beaver which often prefer and sometimes are obligate to members of the willow family. Some

tree species have been commonly cultivated. Some of these are among the few broadleaf trees that do well in the colder valleys of Utah. With increasing awareness of riparian or wet land values, interest in planting shrubby species has greatly increased. Willow species of Utah show strong elevational preferences. Some show other specific habitat preferences. Identification can be important to planting and to a general appreciation of the value of willows. Identification of willows has often been considered difficult. Perhaps lack of interest more than difficulty is the reason willows have commonly gone unidentified. However, I admit the following key will not work on all specimens. I have not seen a key that will. Variability is great in willow species as it is in much of biology.

¹Paper presented at the Intermountain Forest Nursery Association Annual Meeting, Park City UT., August 12-16, 1991.

²Sherel Goodrich is Forest Ecologist, USDA. Ashley National Forest, Vernal, UT.

KEY TO SPECIES

- 1 Dwarf to large shrubs, if large then mostly multistemmed and without a conspicuous main stem, if (rarely) treelike then stems commonly with smooth bark to below midlength and leaves commonly pubescent when fully expanded, of low elevations to 3965 m; leaves entire, serrulate or serrate
 - 2 Dwarf shrubs 1-10 (20) cm tall, alpine or near-alpine
 - 3 Leaves elliptic to orbicular, 1.4-2.6 times longer than wide, glaucous and strongly reticulate-veined beneath, the tips mostly rounded or obtuse
.....(netted or snow willow) *S. reticulata* L. ssp. *nivalis* (Hook.) Love, Love & Kapoor
 - 3 Leaves elliptic or narrowly elliptic, (1.25) 2.3-4.7 times longer than wide, glaucous or not, not strongly reticulate-veined, the tips mostly pointed
 - 4 Leaves 2-5 (7) mm wide, 2-4.7 times longer than wide, sessile or the petiole to 3 mm long; plants seldom over 3 cm tall (Cascade willow) *S. cascadenis* Cockerell
 - 4 Leaves 5-20 mm wide, mostly 2-3 times longer than wide; petioles 3-13 mm long; plants mostly 5-10 (20) cm tall(arctic willow) *S. arctica* Pallas
 - 2 Shrubs mostly over 20 cm tall, of low elevations to alpine
 - 5 Mature shrubs less than 1.5 m tall or if taller then keyed both ways, mostly high-montane to alpine; lower part of stems with epidermis often exfoliating in translucent flakes or strips
 - 6 Mature leaves glabrous or nearly so, dark green and shiny above, strongly glaucous beneath; twigs of the season dark chestnut to lustrous purple-black, glabrous or very scattered pubescent (plainleaf willow) *S. planifolia* Pursh
 - 6 Mature leaves pubescent on both sides, but sometimes glabrate; twigs various but rarely as above in all features
 - 7 Lower surface of leaves not visibly glaucous, often more densely pubescent and thus lighter than the upper surface, both sides permanently and densely pubescent; twigs of the season glabrous or thinly villous-puberulent, those of the second and third seasons often yellow to orange (Wolf willow) *S. wolfii* Bebb.
 - 7 Lower surface of leaves usually visibly glaucous, leaves occasionally glabrate on one or both sides; twigs of the current season usually densely pubescent, those of the second and third seasons rarely colored as above

