Willow (*Salix*) Identification in New York State

Benjamin D. Ballard
Christopher A. Nowak
Asa B. Kline

Contents

Photo: *Salix,* male catkins

Introduction

This field guide describes important willow in New York State. It expands our earlier efforts to identify a few of the most common willow species in our book *Northeastern Shrub and Short Tree Identification* (Ballard et al. 2004). Many of the species presented in this dedicated willow guide are common, but some are rare and included because of their conservation value. While this guide's primary application is intended to assist managers in the identification and management of vegetation along utility rights-of-way (ROWs), it has broad application to anyone with an interest in identifying willow.

Information in this book was compiled from numerous field guides and references. As a field guide it is somewhat unique in that it presents in a single source a detailed compilation of facts on willow characteristics and identification and detailed color photographs important in identifying the species. These descriptions, which include pertinent information regarding management opportunities / considerations, and the original detailed drawings, diagrams, and photographs make this book a useful reference source for naturalists and vegetation managers. While all of the photographs were collected from across New York, the ranges for most species extend throughout the northeast and into the mid-Atlantic and the mid-Western states. The species included are not a complete accounting of willow throughout this range, but do represent many important species occurring in old-field, early-successional habitats.

Our book features 80 pages with two pages devoted to each of 22 species. Collectively, there are over 230 original photos and diagrams portrayed on these pages. A series of supporting definitions is presented in diagrammatic and glossary form. A unique five-step process is presented to guide identification of species. An appendix is included that outlines typical habitat and plant origin, both of which may be helpful to identification and management.

While this book is finalized via this printing, we look at it as a "living document" that can be improved with subsequent editions. As such, please consider sending critical comments to the authors so the guide can be improved as a complete source for identification of willow in New York State and beyond.

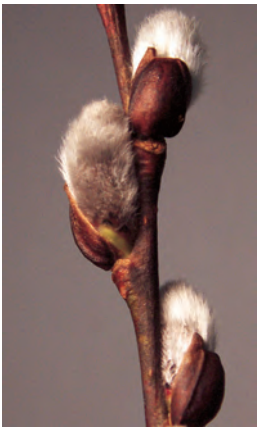
Benjamin D. Ballard

Christopher A. Nowak

Asa B. Kline

Willow Flowers and Fruits

Salix discolor



young catkins

Salix sp.

male catkins (emerging)

S. petiolaris

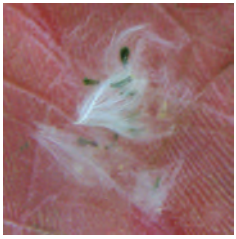
female catkins (emerging)

S. discolor - male catkin

S. amygdaloides - female catkin

S. purpurea - fruit capsules (ovaries)

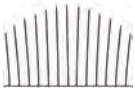
S. lucida - fruit capsules (opened)



Salix seeds

Interpretation of Growth Form Icons

Tree form willows, with single or few dominant trunks or stems, including upright and weeping branched species (e.g., *Salix alba, S. amygdaloides, S. bebbiana, S. fragilis, S. nigra, S. pentandra, S.* x*rubens, S.* x*pendulina*, *S.* x*sepulcralis*).



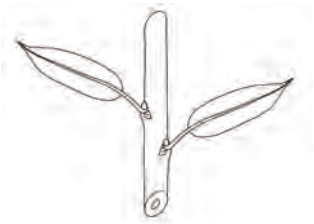
Root-suckering shrubs with multiple upright stems; spread vegetatively, sprouting from roots with the potential for forming a dense mound or dome of stems (e.g., *S. interior*).

Erect, upright shrubs with many stems clustered near the base; stems and branches mostly upright (e.g., *S. discolor, S. lucida, S. pentandra, S. purpurea, S. pyrifolia, S. sericea*).

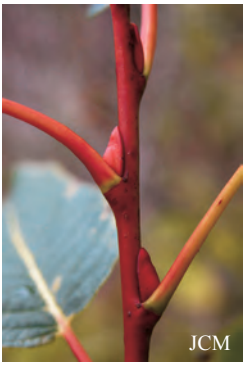
"Rounded" shrubs with few to many stems originating from a common base, and often highly branched above, forming a rounded appearance (e.g., *S. eriocephala, S. pedicellaris, S. petiolaris, S. sericea, S. serissima*).

