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List of species typed by WAA.

Five are lacking.

Sequence
No.

7 alba	16 pedicellaris
4 amygdaloides	31 pedunculata
22 anglorum (lacking)	28 pellita
21 arctophila	32 petiolaris
27 argyrocarpa	30 planifolia
	40 purpurea (lacking)
8 babylonica	12 pyrifolia
39 bebbiana	
23 brachcarpa	10 rigida (lacking - adapted from Deam)
15 calcicola	
25 candida	34 sericea
3 caroliniana	2 serissima
17 chlorolepis	33 subsericea
35 coactilis	
14 cordata	38 tristis
24 cordifolia	
26 cryptodonta	19 uva-ursi
36 discolor (lacking)	20 vestita
	29 viminalis
6 fragilis	
15 glaucophylloides	
18 herbacea	
37 humilis	
9 interior	
1 lucida	
11 myrtillifolia (lacking)	
5 nigra	

(copy by W. A. Archer, June 1964)

NOTES ON WILLOWS OF SECTIONS PENTANDRAE AND NIGRAE

Carleton R. Ball

(with four figures)

Miss. Lacks p. 6a, 9, 10, 20
Bot. Gaz. 72:
220-236. 1921

In 1905 the writer began a series of contributions under the title, Notes on North American Willows, of which three were published.¹⁾ This gen-
1) Bot. Gaz. 40:376-380; 60: 45-54, 1905; 60: 391-399. 1915.

eral title has been dropped because of the great disadvantage of not being able to indicate clearly, in the title, the content and scope of each page. For this reason the most recent contribution appeared under a specific title,²⁾
2) Undescribed willows of the section Cordatae. Bot. Gaz. 71: 426-434. 1921. as does the present treatment of the genus Salix in various floras and manuals of botany.³⁾ Not copied/

The location of the herbarium specimens cited is as follows: B, herbarium C. R. Ball; C, Canadian Geological Survey, Ottawa; D, herbarium C. C. Deam, Indiana; F, Field Museum, Chicago; FBb, Bebb Herbarium in Field Museum; I, Iowa State Agricultural College; N, United States National Herbarium; N.D., North Dakota Agricultural College; N.M., New Mexico Agricultural College; R, Rocky Mountain Herbarium, University of Wyoming.

SALIX SERISSIMA (Bailey) Fernald. 91

Salix arguta * S. pallescens Anderss. Svensk Vetensk. Acad. Handl.
6: 32, 1867.

Salix lucida serissima Bailey in Arthur, Bul. Geol. Nat. Hist. Surv.
Minn. 3: 19, 1887.

Salix serissima (Bailey) Fernald, Rhodora 6: 7, Dec. 28, 1903.

When this species was established by Dr. Fernald, in the very interesting and comprehensive article cited, he fully set forth its ecologic characters and catalogued all available herbarium specimens. These showed its range to extend westward from Connecticut to northern Ohio, Wisconsin and northern Minnesota. The type locality in Minnesota, and the most westerly station then known, was Mud River, Vermillion Lake, Saint Louis Co., lying in the extreme northwestern part of the State, about 75 miles north of Duluth. Robinson and Fernald extend the range to Alberta, while the writer has reported the species from ^b ~~Choteau~~ ^{Leton} Co., Montana. Schneider

a. Robinson and Fernald; Gray
New Man. Bot. 322, 1908.

b. Ball, Carleton R., in Coulter and Nelson,
New Man. Rocky Mtn. Bot. 130,
1909.

(l.c. p. 14) extends its range eastward to Newfoundland, north to the eastern shore of James Bay and the Severn River in Keewatin, and west to Edmonton, Banff, and Crow's Nest Lake in Alberta.

The specimens cited below extend the range southwestward to Pembina and Rolette Counties in North Dakota, and to Flathead County in extreme northwestern Montana. Both the Montana specimens come from the east side of the Continental Divide. ^{Le} ~~Fenton~~ Co. lies on the plains at the eastern

dupel

base of the Rockies, at an average elevation of about 4,000 feet. Choteau is on the Teton River, which rises in the high mountains but have flows eastward through the plains to the Missouri River. The localities in North Dakota are a southward extension of the distribution in Manitoba, while those in Montana obviously represent a similar extension of its distribution in the mountains of Alberta. It is quite possible that further search will extend the range both north and south in the Rocky Mountains. The Mennicott specimen from Slave River extends the range far to the north of Edmonton, into Athabasca or Mackenzie.

