



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

The Hunt Institute is committed to making its collections accessible for research. We are pleased to offer this digitized item.

Usage guidelines

We have provided this low-resolution, digitized version for research purposes. To inquire about publishing any images from this item, please contact the Institute.

About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

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.

25. SALICACEAE. Willow Family.

Dioecious trees or shrubs, with simple, stipulate, alternate leaves and bitter bark and brittle twigs; flowers in catkins, each flower solitary in the axil of a bract; true perianth wanting; stamens 1-many; ovary solitary, forming a 1-loculed, 2-4 carpelled, dehiscent capsule; seeds many, bearing silky hairs.

Bracts laciniate; stamens on a concave disk; winter buds covered by several scales; flowers without glands; trees. Populus.

Bracts entire or denticulate; stamens not on a disk; winter buds covered by 1 cap-like scale; flowers with glands at base; mostly shrubs. Salix.

POPULUS L. Cottonwood, Poplar.

Trees, with more or less resinous buds, and rough, gray old bark; leaves long-petioled, smoothly serrate; stipules small, caducous; flowers in drooping catkins, borne in broad or cup-shaped disks; stamens numerous; stigmas 2-4.

Petioles strongly flattened laterally; leaves suborbicular; bark of trunk mostly smooth and white. P. tremuloides.

Petioles terete or nearly so; leaves broadly ovate to lanceolate; bark of trunk mostly rough and gray or green.

Leaves usually ovate to narrowly-lanceolate, cuneate, rounded, or rarely acuminate at base; fruit noticeably pedicelled (also see P. Tacamahaca).

Petioles generally one-third or less as long as the blades; blades 3-7 times as long as broad, gradually acuminate at the apex. P. angustifolia.

Petioles one-half or more as long as the blades; blades about twice

as long as broad, usually abruptly acuminate at the apex.

..... P. acuminata.

Leaves usually broadly ovate, rounded to subcordate or rarely abruptly narrowed at base; fruit sessile or short-pedicelled.

Ovary glabrous, oblong, with 2 stigmas; petioles glabrous; buds very resinous and large. P. Tacamahaca.

Ovary tomentose, nearly globose, with 3 stigmas; buds only moderately resinous and moderate-sized. P. trichocarpa.

P. acuminata Rydb. Trees about 20 m tall, with a broad spreading crown and stout branches; petioles 3-7 cm long; leaf crenate, glabrous; stamens numerous; capsule ovoid, papillose, 6-8 mm long; pedicels in fruit 3-5 mm long. Along streams. Sask. to S. Idaho, south to Tex. and Ariz.

P. angustifolia James. Narrow-leaf Cottonwood. Trees mostly slender, reaching about 15 m tall; with slender, ascending green branches; leaves broadly to narrowly lanceolate, gradually narrowed or acute at apex, finely crenate, usually rounded at base; stamens 20 or less; capsule narrowly ovate, rugose, 6-8 mm long. Very common along stream bottoms. Sask. to Oreg., south to N. M. and Ariz.

P. Tacamahaca Mill. Balsam Poplar. A broad tree up to 25 m tall, with sometimes sharply-ridged twigs; petioles 2-5 cm long; leaves broadly-ovate to ovate, 7-20 cm long, crenate-serrate, pale green to whitish beneath, rounded or cuneate at the base; stamens usually 20-30; capsule oblong, mostly glabrous, sessile or short-pedicelled. P. balsamifera L. for Idaho. Not common in Idaho. Newf. to Alaska, south to N. Y., Colo., and Oreg.

P. trichocarpa T. & G. Black Cottonwood. A large tree up to 60 m tall, with a rounded top and pubescent branches; leaves usually pubescent when young, broadly ovate to ovate-lanceolate, acute or

279 short-acuminate at the apex; stamens 30-40; ovary nearly globose. Along streams. Mont. to Alaska, south to Calif. A form with glabrous, slightly warty ovaries, and narrower leaves has been called var. hastata Henry.

SALIX L. Willow.

Contributed by Dr. Carleton R. Ball.

