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Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

The Genus Salix In Ohio.

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my letter 5 July to Dr. E. Lucy Braun + approved
it before of 15 July

1. *Salix lucida* Muhl. Shining Willow.*Salix of Ohio*

Shrub or small tree 4-6 or more m. high; bark brown, glabrous; twigs and bud-scales chestnut-brown, shining, glabrous (see var.); stipules reniform, to semilunate, 2-5 mm. long; leaves large (see var.), lanceolate to ovate-lanceolate, 5-12 or 15 cm. long, 2-5 cm. wide, or rarely up to 20 by 8 cm., narrowed to rounded or cordate at base, mostly long-acuminate, sharply glandular-serrulate, glabrous (see var.), shining green above, paler green beneath, petioles stoutish, 3-10 or 15 mm. long, glandular above ^{stout,} near leaf-base; aments castaneous, oblong or oval, 2-6 or 7 cm. long, on lateral leafy peduncles 1-2 cm. long; scales oblong or oval, obtuse, entire or erose at apex, yellow, thinly pilose, deciduous; stamens 3-5 or more, filaments free, pubescent below; capsules lanceolate, 4.5-6.5 mm. long, glabrous, brownish; pedicels 0.5-1 mm. long; styles about 0.5 mm. long; stigmas short, thick.

Along streams and lakes, and in swamps, from Del. west to northern W. Va. and central Ohio and northwestward to northern Ia. and north-central N.D.; north to Highland, and Lab., and west, at about 54° N. to east-central Sask. Outlying stations ^{are} in Roanoke Co., Va., and at Weeping Water, ^Nebr. In Ohio, it occurs sparingly in the central third (east-west), and more commonly in the northern third.

1, a. *S. lucida* var. *angustifolia* Anderson has shorter, narrowly lanceolate leaves. It occurs sparingly in the northern part of the species range. It has not yet been reported from Ohio or closely adjacent Michigan.

1, b. *S. lucida*, var. *intensa* Fernald has the young twigs and bud-scales, and the lower surfaces of young leaves more or less hairy. It occurs with the species but most commonly northward. It has been found on Catamba Id., Ottawa Co., in Ohio.

Reint
Salix of Ohio

1. *Salix lucida* Muhl. Shining Willow.

Shrub or small tree, 4-6 m. high, or more; bark brown, glabrous; twigs and bud-scales chestnut-brown, shining, glabrous or rarely more or less hairy; stipules reniform to semilunate, 2-5 mm. long; leaves large, narrowly lanceolate or lanceolate to ovate-lanceolate, 5-12 or 15 cm. long, 1.5-5 cm. wide, or rarely to 20 by 8 cm., narrowed to rounded or cordate at base, mostly long-acuminate, sharply glandular-serrulate, glabrous, or young leaves rarely somewhat hairy beneath, shining green above, paler green beneath; petioles stoutish, 3-10 or 15 mm. long, glandular above near leaf-base; anthers coesaneous, stout, oblong or oval, 2-5 or 7 cm. long, on lateral leafy peduncles 1-2 cm. long; scales oblong or oval, obtuse, entire or erose at apex, yellow, thinly pilose, deciduous; stamens 3-5 or more, filaments free, pubescent below; capsules lanceolate, 4.5-6.5 mm. long, glabrous, brownish; pedicels 0.5-1 mm. long; styles about 0.5 mm. long, stigmas short, thick.

Along streams and lakes, and in swamps, from Del. west to central Ohio, and northwest to northern Ia. and north-central N.D.; north to Nfld. and Lab., and west, at about 54° N., to east-central Sask. Outlying stations in Roanoke Co., Va., and at Weeping Water, Nebr. In Ohio, it occurs in the northern two-thirds of the State but is more abundant in the northern portion.

Three varieties (variations) are recognized, and may be separated by the following keys.

Twigs, ~~the~~ bud-scales, and leaves glabrous.

Leaves lanceolate to ovate-lanceolate . . . var. *tyocia* (the typical variation).

Leaves narrowly lanceolate, shorter; not known to occur in Ohio,
but common northward var. *angustifolia* Anders.

Young twigs, bud-scales, and lower leaf-surfaces more or less hairy; In Ohio, known only from Catawba Id., Ottawa Co. . var. *intensa*
Fern.