MONTANA. CHOTEAU CO.: Choteau, on Teton River, about 4,000 feet elev., L. 112° 10' ^{W.} Griffiths and Lange, Aug. 22, 1900 (B).

PLATONAD CO.: 3-4 feet high in open marsh along Swiftcurrent Creek below Lake McDermott, alt. about 1,350 m., P. C. Standley 16053, July 20, 1919 (B, N).

ALBERTA. Crow Nest Lake, Rocky Mts., J. Macoun ¹⁶ 39 (Geological Survey, Canada 94440), Aug. 8, 1897 (B).

ROCKY MTS. PARK, Banff, low ground near the village, alt. 4,500 feet, W. C. McCalla 2252, shrub 6 ft. tall, June 19, 1899 (N); vicinity of Banff, N. B. Sanson 304, July 14; 307, 309, 315A, 2167, July 15; 2173, June 27, 1911 (B).

CALGARY: J. Macoun 16 (Geological Survey, Canada 94,336, June 5, 1897 (B))
 GRATTAN CREEK, near Battle River, J. Macoun and Wm. Herriot (Geological Survey, Canada 70,252) Aug. 17, 1906 (B).

ATHABASCA or MACKENZIE: Slave River, R. Kennicott, July, 1860 (N).

MANITOBA: Bog north of Carberry, Macoun and Herriot (Geological Survey, Canada 70,262) June 11, 1906 (B); near Sidney, Macoun and Herriot (Geological Survey, Canada 70,263) June 12, 1906 (B), (70,264), June 13, 1906 (B).

NORTH DAKOTA. ROLETTE CO.: Turtle Mts., woods around Upsilon Lake (Fish Lake), D.C. Mabbott 464, Sept. 7, 1917 (B);

PEMBINA CO. Walhalla, L. R. Waldron 1666, Aug. 16, 1902 (B, ND).

Bot. Eng. 72: 220-22, 1921
 Pentandrae - Nigrae

(Copied - W. A. Archer, June 1964)

Anderson in 1867 published S. arguta* S. pallescens hirtisquama, based on a specimen collected by Bourgeau at Lake Winnipeg and having short aments on short peduncles, scales densely white pilose except at tips, and narrow, sharply serrate leaves. Throughout its range S. serissima has short aments and pilose scales, but not narrow and sharply serrate leaves. The three Manitoba specimens cited do have such leaves, and it is quite possible that they represent this form. The leaves are not quite fully developed, and it seems hardly desirable to designate them as belonging to it without more and older material. On no. 70264 the under surfaces of the leaves show scarcely any traces of glaucescence. The leaves of all three are discolored in drying, however, which tends to obscure this character.

On flowering specimens from Manitoba (Macoun and Herriot 70262) and Alberta (Sanson 304, 309, 2167), a peculiar appearance has been observed. The capsules, nearly or quite full sized, but not mature, are minutely roughened or papillate, and the surface, viewed by reflected light, has a striking and deceptive resemblance to a fine lustrous puberulence.

5 1 1
S. LASIANDRA Benth.

S. lasiandra Benth., Pl. Hartweg. 335, 1857.

S. speciosa Nutt., No. Am. Sylva. 1: 58, pl. 17, 1843, not Host, 1828, or Hooker and Arnott, 1832.

S. arguta lasiandra Anderss. Svensk. Vetensk. Akad. Handl 6: 33, 1867 (Monog. Sal.).

S. lasiandra lyallii Sargent, Gard. & For. 9: 463, 1895.

S. lyallii (Sarg.) Heller, Bull. Torr. Bot. Club 25: 580, 1898.

This beautiful species was described by Bentham from a staminate specimen, No. 1954, collected by Hartweg on the Sacramento River in California. The cotype in the Gray Herbarium is a twig about 12 inches long, not fully in anthesis. The expanding leaves are only 2-4 cm. long, and 5-9 mm. wide. The aments are 4 cm. long, by 5-9 mm. wide.