Trees or usually shrubs in Idaho, with slender twigs and usually narrow leaves which are pinnately veined and usually finely toothed; flowers each with 1-2 glands at the base, appearing before (precocious), with (coetaneous), or after (serotinous) the leaves; stamens usually 2 or 5 (1-10); capsule sessile or short-stipitate, mostly 2-valved.

1. Leaves closely serrulate, serrate, or crenate-serrate, or (Nos. 4-6) linear and remotely denticulate, or rarely entire or subentire (Nos. 9, 10a, 12, 13); aments coetaneous or serotinous, mostly leafy-peduncled.
2. Leaves 4 or 5 to 10 times as long as wide (except No. 3), acuminate to long-acuminate; scales yellow (see also Nos. 21, 22, 31, 32), 2-3 mm long, deciduous; styles short, 0.0-0.4 mm long.
3. Trees 5-15 m high (No. 2 sometimes shrubby); leaves narrowly to broadly lanceolate (No. 3 sometimes ovate-lanceolate), closely serrulate, stipulate, distinctly petioled; aments coetaneous, solitary; stamens 3-8 (mostly 4-5); capsules glabrous; pedicels 1.5-2.5 mm long; styles 0.1-0.4 mm long.
4. Twigs stoutish, yellow to reddish; leaves long, narrowly lanceolate, long-acuminate; vein islets large; petioles stoutish, glandular above at apex; aments broadly oblong, 1.5-2 cm wide; scales broad, often erose at apex (Lucidae).
5. Leaves glaucous beneath (when expanded).
6. Twigs, bud scales, and petioles glabrous-glabrate.
7. Leaves large, 6-20 cm long, 2.5-4 cm wide. 1. S. lasiandra.

7. Leaves mid-sized, 5-10 cm long, to 1.5 cm wide. 1a. var. Abramsi.
6. Twigs, bud scales, and petioles more or less pubescent. 1b. var. lancifolia.
5. Leaves green beneath when expanded, large, 6-20 cm long.
6. Twigs, bud scales, and petioles pubescent. 2. S. caudata.
6. Twigs, bud scales, and petioles glabrous. 2a. var. Bryantiana.
4. Twigs slender, yellowish; blades glaucescent beneath, 3-4 times as long as wide, vein islets tiny, petioles long, slender, not glandular; aments linear-oblong, to 1.5 cm wide; scales narrower, mostly entire. (Triandrae). 3. S. amygdaloides.
3. Caespitose shrubs, forming large clumps; twigs slender, mostly ascending; leaves narrowly to broadly linear, 7-15 times as long as wide, subentire to remotely and irregularly denticulate, acute, the base tapering to an indefinite petiole, scarcely stipulate; aments serotinous, 1-3 together, terminating seasonal leafy twigs; stamens 2; pedicels 0-1.5 mm long; styles none (in Idaho species). (Longifoliae).
4. Twigs yellowish to brownish, hairy; scales lanceolate, hairy; ovaries and capsules usually hairy.
5. Aspect white; 1-year twigs, leaves, and capsules densely white-pilose. 4. S. argophylla.
5. Aspect gray; 1-year twigs and leaves finely gray-pubescent or gray-puberulent (except 5b); ovaries mostly, and capsules often, gray-pubescent or puberulent (except 5b) to glabrate-glabrous.
6. Leaves 5-10 or 12 cm long.
7. Leaves 4-10 mm wide. 5. S. exigua.
7. Leaves 2-5 mm wide. 5a. var. stenophylla.
6. Leaves 3-6 cm long, 2-4 mm wide, glabrate, yellowish-green; capsules glabrous. 5b. var. nevadensis.