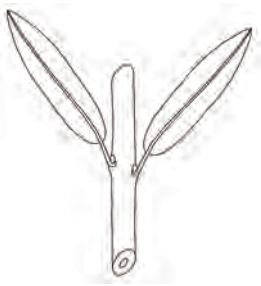
Ascending shrubs with growth form intermediate between the rounded and erect forms above, but with more ascending stems and branching (e.g., *S. candida, S. cordata, S. humilis, S. petiolaris, S. serissima*).

Leaf Arrangement

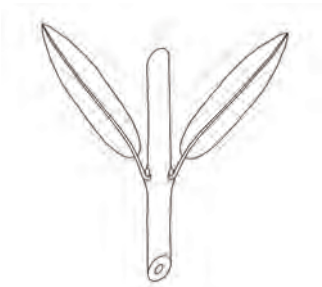


Alternate
(typical of most willlow)





Sub-opposite
(*S. purpurea*)



Opposite
(*S. purpurea*)

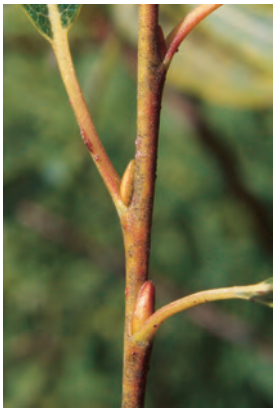
Drawings by: B. Ballard

Single-Scale Willow Buds

S. bebbiana

S. lucida

S. pentandra



S. petiolaris

S. purpurea

S. discolor

S. pyrifolia

S. purpurea

S. alba

Stem and Bark Appearance

The following photographs display a range of bark textures of 1- to 1.5-inch diameter stems, starting with fairly smooth stems and progressing to rougher bark. They are *not* intended to be used to identify species. They are intended to be used to illustrate that, in general, **tree form** species tend to have bark that develops blisters, cracks, furrows, or flakes fairly early. **Shrub form** species tend to retain smoother bark longer. While these observations are useful guidelines, they are just that, guides. They should be used ***in combination*** with **"Leaves - A Visual Guide"** and detailed **species descriptions** pages.

S. pyrifolia

S. petiolaris

S. eriocephala

S. amygdaloides

S. ×rubens

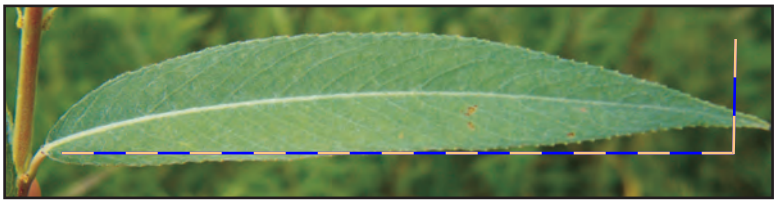
S. amygdaloides

S. bebbiana

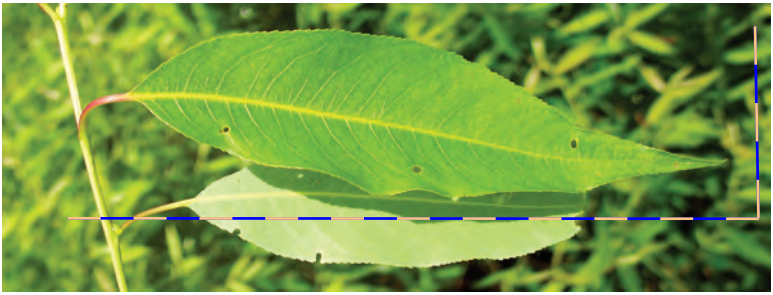
Leaves - A Visual Guide

The following leaf photos can be used as a guide for identify many of the most common willow species in New York State. The yellow and blue lines accompanying each photo represent the average leaf length and width for the species. Photos with the yellow and blue lines have been sized to approximate their actual size (note some of the adjacent photos without the lines are not). Please note that both length and width of leaves are variable, as is the ratio of length to width. Species marked with an asterisk (*) are typically taller shrub or tree-form willows.