The species had previously (1843) been described by Nuttall from specimens observed abundantly on the Oregon & Wahlamet (Columbia and Willamette) Rivers and occasionally as far east as the Blue Mountains and the Boisee (Snake) River.

It is a curious coincidence that Fendler's No. 816, collected near Santa Fe, N. Mex., and made by Anderson the type of his S. fendleriana, also is a staminate specimen with the aments not yet fully in anthesis and the leaves just unfolding. Schneider regards this specimen also as representing the true lasiandra rather than the green-leaved S. lasiandra-candata, because, as he states, in some of the cotype specimens he has examined the leaves are more fully developed and show the glaucous under surface. Two spec. of this No. in the

Nutt. Herb. are not suff. dev. to show this

dupl

S. lasiantha

79

The range of this species recently has been discussed by Schneider (Journ. Arnold Arb. 1: 17, 1919). Its distribution in Colorado and New Mexico, the southeastermost extension of its range, is so restricted, and, in a way, so separated from the remainder, that the specimens known to me from these two states are listed below, in order to stimulate the interest of botanists.

COLORADO. MONTEOSE CO.: Cimarron, Gunnison R., 6,900 feet, C. F. Baker 141, June 15, 1901 (N).

SAN MIGUEL CO.: Norwood Hill, river banks, alt. 7,000 ft., E. P. Walker 453, Aug. 11, 1912 (N).

ARCHULETA CO.: Piedra (creek), E. O. Wooton 2718, Aug. 12, 1904 (N, NM).

NEW MEXICO. RIO ARIBO CO.: Nutritas Creek below Tierra Amarilla, alt. 2,250 m., W. W. Eggleston 6656, April 18-May 23, 1911 (N); meadows, vicinity of Chama, alt. 2,380-2,550 m., P. C. Standley 6645, July 9, 1911 (N).

SANTA FE CO.: Santa Fe Canon, 9 miles east of Santa Fe, alt. 8,000 ft., A. A. & E. G. Heller 3637, June 2, 1897 (N); Santa Fe Creek, 4 miles east of Santa Fe, alt. 7,500 ft., A. A. & E. G. Heller 3719, June 27, 1897 (N).

McKINLEY CO.: north of Ramah, E. O. Wooton, July 25, 1906 (NM).

SOGORRO CO.: Mogollon Mountains, middle fork of Gila R., alt. about 7,000 ft., E. O. Wooton, Aug. 4, 1900 (N); west fork of Gila R., alt. 6,800 ft., E. O. Wooton, Aug. 6, 1900 (N, NM); northwest of Mogollon Mountains, Lower Plaza, Frisco, alt. 5,800 feet, E. O. Wooton, July 25, 1900 (N, NM); Frisco River, near Frisco, alt. 5,800 feet, E. O. Wooton, July 25, 1900 (N).

Pentandrae Bot. Gaz. 72: 222-224, 1921
nigras dupl

6a

SALIX LASIANDRA ABRAMSI, n. var.

/lacking/

7

11

SALIX CAUDATA var. PARVIFOLIA n. var.

In the northern part of the range of S. caudata is found a form of lower stature and shorter, narrower leaves. It occurs rather commonly and appears to be the dominant form in the mountains of northwestern Montana and southern Alberta. ⁴While the examination of a large number of specimens indicates that it passes gradually into the more typical form of the species, as do many other varieties, its recognition as a variety should help to a better understanding of the range of expression in S. caudata.

Little is known of its height other than the notes given by Standley, which indicate a lower stature than that of the species. The branchlets frequently are shorter and more div^ricate; the leaves are very small, 5-8 cm. long, 7-12 mm. wide, seldom exceeding 1 cm. in width, common size being 6 cm. by 8 mm., 7 cm. by 9-10 mm., or on sterile shoots 8-10 cm. x 11-16 mm., strongly glandular-serrulate, as are the stipules also. The aments are 2-3 or 3.5 cm. long, rather lax; the scales 3-3.5 mm. long, linear-lanceolate, acute to truncate or toothed, ^{and} glabrate. The capsules are 6.5-8 mm. long.

The range of variety parvifolia is in the Rocky Mts. from Banff, Alberta, to the Yellowstone Park in Wyoming and in the mountains of western Idaho and eastern Oregon, and westward in Oregon to the eastern slope of the Cascades in Wasco Co.