4. Twigs (young) dark brown to blackish; aspect dark green; scales broad, veiny, glabrate; capsules glabrous.
5. Twigs, bud scales, petioles, and leaves glabrous.
6. Blades 4-10 cm long, 8-15 mm wide. . . . 6. S. melanopsis.
6. Leaves 4-10 cm long, 2-7 mm wide. 6a. var. tenerrima.
5. Twigs, bud scales, petioles, and leaves (especially beneath) more or less pubescent. . . . 6b. var. Bolanderiana.
2. Leaves 2-4 times as long as wide, mostly closely serrate, crenate-serrulate, or crenate-serrate, rarely subentire or entire (see Nos. 9, 10a, 12, 13); aments coetaneous, short-leafy-pedunculate, or rarely sessile (No. 16); scales dark brown to blackish, persistent; stamens 2; capsules mostly glabrous (except 13a, 15b); stigmas shorter than the styles.
3. Leaves lanceolate and glabrous when mature, or linear-ob lanceolate to broadly oblanceolate (broader in 12a) and pubescent or pilose when mature.
4. Leaves lanceolate, acute, rounded to cordate at base, serrate-serrulate or rarely entire (Nos. 9, 10a), acute or short-acuminate; capsules glabrous, 4-6 or 7 mm long; pedicels 1-4 mm long; styles 0.3-0.8 mm long. (Cordatae).
5. Leaves glaucous beneath, glabrous.
6. Twigs, bud scales, and petioles yellowish, glabrous.
7. Twigs mostly ascending, leaves 4-8 or 12 cm long.
8. Leaves 5-12 cm long; pedicels 1-2.5 mm long.
- 7. S. lutea.
8. Leaves 4-8 cm long, broad; pedicels 2-4 mm long.
- 7a. var. platyphylla.
7. Twigs shorter, divaricate, pipe-clay-colored; leaves 3-6 cm long, subentire. 7b. var. Watsoni.
6. Twigs reddish-brown to dark brown (seasonal yellowish), glabrate, puberulent or pubescent.

7. Shrub to 6 m tall; leaves 6-10 cm long, serrulate; pedicels 2.5-4 mm long. 8. S. Mackensiana.
7. Shrub to 1.5 m tall; leaves 3-6 cm long, entire; pedicels 0.5-1.5 mm long. 9. S. Farrae.
5. Leaves green beneath, glabrous when full grown; shrubs 1-4 m tall.
6. Leaves lanceolate to oblong-oval, thickish; pedicels 1-1.5 mm long.
7. Leaves 3-8 or 10 cm long, serrulate. 10. S. pseudocordata.
7. Leaves 3-5 or 6 cm long, entire. . . 10a. var. aequalis.
6. Leaves broadly lanceolate to oval, thinnish; pedicels 2-4 mm long. 11. S. monochroma.
4. Leaves oblanceolate or broadly so to suboval and pubescent, or linear-oblanceolate or -lanceolate and pilose; all entire or subentire; scales obovate, blackish; capsules 3.5-5.5 mm long, glabrous (except No. 13a); styles 0.4-1 mm long; stigmas short.
5. Leaves 6-10 or 15 cm long, oblanceolate or lanceolate to oval-obovate, veiny and glaucous beneath, somewhat revolute; shrub (in Idaho) or small tree to 12 m tall; aments precocious to subcoetaneous, to 7 cm long, subsessile; scales densely pubescent on both sides; capsules 4-5.5 mm long; pedicels 0.5-12 mm long. (Lasiiolepis).
6. Leaves oblanceolate, often becoming glabrate beneath. 12. S. lasiiolepis.
6. Leaves oblanceolate to oval-obovate, densely pubescent beneath. 12a. var. Sandbergii.
5. Leaves 2-6.5 cm long, linear-oblanceolate, -lanceolate, or -elliptical, mostly rounded at base, entire, green, plane, and more or less pilose on both sides; low meadow shrub to 1 m tall; twigs slender, leafy; aments costaneous, short-

leafy-pedunculate, dense; capsules 3.5-4.5 mm long;

pedicels about 0.5 mm long. (Wolfianae).

Leaves 2-4.5 cm long, thinly villous to glabrate; aments

to 2.5 cm long; capsules glabrous. . . . 13. S. Wolfii.

Leaves 3-6.5 cm long, silvery-villous; aments to 3.5 cm long;

capsules thinly to densely tomentose. 13a. var. idahoensis.

3. Leaves broadly oblanceolate, obovate-oval, or obovate, to elliptic-ovate or broadly ovate, rounded to cordate at base, acute or short-acute at apex, serrulate (No. 15 rarely subentire) to crenate, crenate-serrate, or denticulate; shrubs 1-6 m tall; aments 2-6 or 8 cm long, leafy-pedunculate (sessile in Nos. 16, 17); scales 1-3 mm long, black, villous; capsules 5-8 mm long.