***S. alba**



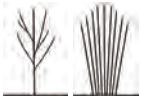
***S. amygdaloides**

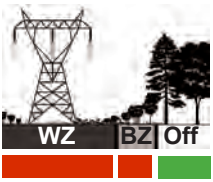


***S. bebbiana**

Salix alba

white willow





Etymology: *Salix*–L. for willow; *alba*–L. for white, appearing silvery/white at a distance.

Form: Many-branched tree with somewhat conical crown reaching height of 80'.

Leaves: Alternate, simple, lanceolate, 2-6" long; margins finely toothed, and minutely gland-tipped teeth; blade silky-hairy on upper and lower surfaces when young, becoming dull hairless/smooth green above and waxy-white and silky below when mature; midribs paler in color than leaf itself; stipules small and lanceolate, often lacking or falling off early.

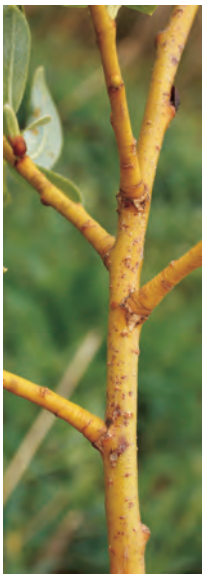
Flower and fruit: Catkins 0.5-1.5", appearing with leaves April-June, bracts tawny, hairy near base.

Bark and twig: Twigs greenish to yellowish-brown, silky, flexible, compact, drooping; older bark brownish-gray, furrowed.

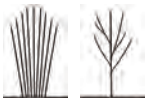
ID Hint: white/silvery leaf, often apparent from a distance.

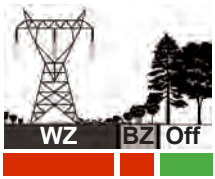
upper (adaxial) leaf surface

lower (abaxial) leaf surface



Salix amygdaloides





peach-leaf willow

Etymology: *Salix*–L. for willow; *amygdaloides*–L. for amygdalus, the old generic name for the peach, in reference to the resemblance between the leaves of this willow and those of peach.

Form: Tree with one or more stems, reaching height of 60'.

Leaves: Alternate, simple, lanceolate to ovate-lanceolate, 2-6" long, acute or obtuse or rounded at base; margins closely toothed; blade yellowish-green to dark green and glabrous above, glabrous and glaucous (white, waxy) beneath, pale midrib prominent on both surfaces; petioles sometimes with minute glands at junction with blade; stipules mostly absent; young leaves sparsely pubescent, often reddish.

Flower and fruit: Catkins flower with leaves; flowers whorled; bracts pale yellow, pubescent on inner surface.

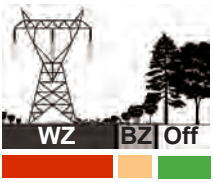
Bark and twig: Branchlets slender, glabrous, yellowish-brown, not brittle, older branches becoming gray-brown, fissured.

lower (left) and upper (right) leaf surfaces

ID Hint: leaf shape similar to cherry/peach (*Prunus*); note waxy bloom on underside (abaxial); petiole often has pinkish-red coloration; leaves droop/hang similar to cherry.

typical tree-form growth

Salix bebbiana



gray willow, Bebb's willow, long-beaked willow

Etymology: *Salix*–L. for willow; *bebbiana*–L. for 'of Bebb', refers to Michael Bebb, a 19th century botanist who specialized in willows.

upper (adaxial) surface

Form: Shrub to small bushy tree reaching height of 10'(shrub) to 30'(tree) tall.

Leaves: Alternate, simple, narrowly elliptic to oblong-lanceolate, 1-4" long; margin toothed to smooth; blade dull green above, glaucous with prominent veins beneath; stipules semi-cordate; young leaves pubescent on both surfaces, becoming glabrous at maturity.

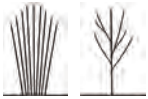
Flower and fruit: Appear before or with leaves April-June; bracts tawny; fruit capsule narrow, with ovate base that tapers to a long beaked tip.