CANADA. ALBERTA. ROCKY MTS. PARK: N. B. Sanson 164, m., June 17, 1911 (B); 265, July 5, 1911 (B); 413, 414, Aug. 21, 1911 (B); 2056, June 22, 1912 (B).

MONTANA. FLATHEAD CO.: GLACIER NATIONAL PARK: 6-8 feet high, boggy meadow, along Swiftcurrent Creek, below Lake McDermott, alt. about 1,350 m., Paul C. Standley 16865 (type) Aug. 1, 1919 (N); Thicket along lake, abundant, very slender, 6-12 ft. high, vicinity of Glacier Hotel ("Lewis's"), at the head of Lake McDonald, alt. 900 to 1,050 m., P. C. Standley 17906, August 22, 1919 (N). -- DEER LODGE OR POWELL COS.: Deer Lodge Valley, mountain streams, 5,000 feet elev., J. W. Blankinship 786, m., f., May 27, 1906 (N). +

WYOMING. YELLOWSTONE NATIONAL PARK: Upper Fire Hole Basin, Yellowstone Lake, W. M. Coulter, Hayden Survey, July, 1872 (N 253, 728, fr.); along Lamar Creek, J. N. Rose 406, fr., Aug. 20, 1893 (N). +

IDAHO. FREMONT CO.: along an irrigating ditch, St. Anthony, Merrill and Wilcox 899, July 6, 1901 (B, N). -- WASHINGTON CO.: Weiser, alt. 2,200 feet, M. E. Jones 6548, July 5, 1899 (N). +

OREGON. UNION CO.: a small tree, bank of Catherine Creek, 3,500 feet, alt., W. C. Cusick 2385, m. f., ^{fr.} May 30, June 28, 1900 (N). -- GRANT CO.: Prairie City, alt. 1,040 m., W. ^{fr.} Eggleston 13700, Sept. 5, 1916 (N). -- WASCO CO.: along streams in yellow pines, near head of Warm Springs River, alt. 3,000 feet, E. I. Applegate 2777, Sept. 7, 1898 (N).

SALIX LUCIDA Muhl.

/Discussion, lacking/

41
S. GOODINGII BALL.

S. goodingii Ball, Bot. Gaz. 40: 376, Pl. XII, figs. 1 and 2, Nov.,
1905; Schneider, Bot. Gaz. 65: 12, 1918; Schneider, Journ. Arnold Arb. 1:
9, July, 1919.
S. nigra of numerous authors, now Marsh.
S. nigra vallicola Dudley in Abrams Fl. Los Angeles and Vicinity. 100. 1904.
S. vallicola (Dudley) Britton, No. Am. Trees 134, fig. 141, 1908.

This species was described in 1905 from a single collection of immature and somewhat parasitized pistillate specimens and at that time placed in the Section Longifoliae. Not long after describing it, I was indebted to Prof. W. W. Rowlee for calling my attention to the fact that the species belonged rather in the Nigrae, and that Gooding's No. 719 represented the staminate plant. Such an error would scarcely have been made if mature specimens had been in hand. In the present instance the type specimen, with its puberulent to pubescent branchlets and tomentose capsules, constitutes so striking a departure from the characters we have so long been accustomed to associate with the species of Section Nigrae, and agrees superficially so well with those of far western members of the Longifoliae that the deception was complete.

Recently the writer has studied the numerous older collections of this species as well as some more recent material. Some interesting notes on habit, size, etc., have been obtained by Mrs. Agnes Chase and the writer. The rather abundant material and the fuller notes now permit a complete description of the plant as follows:

Bot Gaz 72: 227-234, 1921

Printed copy in Sect-Spp

Description.

Shrub 3 m. tall, to tree, 3-9 dm. in diameter and at least 12 and probably 15 m. in height; bark furrowed, gray; branchlets straight, slender, yellowish, glabrous ^{to} puberulent, more or less shining, seasonal twigs usually densely pubescent to subpilose; bud scales small, 2-4 mm. long, color and pubescence as in branchlets.