2. *Salix serissima* (Bailey) Fernald, Rhodora 6:7, 1903. ~~XXXXXX~~

~~XXXXXX~~ Willow. *S. lucida serissima* Bailey, in Arthur, Bull. Geol. and Nat. Hist. Survey Minn. 3:19, 1887.

Shrub 1-4 m. high; branches olive-brown; twigs and bud scales yellowish-brown, glabrous, shining; stipules none; leaves narrowly lanceolate to lanceolate, elliptic-lanceolate, or oblong-lanceolate, 5-8 or 10 cm. long, 1-2.5 or 3.5 cm. wide, narrowed to rounded at base, acute to short-acuminate at apex, finely glandular-serrulate, green, glabrous, and shining above, glaucescent to subglaucous and ~~shy~~ glabrous beneath; petioles slender, glandular above near leaf base; aments serotinous, oblong to oblong-oval, on lateral leafy peduncles 1-3.5 cm. long; scales obovate, pale yellow, white-pilose, deciduous; staminate aments 1-2 cm. long, stamens 3-5 or more, filaments free, thinly pilose below; pistillate aments 1.5-3 cm. long, 2 cm. wide in fruit, capsules narrowly conical, 7-10 or 12 mm. long, brown, thick-walled, glabrous, pedicels stout, 1-2 mm. long; styles 0.3 mm. long, stigmas very short, divided. Late May and June; fruit held through July to Sept.

Mostly in swamps and bogs from northern N.J. west to northeast Ind., and northwest to Mich., Wis., central Minn., northern N.D., and northwest Mont., with outlying stations in the Black Hills of S.D. and on Long Peak in northern Colo. In Canada it occurs from Nfld. and the James Bay area of Que. westward to northern Sask. and Alta., with one collection from the Slave River farther north. It occurs only rarely in our northern States but commonly in most of its Canadian range. In Ohio it has been found but once, in Williams Co., in the extreme northwest corner of the State. The label reads: "*Salix lucida* Muhl., near swamps, No. Williams Co., ^{No. 115,} A. D. Selby, 8-5, 1899." Specimens are in the herbarium of Oberlin College, Ohio Agricultural Exp. Station, and the writer.

I am record it from 3 counties of northeastern Ind., one adjoining Williams Co., Ohio. It has been found in Kalamazoo Co., Mich., 2nd. tier north of Ohio. Jennings collected it in Crawford Co., Penn., adjoining Ashtabula Co. in northeast Ohio. These collections should encourage Ohio botanists to search for it in the northern counties of Ohio.

Pentandra
*Salix glauca**S. pentandra* L. Bay-Leaved or Laurel Willow.

Large shrub or small spreading tree, introduced from Europe; twigs glabrous, shining, often reddish-brown; leaves ovate-lanceolate, ovate, or oval, 4-9 cm. long, 2-4 cm. wide, or 5-6 cm. by 10-16 cm. ^{and sometimes long-acuminate} on vigorous growth, rounded to subcordate at base, mostly short-acuminate at apex, closely glandular-serrulate, dark green and shining above, pale to subglaucous beneath, glabrous; petioles 2-5 or 7 cm. long, glandular above near leaf base; aments stoutish, coesaneous, on leafy peduncles 3-5 cm. long; staminate aments 2-4 cm. long, dense, stamens 2-5 or more; pistillate aments 3-7 cm. long, less dense, 1.2-1.5 cm. wide; capsules lanceolate, greenish brown, glabrous, 5-6 mm. long, pedicels 0.5-1 mm. long, styles 0.3-0.7 mm. long, stigmas short, thick, divided; scales oblong to ovate, obtuse, yellow, villous outside at base, sometimes throughout. April-May, rarely autumnal.

A Eur-Asian species, sparingly but widely introduced into the United States and Canada for basket making, or as an ornamental in grounds and parks, and occasionally on streets in Canada. It occasionally escapes in the northern States and adjacent Canada.

Fragilis
Salix of Ohio

4. *Salix fragilis* L. Crack Willow, Brittle Willow.