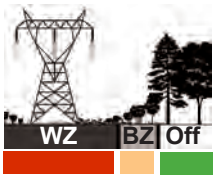
Bark and twig: Twigs slender, branch at wide angles, thinly to densely hairy, young bark smooth, mature bark rough and furrowed, greenish-gray, olive-green or tinged with red.

ID Hint: sunken veins on upper leaf surface; prominent raised veins on underside of leaves; underside usually fuzzy, pubescent.

lower (abaxial) surface

Salix discolor





pussy willow
glaucous willow

Etymology: *Salix*–L. for willow; *discolor*–Gr. for 'of two different colors', referring to contrast between top of leaf and underside.

Form: Large shrub or small tree, dense multiple stems, reaching heights of 6-15' (35').

Leaves: Alternate, simple, oblong to oblanceolate, 1-4" long, blade bright green on top, glaucouse and smooth hairless OR finely hairy underside; margins irregularly crenate to serrate; small stipules at base of some leaves; young leaves often reddish with deciduous, rust-colored, curly hairs on lower leaf surface.

Flower and fruit: Catkins 0.75-1.5" long, flowering April-May before leaf emergence; young catkins small, white to silvery-gray, soft and fuzzy; bracts brown, black or bicolor.

Bark and twig: Young twigs pubescent, becoming stout, dark reddish-brown and smooth; older stems larger than 1-2" in diameter becoming furrowed.

ID Hint: leaves have a glaucous (waxy bloom) underside; crenate margin, with most teeth above the middle.

upper (adaxial) surface

lower (abaxial) surface

lower (abaxial) surface

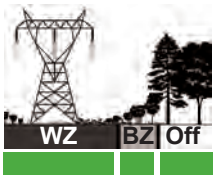
fruit capsules

young catkins

stipules

Salix pyrifolia

balsam willow



Etymology: *Salix*–L. for willow; *pyrifolia*–L. for balsam, refers to balsam odor associated with the species' buds and foliage.

Form: Low to tall erect shrubs, reaching 12' height.

Leaves: Alternate, simple, narrowly oblong, elliptical to broadly elliptical, 1-4" long; margins serrulate or entire; leaf base can be rounded to cordate; lower leaf surface glaucous and hairless; petioles usually hairless or sparsely velvety; stipules rudiments or leafy; young leaves yellowish green with white hairs.

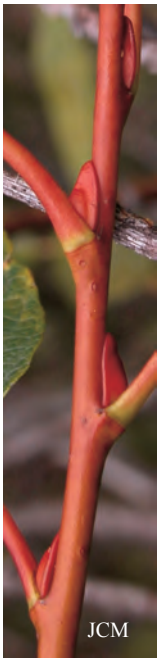
Flower and fruit: Flowering May to mid-June, catkins appear as leaves emerge.

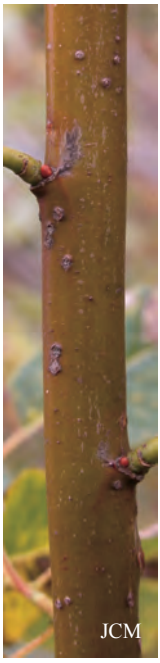
Bark and twig: Branches red-brown and highly glossy; branchlets red, yellowish-brown, or yellowish; buds typically red.

ID Hint: Limited range in NYS (northern), often bog-like conditions; buds usually red; buds and foliage have balsam odor.

lower (abaxial) leaf surface

buds and petiole





juvenile catkin and leaves

lower (abaxial) leaf surface

bud

Salix sericea

silky willow

Etymology: *Salix*–L. for willow; *sericea*–Gr. for ‘of silk’, refers to silky underside.

Form: Medium to tall shrub reaching height of 13’.

Leaves: Alternate, simple, narrowly lanceolate to lanceolate, 2-5” long, tapers to a point at both ends; blade becoming dark green and glabrous above and glaucous with pubescence beneath when mature, lower surface is lustrous when light hits it; stipules absent or minute rudiments.

Flower and fruit: Catkins flower early March to early June appearing before leaves, 0.5-2” long; bracts dark brown, hairy.