Leaves numerous, stipules 1-3 mm. long, or 8-10 mm. long on vigorous shoots, semi-ovate to subreniform or sub^{un}ulate, glandular-denticulate to dentate, often densely glandular on the upper (inner) surface also (See Ball 1821, 2069; Chase 5517); petioles 3-6 mm. long, yellowish, densely pubescent to glabrate; blades linear-lanceolate, usually somewhat falcate, 8-15 mm. wide, 6-10 cm. long, commonly 8 mm. by 8 cm., on new shoots up to 2.4 by 15 cm., usually acute at the base, acuminate at the apex, margins finely and shallowly glandular-denticulate, ^{with} about 8 teeth per cm., green or yellowish green on both sides, often pubescent or puberulent ^{un} till half grown, usually glabrous at maturity or the midrib beneath permanently pubescent; veins prominent above.

Aments ^{ot} coestaneous, numerous, solitary, terminating lateral ~~leafy~~ peduncles 2-4 cm. long, and bearing 3-6 small leaves; rachis densely pubescent to pilose; scales oblanceolate to lanceolate-oblong, or the staminate obovate, occasionally toothed or even lacerate at apex(), 2.5-3 mm. long, yellow, more or less densely pilose, sometimes nearly glabrous on the outer apical portion, deciduous; pistillate aments (originally described from immature parasitized specimens) 3-6 or 8 cm. long, 1.5-2 cm. wide, lax; capsules ovate-conic, 5.5-7 mm. long, roughened, thinly to densely pilose with gray hairs at anthesis, becoming glabrous at maturity; pedicels 2-3 mm. long, pilose, becoming glabrous; style less than 0.5 mm. long, stigmas divided, 0.3-0.5 mm. long; staminate aments 4-6 or 7 cm. long, 1-1/2 cm. wide; stamens 5-6, the filaments pilose on lower third or half.

Distribution.

Salix gooddingii is found along streams and about springs from southwestern New Mexico to southern Nevada (Lincoln Co.), Baja California, and thence northward through the interior of California to Tehama Co., in the vicinity of Red Bluff. It is most abundantly distributed in the valleys having an elevation of only 0-200 feet, but ascends the foothills streams to 1,500 feet or more. The specimens listed below are referred to this species. The arrangement is from east and south to west and north.

According to Schneider this species is found as far east as the Rio Grande Valley in south central New Mexico and in the Davis Mtns. of southwest Texas. The material from those districts is discussed further on.

NEW MEXICO: GRANT CO.: Dog Spring, E. A. Mearns 163 (tree 25 feet high, 1 ft. in diam.), May 29, 1903(?) (N); Dog Spring, Dog Mts., E. A. Mearns 2419, Sept. 22, 1903 (N); tree 20 feet high, Emory Spring, at foot of Emory Peak, E. A. Mearns 277, June 4, 1902, (N); near Kingston, in meadows at 6,600 feet elev., O. B. Metcalfe 969, 1904 (N); Mangas Springs, 18 miles northwest of Silver City, alt. 4770 ft., O. B. Metcalfe, April 26, 1903 (N).-- Gila, 4200 feet alt., E. A. Goldman 1561, Oct. 9, 1908 (N).

ARIZONA: GRAHAM CO.: Sierra Bonita Ranch, 23 miles north of Wilcox, R. A. Oakley, 1904 (B); Duncan, J. N. Rose 11737, April, 1908 (N). -- COCHISE CO.: Ft. Huachuca, Dr. Edward Palmer 452, Apr. 26- May 21, 1890 (N); Dr. Patzky (?), 1890 (N); T. E. Wilcox 63, 1894 (N); Chiricahua Mts., Joe Smith's Ranch, alt. 5,500 ft., J. C. Blumer 2306, Nov. 22, 1906, (B); Bonita Canon, alt. 6,500 ft., Blumer 2309, Nov. 4, 1906 (B). --

(B)