- 8 Petioles 1-4 mm long, seldom exceeding the bud even on vegetative twigs; plants almost always on or near calcareous substrates (barren-ground willow) **S. brachycarpa** Nutt.
- 8 Petioles (1) 2-6 (10) mm long, equaling or often exceeding the bud especially on vegetative twigs; plants on calcareous and other substrates (grayleaf or glaucous willow) **S. glauca** L.
- 5 Mature shrubs over 1.5 m tall or keyed both ways; epidermis rarely exfoliating as above
- 9 Leaves (8) 10-20 (32) times longer than wide; plants strongly colonial, spreading underground, with stems arising singly or few together; our most common and widespread lowland willow (coyote, dusky, sandbar, or narrowleaf willow) **S. exigua** Nutt.
- 9 Leaves less than 8 times as long as wide
- 10 Twigs of the season strongly blue-glaucous, the bloom easily rubbed off and deciduous toward the end of the season but usually persisting under the buds into winter, mostly glabrous or nearly so by the time the bloom has gone 11 Mature leaves permanently, silvery silky-sericeous to subtomentose beneath (this pubescence persistent when rubbed), dark green and glabrous above, slightly revolute; stems and twigs often turning yellowish after the bloom has gone; plants commonly producing elongate sprouts and twigs (these to 1 m or longer), commonly of swift, steep-gradients, rocky streams (Drummond willow) **S. drummondiana** Barratt
- 11 Mature leaves sparsely or moderately sericeous beneath, the pale color mostly a function of a glaucous bloom which is easily rubbed off, usually pubescent and not as dark green above as in the preceding species, not revolute; stems and twigs often grayish, dull purplish or dull blackish after the bloom has gone, plants not commonly producing shorter sprouts and twigs, commonly of meadows with meandering streams and where the soil is of silty or clayey loam texture (Geyer willow) **S. geyeriana** Anderss.
- 10 Twigs of the season not glaucous or rarely conspicuously so, often pubescent
- 12 Leaves not glaucous beneath, of nearly same color on both sides.
- 13 Leaves long-accumbent, glabrous except when very young, consistently and uniformly serrulate or serrate, the larger ones 5-12 cm long or to 26 cm long on vigorous sterile shoots; mature shrubs commonly 3-6 (12) m tall (whiplash willow) **S. lasiandra** Benth.
- 13 Leaves not acuminate, pubescent, sometimes glabrate at the end of the season, entire or serrulate, averaging smaller than above; mature shrubs to 4 m tall
- 14 Leaves permanently and densely pubescent on both sides, the hairs readily conspicuous usually without a lens, entire; plants 0.5-1.5 (2) m tall, known from 2470-3290 m (Wolf willow) **S. wolfii** Bebb.
- 14 Leaves subglabrate, the hairs sometimes not conspicuous without a lens, entire or serrulate; plants commonly over 1.5 m tall, known from 2075-3050 m (Booth willow) **S. boothii** Dorn
- 12 Leaves glaucous beneath when fully expanded, conspicuously lighter below than above.
- 15 Leaves glabrous or nearly so when fully expanded
- 16 Plants known from (2255) 2895-3660 m, 1.5-2 (4) m tall; younger twigs commonly lustrous black or purplish black; older twigs and stems gray-black or dull purple; leaves entire, dark green above, strongly glaucous beneath .. Plainleaf willow **S. planifolia** Pursh
- 16 Plants known from 1340-2255 m, (2) 3-5 (9) m tall; younger twigs yellowish or reddish; older twigs and upper parts of stems with grayish or whitish bark; leaves entire or serrulate, moderately green above, rather lightly glaucous beneath (yellow willow) **S. lutea** Nutt.
- 15 Leaves pubescent on at least one side when fully expanded
- 17 Mature shrubs 1.5-3 m tall, midmontane to alpine; stems less than 4 cm thick; leaves mostly less than 2 cm wide, occasionally wider on vegetative twigs, elliptic to narrowly lanceolate (see leads 6 through 8 above)
- 17 Mature shrubs commonly 3-8 m tall or taller, of valleys to midmontane; mature stems often 4-10 cm thick or thicker; leaves sometimes over 2 cm wide, mostly oblong, obovate, oblanceolate, or elliptic
- 18 Leaves oblong to oblanceolate, less than 15 mm wide except on vigorous young shoots; plants of Great Basin and Virgin River drainages (Arroyo willow) **S. lasiolepis** Benth.
- 18 Leaves mostly elliptic, obovate or occasionally oblanceolate, sometimes over 15 mm wide; plants of various distribution
- 19 Leaves mostly elliptic, occasionally lanceolate or obovate; twigs of the season with mostly appressed or ascending hairs or occasionally glabrous (Bebb willow) **S. bebbiana** Sarg.
- 19 Leaves commonly obovate, occasionally oblanceolate; twigs of the season with mostly widely spreading hairs (Scouler willow) **S. scouleriana** Barratt