Bark and twig: Branches gray-brown or purplish, long, slender when young, glabrous when older. Branches highly brittle at bases.

ID Hint: Multistemmed shrub with brittle branches and short-silky hairs on underside of leaves. Unlike *S. eriocephala*, *S. sericea* has very small (or lacks) stipules, and underside densely silky. These two species may hybridize resulting in intermediate characteristics.

lower (abaxial) surface

stem with bark removed

male catkin (past prime)

fruit capsules

Glossary

abaxial – lower (under) leaf surface

acute – tapering to a point with more or less straight sides

adaxial – upper (top) leaf surface

attenuate – tapering to a narrow tip

axil – the position between two organs, such as a leaf and the stem

beaked – having a beak-like structure

bifurcated – dividing in two; forked

blade – broad part of leaf or petal

bract – a specialized or modified leaf that is associated with a flower or inflorescence

branchlets – a small branch growing from a larger branch

bristle – a stiff, prickly hair on the surface of leaves or stems

bud – an undeveloped stem, leaf, or flower

capsule – a dry fruit that splits open when mature to release its seeds; usually contains two or more seeds

catkin – a dense cluster of apetalus (lacking petals) unisexual flowers, as found on willow

ciliate – having small hairs, as on some leaf margins

coetaneous – leaves and flowers develop at the same time

compound leaf – a leaf consisting of two or more leaflets (compare to simple leaf)

conic – shaped like a cone with connection at the broadest part

cordate – heart-shaped

crenate – with rounded teeth along the margin

cuneate – wedge shaped

deciduous – not evergreen; foliage falls off during or at the end of the growing season

decumbent – lying on the ground with tip extended

denticulate – having very small teeth

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Appendix: Typical Habitat and Species Origin

Scientific Name	Common Name(s)	Typical Habitat*	NY Native/ Origin
Salix alba L.	white willow	Streamsides, ditches, floodplain forests, edges of lakes, and wet to wet-mesic disturbed sites.	Europe
S. amygdaloides Anderss.	peach-leaf willow	Edges of lakes, floodplain forests, and streamsides.	NY/N. America
S. bebbiana Sarg.	Bebb's willow, gray willow, long-beaked willow	Swamps, rich fens, wet thickets, wet successional fields, roadsides, ditches, marshes, vernal pools, and edges of lakes and streams.	NY/N. America
S. candida Flugge ex Willd.	sage willow, hoary willow	Shrub- or herb-dominated rich fens and sometimes in calcareous swamps and swamp openings.	NY/N. America
†*S. cordata* Michx.	sand dune willow, heart-leaved willow	Sand dunes and beaches; NYS along the eastern edge of Lake Ontario in dry to mesic soils.	NY/N. America
S. discolor Muhl.	pussy willow, glaucous willow	Swamps, rich fens, wet thickets, wet successional fields, roadsides, ditches, marshes, vernal pools, and edges of lakes and streams.	NY/N. America
S. eriocephala Michx.	stiff willow, diamond willow	Swamps, wet thickets, wet successional fields, roadsides, ditches, marshes, and edges of lakes and streams.	NY/N. America
S. fragilis L.	crack willow	Often naturalized along river and stream banks (our observations).	Europe
S. humilis Marsh.	prairie willow, small pussy willow, upland willow	Forest edges, forest openings, occasionally in thin forests, successional fields, utility rights-of-way, ditches, and perhaps sparsely in wetlands.	NY/N. America
S. interior Rowlee	sandbar willow	Streams and stream edges, exposed gravel and sand bars in streams, gravel and sand pits/mines, and coarse grained soils at edges of lakes.	NY/N. America
S. lucida Muhl.	shining willow, glossy willow	Shrub swamps, stream and lake edges, rich fens, ditches, and wet thickets. Populations are often isolated and small.	NY/N. America
S. nigra Marsh.	black willow	Edges of rivers and streams, wet thickets, marshes, low and floodplain forests, and edges of lakes.	NY/N. America

Index of Common and Scientific Names

State University of New York
College of Environmental Science and Forestry
1 Forestry Drive, Syracuse, NY 13210
www.esf.edu/ivm

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