SANTA CRUZ CO.: Nogales, I. Tidestrom, March 28, 1908; near Santa Cruz River, east of Nogales, I. Tidestrom 743, Mar. 30, 1908 (B); Sonaita Creek, Patagonia, F. M. Chamberlain 5, Apr. 2, 1904 (N); in creek bed at Patagonia, I. Tidestrom 814, April 10, 1908; Calabases, common in bottom lands, Ivar Tidestrom 870, April 21, 1908 (B); same locality, Tidestrom 886, April 24, 1908 (B). — PIMA CO.: Canoa to Arabaca (Arivaca) D. Griffiths 3667, March 13-April 23, 1903 (N); Tucson, E. A. Mearns 178 (2656) Nov. 21, 1893 (N); J. J. Towney, April 13, May 20, 1894 (N); March, May 16, 1896 (N); Myrtle Zuck, May 16, 1896 (N); G. R. Vasey 266, March, 1881 (N); J. N. Rose 11767, April 16, 1903 (N); Rose, Standley and Russell 15192, Apr. 27, 1910 (N); J. C. Blumer B 16, alt. 2,400 ft., April 15, 1907 (B); Santa Cruz River, Near Tucson, Blumer B 16a, May 10, 1907 (B, N); Santa Catalina Mts., alt. 3,000 ft., J. C. Blumer, B 17, April 25, 1907 (B, N); Santa Rita Mts., Andrade, D. Griffiths 4079, April 18, 1903 (B, N). — PIMA CO.: near Dualeville, D. Griffiths 3666, Mar. 13-Apr. 23, 1903 (N). — GILA CO.: near San Carlos, F. V. Coville 1907, June 23, 1904 (N).

YUMA CO.: Yuma, State Experiment Substation, C. R. Ball 1740, 1741, June 15, 1911 (B, N); C. R. Ball 1901, May 26, 1915 (B, N). —

MOHAVE CO.: Topeck, abundant along Colorado R., alt. 600 ft., E. A. Goldman 2970, Sept. 27, 1917 (N); Beaverdam, alt. 1,800 ft., M. E. Jones

5020, Apr. 5, 1894 (N); Littlefield, near petrified springs, I. Tidestrom

9236, Apr. 29, 1919 (B); *at spring 8, miles above* *Pierces Ferry, 1700 feet. elev, NE*
Jones 5077, April 18, 1894, (N).

LOCALITY UNKNOWN: Fremont's Expedition to California: No. 202 (A),

1845 (N), has "Utah" written on label, but "Ariz." added by same hand that added number and date; *Beaver Creek, B.E. Fernow, Aug., 1896 (N).*

NEVADA. LINCOLN CO.: Muddy Creek (R) near Virgin R., L. N. Goodding 689, (type) May 2, 1902 (B, N); Rioville, Colorado River, Goodding 719, May 6, 1902 (B, N); along ditches, Bunkerville, I. Tidestrom 9202, May 27, 1919 (B). —

NYE CO.: Ash Meadows, Coville & Funston 2145, Mar., 1892 (N), sub nom.

nigra venulosa.

MEXICO: Baja California: Seven Wells on the Salton River, E. A. Mearns,
2869 (Intl. Boundary Com.) Apr. 8, 1894 (N); ^aL. Schoenfeldt, ^e2877 (Intl. Boundary
Com.) Apr. 9, 1894 (N).

CALIFORNIA: MEXICAN BOUNDARY: Unlucky Lagoon, L. Schoenfeldt ^e2918,
May 1, 1894 (N).

IMPERIAL CO.: Yuma (Ft. Yuma Ind. Res.) pump-house at ferry, C. R. Ball 1741,
June 15, 1911 (B); Indian Reservation, Agnes Chase 5517, Apr. 7, 1910 (B);
Salton Basin, S. B. Parish 8092a, June 30, 1912 (B).

SAN DIEGO CO.: Bernardo, San Dieguito R., L. R. Abrams 3371, May 2, 1903 (N);
Pine Valley, E. A. Mearns 3977, Aug. 12, 1894 (N).

ORANGE CO.: Santa Ana R. near Orange, L. R. Abrams 3256 (type of S. niagara
vallicola Dudley) April 16, 1903 (N).

SAN BERNARDINO CO.: Colton, M. E. Jones 3195, April 28, 1882 (N); Fort
Mojave, Mojave River, J. G. Cooper, Mar. 25, 1861 (N, 319,845); undated (N,
319846).

INYO CO.: On the old Mitchell Ranch, Nesting Springs Valley, alt. 525 m.,
Coville and Funston 262, Feb. 6, 1891 (N); Furnace Creek Ranch house, Death
Valley, Coville and Funston, 469, Mar. 24, 1891 (N).