Large tree to 20 m. high and sometimes 1 m. in diameter; twigs greenish to dark red, glabrous, very brittle at base and deciduous in winds; stipules wanting, or small, semicordate, and early deciduous; leaves narrowly lanceolate to lanceolate, 7-12 or 15 cm. long, 2-3.5 cm. wide, mostly acute but sometimes bluntish to rounded at base, long-acuminate at apex, glandular serrations 5-6 per cm., glaucescent to glaucous beneath,* glabrous at maturity but often thinly hairy while young, petioles 7-15 mm. long, glandular above near leaf base; aments costaneous, slender, lax, 3-8 cm. long, 8-10 mm. wide, on leafy peduncles 1-3 or 5 cm. long, bearing 2-5 small leaves; flower scales oblong, greenish-yellow, crisp-villous, deciduous; stamens mostly 3-4, rarely 2, filaments free, hairy below; capsules narrowly conic, 4-5.5 mm. long, glabrous, pedicels 0.5-1 mm. long, styles 0.3-0.7 mm. long, stigmas short, notched. April-May.

Introduced from Europe in colonial times for ornament, sentiment, shade, and gunpowder-charcoal, and carried steadily westward by settlers. Common in farm yards, pastures, and parks in the east and often escaped; less common westward. Hybridizes commonly with *Salix alba* and sometimes with several other species. Many of the introductions from Europe already were hybrids and some of them have hybridized again here. This accounts for the great diversity found in herbarium and living material. While not widely collected, the Crack Willow may be looked for throughout Ohio.

* Not "green both sides", as keyed and described by Fernald in Gray's Manual, ed. 8. 1950.

5. *Salix alba* L. White Willow.

Large tree to 20 m. high; twigs greenish or yellowish, pubescent, not brittle; stipules minute and deciduous, or wanting; leaves ~~of~~ narrowly lanceolate to lanceolate, 4-8 or 10 cm. long, 1-2.5 cm. wide, acutish or rounded at base, acuminate at apex, glandular serrations 9-10 per cm., glaucous beneath, more or less silvery silky on both sides but especially below, or rarely densely hairy on both sides, petioles glandless, or those on vigorous shoots glandular above near the leaf base; aments costaneous, slender, 3-5 or 6 cm. long, 7-9 mm. wide, on peduncles 1-4 cm. long, with 2-4 smallleaves; flower scales as in *S. fragilis*; capsules ovoid-conic, 3-4.5 mm. long, glabrous, sessile or subsessile; styles 0.2-0.4 mm. long, stigmas short. April-May.

Introduced from Europe in colonial times for the same purposes as *S. fragilis*, and also for basketry and medicinal use. Commonly planted and sparingly escaped in the Eastern States and adjacent Canada, and occurs less abundantly westward. ^S noted, it hybridizes freely with *S. fragilis*, and less frequently with some other species.

A few varieties have been described. Two so-called varieties, the abundant var. *vitellina* (L.) Stokes, and the rare var. *galva* G. F. W. Meyer, included by Fernald, seem to represent hybrids with *S. fragilis* and both are less hairy than *S. alba typica*. A third variety is much more hairy than typical *S. alba* and is presented below. It is sparingly cultivated for ornamental purposes and has rarely escaped. It has not been reported from Ohio.

Leaves thinly silvery silky above, more densely so beneath. *S. alba typica*.

Leaves densely and beautifully silvery silky on both sides. var. *argentea* Wimmer.

stamens 2-4, rarely 2, commonly 3-4,
filaments free, hairy below;

6. *Salix babylonica* L. Weeping Willow.*Salix of Ohio*

Introduced tree, to 12 m. high; branchlets and twigs slender, elongated, pendulous, yellowish to brownish, glabrous; stipules mostly wanting, or lanceolate, 2-7 mm. long; leaves linear-lanceolate to lanceolate, acute or somewhat broadened at base, long-acuminate at apex, mostly falcate, 6-12 cm. long, 0.5-1.5 or 2 cm. wide, finely but unevenly spinulose serrulate, yellowish-green above, glaucescent to glaucous beneath, glabrous, petioles slender, 3-7 mm. long, or to 10 mm. on vigorous shoots, sparingly glandular above near leaf base; aments coetaneous, very small, 1-2.5 or staminate to 4 cm. long, 6-8 mm. wide, on peduncles 0.5-1.5 cm. long and bearing 2-4 scales narrow, pale yellow, crinkly-pubescent, deciduous; tiny leaves; stamens 2 to 3 or 4, apparently mostly 2, filaments free, pubescent at base; capsules tiny, narrowly ovoid, 1.5-2.5 mm. long, sessile, glabrous, styles almost obsolete, stigmas minute. April-May.