4. Twigs stoutish (subslender in No. 16), younger yellowish, older brownish or reddish-brown, thinly pubescent to glabrate; leaves broadly oblanceolate to elliptic-oval, elliptic-ovate, or obovate, 4-7 or 10 cm long, crenate-serrulate, serrulate, or crenate-serrate, narrowed to rounded or subcordate at base; aments coetaneous, leafy-peduncled (sessile in No. 16); capsules 5-8 mm long, mostly glabrous; pedicels 0.5-2.5 mm long; styles 0.8-1.5 mm long. (Commutatae).

5. Leaves glaucous beneath.

6. Twigs stoutish; leaves broadly oblanceolate to obovate, crenate-serrulate, narrowed to subcordate at base; scales 2-3.5 mm long, black; aments leafy-peduncled; pedicels 0.5-1 mm long. 14. S. Barclayi.

6. Twigs slender, divaricate; leaves narrowly to broadly ovate, mostly subcordate to cordate at base, coarsely crenate-serrate; scales 1-1.5 mm long, brown; pedicels 1.5-2.5 mm long; aments sessile. 16. S. pseudomonticola.

5. Leaves green beneath, elliptic-lanceolate to oval-obovate, glandular-serrate or rarely subentire, more or less

- 284
- pubescent; capsules glabrous. 15. S. commutata.
6. Leaves glabrate-glabrous. 15a. var. denudata.
6. Capsules thinly pubescent. 15b. var. puberula.
4. Twigs stout, divaricate, dark, long-villous; stipules large, broadly reniform to ovate, clasping, denticulate; leaves oval to broadly ovate, 4-7 or 10 cm by 2-4 or 5.5 cm, denticulate, glaucous beneath; aments precocious, sessile on old wood, stout, dense; scales 2-3 mm long; capsules 7-8 mm long, glabrous (or sometimes pubescent at apex); pedicels 0.5-1 mm long; styles 1.5-2.5 mm long. (Chrysanthae). 17. S. Tweedyi.
1. Leaves entire or merely remotely serrulate or sparsely crenate or crenate-dentate (see also Nos. 9, 10a, 12 & 13), of varying shapes, distinctly petioled; scales brown to black (except Nos. 21, 22, 31, 32), persistent; stamens 2 (or filaments united sometimes in Nos. 26, 27).
2. Leaves glabrous (or long-villous beneath while unfolding), entire, glaucous beneath; twigs, bud scales, and petioles glabrous (or rarely thinly pubescent while young).
3. Plants prostrate and sometimes rooting, mountain shrubs; leaves oblanceolate, oval, obovate, or suborbicular.
4. Leaves elliptic-obovate or oval to suborbicular, veins depressed above, strongly reticulate beneath; aments serotinous, on short leafy peduncles; capsules ovate, sessile, 3 mm long, tomentose; styles 0.1-0.2 mm long. (Reticulatae).
5. Leaves 7-12 mm long; aments 1 cm long, 3-10-flowered. 19. S. nivalis.
5. Leaves 1-3 cm long; aments 1-2 cm long, 15-40-flowered. 19a. var. saximontana.
4. Leaves oblanceolate or narrowly elliptical to obovate, strongly veined beneath; aments coetaneous, 2-5 cm long, on long leafy peduncles; capsules 5-6.5 mm long, subsessile, tomentose;