KERN CO.: On the Tulare Plains, about 10 miles south of Bakersfield, alt.
400 m., Coville and Funston 1256, July 13, 1891 (N).

TULARE CO.: Hanford, Alice Eastwood 3846, 3851, Mar. 24, 1914(N); Visalia,
Alice Eastwood 34, May 11, 1894 (N).

MADERA CO.: Fresno River, J. W. Congdon, June 21, 1903 (N); Powerhouse No.
1, San Joaquin R., alt. 1,000 ft., E. G. Dudley, 5, Nov. 1911 (B).

SAN JOAQUIN CO.: Large tree, 10-18 in. diam., in Tom. Payne's or Paradise
Cutoff, Tracy pike, about 10 m. south of Stockton, Ball 1929, June 1, 1915 (BN).

AMADOR CO.: Sutter Creek, Ione, C. H. Merriam 4, Sept. 15, 1905
(letter) (N); South Jackson, 1500 feet, Geo. Hansen 198, July 3, 1892 (N).

SACRAMENTO CO.: Sacramento, L. F. Ward 89, Oct. 1, 1895 (N).

✧ SACRAMENTO VALLEY: Wilkes Exploring Expedition 1234 (N).

LAKE CO.: Bank of Cache Creek, H. N. Bolander 2678 (N), 1863;
Clear Lake (not certainly in Lake Co.), J. Torrey 490 (N), 1865.

YOLO CO.: near Madison, A. A. Heller 5419, April 29, 1902 (N);
Rumsey, C. F. Baker 2936, May 7, 1903 (N).

BUTTE CO.: Biggs, near U. S. Experiment Farm, Ball 1820, 1821
(B, N), 1822, 1824 (B), Aug. 15, 1913; same place, Ball 1939 June 4,
1915 (B, N); Chico, bank of Chico Creek, Ball 2069, June 15, 1916 (B).

TEHAMA CO.: Red Bluff, L. E. Smith 596, 599, 600, Mar. 28, 1914
(N); 668, 669, May 8, 1914 (N).

SHASTA CO.: Reed Creek, L. E. Smith 610, Mar. 30, 1914 (N).

In addition to the distribution shown above, Schneider (Bot. Gaz. 65: 12-13, 1918; Journ. Arnold Arboretum 1: 9, 1919) credits gooddingii with an eastern extension of range to central southern New Mexico and southwestern Texas (not "northwestern," as Schneider states). The specimens so determined by him are listed below. Two chief districts are involved. The localities in Dona Ana Co., N. Mex., and El Paso Co., Texas, are in the Rio Grande Valley near El Paso, Texas. The Davis Mts. are some 100 miles to the southeast, forming part of the watershed between the Rio Grande and the Pecos Rivers. I am by no means convinced that all of this material represents S. gooddingii instead of a form of S. nigra.

NEW MEXICO. DONA ANA CO.: On the White Sands, alt. 3700-4000 ft.,

L. C. Woolon, Aug. 24, 1899 (N, 3 sheets, twigs brown). Documentation

TEXAS. EL PASO CO.: near El Paso, G. R. Vasey, March, 1881 (N, 2 sheets); G. R. Vasey 267, April, 1881 (N, 2 sheets); V. Havard, Nov., 1881 (N); without locality, V. Havard, 1881 (N 264 239); Mexican Boundary Survey, chiefly in the valley of the Rio Grande below Donana, Parry, Bigelow, Wright and Schott 1357 (N).

JEFF DAVIS CO. (probably); Fort Davis, V. Havard, April, 1885 (N); Davis Mts., S. M. Tracy 187, Apr. 24, 1902 (N).

TOM GREEN CO.: Knickerbocker Ranch, along Dove Creek, Frank Tweedy, May, 1880 (N). (strongly suggests S. nigra lindheimerii Schn.)

125
S. laevigata forma araquipa Jepson n. form., Flora Calif. 339, 1909.

"Small tree, one-year-old shoot with close dense tomentum; brown tuft of hairs on old wood at base of season's shoot very conspicuous; leaves reddish brown above; catkins long and dense.--(Arbor parva ~~xxx~~ ramulis annotinis cum denso appresso tomento; valde manifestus caespes fuscii pili basi horni ramuli in ligno vetere; folia rufo-fusca supra; amenta longa aratque).--Dry gulches, Araquipa Hills, Solano Co., May 2-6, 1891, W.L.J.