Introduced from Europe in colonial times, for use in cemeteries as an expression of mourning and in home yards as an ornamental; now widely distributed and occasionally escaping. Staminate plants are relatively rare in America. It hybridizes with *S. alba* and less commonly with *S. fragilis*.

Salix babylonica is native to north China and does not occur in the Euphrates Valley. The specific name, *babylonica*, therefore is inappropriate, and the common name, Babylon Weeping Willow, is incorrect. The tree was introduced into Europe many centuries ago and developed there into its present ornamental "weeping" form. It became widely grown there as a "mourning" tree (see Shakespeare). Later, it was given the name *babylonica* by Linne, apparently under the mistaken impression that it was the "willow" mentioned in Psalm 137.

There has been much diversity of opinion as to whether the number of stamens was only 2, or more than 2, as in *S. alba* and *S. fragilis*. Only a study of material from China can determine the facts. Staminate plants are rare in America, and the presence of more than two stamens occasionally may have resulted from hybridization with these other species, here or in Europe. The Chinese plant is scarcely "weeping".

Salix of Ohio

7. *Salix caroliniana* Michx. Carolina Willow, Ward's Willow,

S. ambigua Small, *S. longipes* Shuttleworth, *S. longipes* var. *Wardii* (Bebb.) Schneider,

S. Wardii Bebb.

Shrub, or tree to 10 m. or more in height, with gray bark; seasonal twigs, buds, scales, and short petioles yellowish to dark-brown, thinly to densely white-pubescent; stipules 7-15 mm. long, broadly reniform, obtuse to acutish or acute, serrulate, glaucous; leaves linear-lanceolate to lanceolate (younger often oblanceolate and obtuse), 7-15 cm. long, 1-3 cm. wide, long-acuminate at apex, scabish or rounded at base, closely and shallowly serrulate, dark-green above, densely glaucous beneath, often somewhat pubescent, especially on midribs, vein islets tiny beneath; aments coetaneous, 3-11 cm. long, 6-14 mm. wide, ~~4-6~~ on leafy peduncles 2-5 or 7 cm. long; scales obovate to oblanceolate, mm. long, yellowish, villous, deciduous; stamens 4-8, filaments free, pubescent at base; capsules narrowly ovoid-lanceolate, 3-5.5 mm. long, glabrous, pedicels 1.5-3 or 4 mm. long, styles 0.1-0.2 mm. long, entire, stigmas minute. April-May in its northern range.

In rocky soil along watercourses; Cuba and the Gulf States west to southwest Texas and north to the Potomac and Ohio Valleys, MISS Mo., and northeast Kan. On the north side of the Ohio River, it ranges from Pittsburgh, Pa., to southern Ill. In Ohio, it has been reported from Coshocton, Greene, Hamilton, and Ross Cos. In Indiana, from Perry Co., on the River.

Salix amygdaloides Andersson. Peach-leaf Willow.

Shrub or tree, 3-12 m. high, with 1-3 often leaning trunks to 1-4 dm. in diameter, color-affect yellowish-green; trunk bark fissured, dark- or yellowish-brown, branches gray-brown; twigs yellow to reddish-brown, not brittle, somewhat dropping at tip, glabrous; bud-scales 2-5 mm. long, yellowish, glabrous; stipules often wanting, or semi-ovate, subreniform, or ~~sub~~ semi-lunate, 3-8 or 12 mm. long; leaves lanceolate to ovate-lanceolate, 5-10 or 12 cm. long, 1.2-3 cm. wide, acuminate to mostly rounded at base, acuminate at apex, closely serrulate, glabrous, yellowish-green above, glaucous and with tiny vein islets beneath, petioles slender, 6-20 mm. long, often twisted, glabrous, yellowish; aments coetaneous, linear, lax, 2.5-5 or 7 cm. long, , on leafy peduncles 1-3 or 4 cm. long; scales yellow, lanceolate or broader, mm. long, glabrate outside, villous within, deciduous; stamens 4-7, filaments free, hairy below; capsule lanceolate, 4-5 mm. long, yellowish, glabrous; pedicels slender, 2 mm. long, styles 0.3-0.5 mm. long, stigmas shorter. April-June.