- 1 Trees with solitary or few stems, if (rarely) shrublike then stems commonly with roughened bark to above midlength and leaves commonly glabrous, of the lowest elevations of Utah to 2075 m; leaves commonly uniformly serrulate or serrate
- 20 Native or naturalized trees
- 21 Leaf blades usually not over 3 times as long as wide, 2-6 (7.5) cm long excluding those of vigorous young shoots; small trees mostly 4-10 (12) m tall, mostly of the northern 1/2 of the Utah (peach-leaf willow) S. amygdaloides Anderss.
- 21 Leaf blades commonly over 3 times as long as wide, sometimes longer than above; small to large trees, to 24 m tall, native to the southern 1/2 of Utah or introduced and naturalized
- 22 Trees introduced, widely planted, escaping, and naturalized, probably more common in the northern 3/4 of and well adapted to the coldest valleys of Utah; leaves glaucous or glaucescent beneath; twigs glabrous or nearly so, easily broken from the branches (crack willow) S. fragilis L.
- 22 Trees native to the southern 1/2 of and most common in the southern 1/4 of Utah, in relatively warm areas; leaves and twigs not with the above combination of features
- 23 Leaves glaucous beneath; twigs densely pubescent at least at the nodes (red willow) S. laevigata Bebb
- 23 Leaves not glaucous beneath; twigs glabrous or nearly so S. gooddingii Ball
- 20 Trees introduced, cultivated, occasionally persisting, rarely escaping, not naturalized except in S. fragilis and then keyed both ways
- 24 Trees weeping, widely planted; twigs very slender, elongate, pendulous
- 25 Leaves commonly 3-15 mm wide; twigs often bright yellow (weeping willow) S. babylonica L.
- 25 Leaves commonly 15-22 mm wide; twigs greenish or yellow-green (Niobe or Wisconsin weeping willow) S. blanda Anderss.
- 24 Trees not weeping; twigs not as above
- 26 Crowns umbrella-shaped or semiglobose or twigs tortuose; trees widely planted
- 27 Crowns umbrella-shaped or semiglobose; twigs not tortuose (globe or umbrella willow) S. matsudana Koidz. f. umbraculifera Rehd.
- 27 Crowns not as above; twigs tortuose (corkscrew willow) S. matsudana Koidz. f. tortuosa Rehd.
- 26 Crowns and twigs not as above
- 28 Leaves seldom over 3 times as long as wide, with wartlike glands on the upper part of the petiole and margins of the blade, not glaucous beneath; trees apparently rarely planted (bay willow) S. pentandra L.
- 28 Leaves mostly over 3 times as long as wide, glaucous or glaucescent
- 29 Leaves glabrous when unfolded, serrate with 4-8 teeth per cm; twigs glabrous or nearly so; trees widely planted
- 30 Twigs orange-yellow (this feature especially noticeable in fall and winter after leaf-fall); specimens known from Utah all staminate; trees commonly cultivated and occasionally escaping (golden willow) S. x rubens Schrank nothovar. basfordiana (Scaling ex Salter) Meikle.
- 30 Twigs greenish, grayish, brownish, but not orange-yellow; staminate and pistillate specimens both common in Utah; trees cultivated, commonly escaping, and naturalized (crack willow) S. fragilis L.
- 29 Leaves sericeous or glabrous when unfolded, serrate with 9-10 teeth per cm; twigs sometimes conspicuously pubescent; trees apparently rarely planted ... (white willow) S. alba L.

LITERATURE CITED

- Argus, G. W. 1965. The taxonomy of the Salix glauca complex in North America. Contr. Gray Herb. 196:1-42.
- Argus, G. W. 1985. Studies of the Salix lucida and Salix reticulata complexes in North America. Can. J. Bot. 64:541-551.
- Dorn, R. D. 1975. A systematic study of Salix section Cordatae in North America. Can. J. Bot. 53:2769-2789.
- Goodrich, S. 1983. Utah flora: Salicaceae. Great Basin Nat. 43:531-550.
- Rehder, A. 1951. Manual of cultivated trees and shrubs hardy in North America. Macmillan Co., New York. 996 pp.