S. laevigata araquipa (Jepson) Ball n. var. Ball in Bot. Gaz. 72:234-235, 1921. Quotes Jepson's original description and says:

"The vesture of the seasonal twigs, the buds, the petioles, and even the basal portion of the midrib, especially beneath, makes such a striking contrast with the glabrous and shining epidermis of the typical form that forma araquipa seems worthy of varietal rank. It should be noted, however, that the conspicuous tuft of brown hairs (235) at the base of the seasonal shoots is found on many specimens of which the shoots themselves are glabrous". (pp. 234-235).

Citation of specimens follows.

dupl in Sect. - Sp

Wardii

Salix longipes Shuttlew.

dupl in dupl

"Last fall I found *Salix longipes* as a common willow for several hundred feet along the Ohio River in Perry County where I found it before. The river was very low at the time of my visit. I find this species keeps a zone lower than *Salix nigra*. The species must be under water about half the year. The plants are uniformly very short and usually only the summer's growth above the rocks.

The plant at this place grows in among more or less much detached rocks from the cliffs along the bank. It finds root in the mud between these large rocks and also finds protection. The plants that have any trunk to them at all are those that are protected by the rocks, but the majority of specimens I found had only this year's growth and an examination showed that they were broken off or worn off by the water during the high water.

I found a rocky bank along the Ohio River above Madison, Indiana, and I strongly expected to find this species there, but I searched in vain for it. I was not lucky enough to get along the bank of the Ohio across from Louisville where it was first reported."

From letter received from Chas. C. Deam, State Forester, Indianapolis, Ind., dated October 23, 1923.

SALIX LONGIPES WARDII (Bebb) Schneider.—*S. nigra* Wardii Bebb, U.S. Nat. Mus. Bull. 22. 114-115. 1881.—*S. longipes* Wardii (Bebb) Schneider, Bot. Gaz. 65:22. 1918.

So far as known, this species has not been reported heretofore from any station north of the Ohio River. In the autumn of 1918, a specimen collected on the banks of the Ohio, in Perry County, Indiana, was found in a collection of Indiana willows received for identification from CHARLES C. DEAM, State Forester of Indiana. On asking his interest in getting more material, he was kind enough to visit the spot again in 1920 and make another collection. Both specimens show only the characteristic foliage, but there can be no doubt of their identity.

INDIANA.—Perry County, low bank of Ohio River about 6 miles east of Cannelton, Chas. C. Deam 26749, September 24, 1918 (B,D); same place, a sprawling shrub growing in crevices of rock, the branches about 3 ft. tall, probably submerged during the winter, at least, Deam 33220, October 1, 1920 (B, D).

The recorded northern range of the species is from Washington, D.C., northwestward up the Potomac Valley to Alleghany County, Maryland, and westward in Upshur County, West Virginia (about lat. 39° N.), and Fayette County, Kentucky (about lat. 38° N.). Neither Upshur County nor Fayette

Bot.

Gaz.

72:

235-6,

Oct. 1,

1921.

dupl in dupl

SALIX AMYGDALOIDES Andersson

/Extension of range, lacking/

July 26, 1921.

Dr. John M. Coulter,
Editor -Botanical Gazette,
Department of Botany,
Chicago, Ill.

Dear Dr. Coulter:

When I prepared the manuscript entitled, "Notes on Willows of Sections *Pentandrae* and *Nigrae*", I separated material which I thought should represent a new variety of *Lasianandra*, but lacked sufficient material to characterize it properly. Since then I have obtained additional material from California and have completed the description and citation of specimens.

I am enclosing herewith two pages 6-B and 6-C, respectively, covering these varieties. If you can insert these in that manuscript following page 6 it will complete my discussion on these sections and render the paper more complete and valuable when published.

I am sorry to trouble you in this way but I like to make a paper as complete as possible, and I do not expect to make any further study on these sections for some time, so that it would seem a pity to let this paper appear without these varieties if there is still chance for insertion.

Very truly yours,

CRB:F