Alluvial soils, usually near water, northeast N.Y. and adjacent Que. west to south-east B.C. (to 53° N. in east Sask.), south (east of Cascade Mtns.) to Ariz., Tex., Ky., and Pa.

9. *Salix nigra* Marshall.

Black Willow.

nigrae
Salix of Ohio

Shrub or tree to 20 m. or more in height, with 1-4 often leaning trunks to 5 dm. in diameter, and blackish bark; twigs slender, yellowish-brown to dark-brown, often pubescent while young; stipules ~~linear-lanceolate~~ semi-cordate, acute, serrulate, minute to 12 mm. long; leaves linear-lanceolate to narrowly lanceolate, 6-10 or 12 cm. long, 1-1.5 or 2 cm. wide, acutish to mostly rounded at base, long-acuminate at apex, often falcate, dark green above, paler green beneath, with tiny vein islets, finely serrulate, the upturned lateral veins forming a continuous marginal vein, often pubescent while young, petioles 4-10 mm. long, usually pubescent; anthers coesaneous, slender, lax, 2.5-7 cm. long, 8-12 mm. wide, on leafy peduncles 1-3 cm. long; scales obovate, yellowish, villous, deciduous; stamens 3-7, filaments free, pubescent below; capsules ovate-conic, 3-5 mm. long, brown, glabrous, pedicels 1-2 mm. long, styles and stigmas about 0.2 mm. long. April-May in its northern range.

Abundant in alluvial soils along streams and in meadows, Fla. west to West Texas, north to southern parts of N.B., Que., and Ont., east-central Minn., and southwest to east-central Nebr. and West Texas. In Ohio, it occurs throughout the State and has been reported from most of the counties.

10. *Salix interior* Rowlee. Sandbar Willow. Long-leaved Willow.

S. fluviatilis Nuttall, of eastern authors, not Nuttall.

S. longifolia Muhlenberg.

Many-stemmed shrub 2-5 m. high, 2-6 or rarely 10 dm in diameter; twigs slender, leafy, reddish-brown, usually glabrous; stipules none; leaves linear, broadly linear, linear-oblongate, or rarely oblong, acute to acuminate at both ends, almost sessile, 3-10 or 15 cm. long, 3-12 or 20 mm. wide, remotely and irregularly spinulose-denticulate, green on both sides but paler beneath, often sericeous beneath while young, glabrous or rarely pubescent in age; aments serotinous, 3-6 or 8 cm. long, 8-16 mm. wide, lax, 1-3 or 5 together, terminating lateral leafy twigs 3-10 cm. long; scales lanceolate, yellowish, thinly pubescent, deciduous; stamens 2, filaments free, pubescent at base; ovaries often densely to thinly silvery-villous, capsules narrowly lanceolate, 7-10 mm. long, glabrous; pedicels 0.5-1.5 mm. long; styles almost obsolete; stigmas, short, divided. April-July or later, as the successively lower aments in a cluster often develop later.

Va. west to Ky., thence south to mouth of Mississippi R. and the lower Rio Grande Valley, and west to the western edge of the Great Plains in U.S. and southern Can.; north to N.B. and Que. and northwest to James Bay, Mack., Yukon, and Alaska.

Three varieties are recognized and are keyed out below:

A. Leaves linear to linear-oblongate, 5-15 cm. long; glabrous in age.

a. Leaves 5-12 or 13 mm. wide

var. *typica*

b. leaves 3-6 mm. wide (not occurring in Ohio)

var. *pedicellata* (Anders
Ball)

B. Leaves narrowly to broadly oblong

var. *Wheeleri*

10 a. var. *Wheeleri* Rowlee (*Salix Wheeleri* (Rowlee) Rydberg.

Leaves short and broad, 3-6 or rarely 10 cm. long, 1-1.4 or 1.8 cm. wide, usually more densely and more permanently pubescent. With the species, especially in sandy situations, in the central portion of the north-south species range. Flowering averages later.