- styles 1-1.5 mm long. (Ovalifoliae).
5. Leaves narrowly to broadly oblanceolate; 2-5 cm long, to 1.5 or 1.8 cm wide. 20a. S. anglorum var. antiplasta.
5. Leaves elliptic-oval to oval-obovate, 1-4 cm long, to 2.8 cm wide. 20b. S. anglorum var. araioclada.
3. Plants erect shrubs, 0.5-6 m tall; leaves lanceolate or oblanceolate to elliptical, elliptic-oval, elliptic-obovate, or sub-obovate, glaucous beneath, entire or nearly so.
4. Twigs slender; leaves narrowly oblanceolate to oblanceolate or sub lanceolate; aments coetaneous, leafy-peduncled; capsules 5-8 mm long, pedicelled.
5. Bog shrub to 2 m tall; twigs ascending, brown; leaves narrowly to broadly elliptic-oblanceolate, entire, finely net-veined on both sides; scales pale brown, glabrate; capsules 5-7 mm long, glabrous; pedicels 2-3.5 mm long; styles and stigmas minute. (Roseae). 18a. S. pedicellaris var. hypoglauca.
5. Non-bog mountain shrub to 5 m tall; twigs yellowish to dark brown, divaricate, subshining, sometimes pruinose; leaves oblanceolate or sub lanceolate, acute, entire or often sparsely glandular-serrulate, plane; scales blackish; capsules silvery-pubescent; pedicels 1-1.5 mm long; styles 0.6-1 mm long. (Sericaceae). 24. S. Lemmonii.
4. Twigs stoutish, divaricate, chestnut to brown, shining; leaves broader, elliptical, elliptic-oval, elliptic-ovate, or obovate (oblanceolate in 28b); aments precocious, sessile or subsessile and bracted; scales black; capsules hairy, 5-7 mm long, short-pedicelled.
5. Shrubs 0.5-3 m tall; twigs chestnut to brown; leaves mostly elliptical, elliptic-oval, or elliptic-obovate, entire or sparsely glandular-serrulate, yellowish-green and plane above, secondary veins numerous and parallel beneath;

capsules subsessile, silvery-pubescent; styles 0.6-1.3 mm long; stigmas 0.3-0.6 mm long. (Phyllicifoliae).

6. Leaves as described.

7. Tall shrub; leaves 3-7 cm long; aments 3-6 cm long. . . .

. 28. S. planifolia.

7. Low, sometimes ascending, mountain shrub; leaves 2-4 cm long; aments shorter. 28a. var. monica.

6. Leaves oblanceolate or sub lanceolate, more crenate-

serrulate. 28b. var. Nelsonii.

5. Stout shrubs to 6 m tall; twigs yellowish to brown; leaves narrowly to broadly elliptical or narrowly oval, mostly shallowly crenulate-serrulate or the larger crenate-dentate; capsules gray-pubescent; pedicels 1-2 mm long; styles and stigmas equal, 0.3-0.6 mm long. (Discolores).

. 29a. S. discolor var. princoides.

2. Leaves more or less hairy on both sides; twigs (young), bud scales, and petioles usually more or less hairy (see also Nos. 12, 13, previously, under "leaves serrate", etc.).

3. Leaves, twigs, bud scales, and petioles white-to gray-pubescent or -tomentose; leaves glaucescent to glaucous beneath, 3-7 or rarely 10 cm long, plane, evidently veiny, or rugose.

4. Leaves elliptic-oblong or elliptical to oval or oval-obovate, 3-6 or 8 cm long, acutish to obtusish at both ends; aments coetaneous, short-leafy-peduncled;

5. Low shrubs 0.5-2 m tall; leaves entire, veins somewhat raised-reticulate on both sides; twigs often white- or gray-pubescent, sometimes becoming glabrate; scales light to dark brown, oblanceolate-oval, 1-2 mm long; capsules 5-7 mm long, subsessile, white-to-gray-tomentose; styles about 1 mm long; stigmas shorter. (Glaucæ).

6. Leaves elliptic-oblong to narrowly oval, yellowish-green above, usually rounded at base, short-petioled, gray-pubescent on both sides.
7. Leaves 2-4 or 5 cm long; aments 1-2 cm long. 21. S. brachycarpa.
7. Leaves 1-2.5 cm long; aments 1 cm long; peduncles, capsules, and styles averaging shorter. 21a. var. Sansonii.
6. Leaves elliptic-oblong to elliptic-oval or oval-obovate, 3-6 or rarely 7 cm long, to 2 cm wide, acute or short-acute at apex, acute or larger rounded at base, green above, glaucous beneath, pubescent to glabrate on both sides or becoming glabrous beneath; aments 2-4 or 5 cm long, on leafy-peduncles to 2.5 cm long; pedicels 0.6-1.5 mm long. 22. S. glaucops.
5. Shrub to 5 m tall; twigs slender, divaricate, pubescent to glabrate; leaves mostly narrowly elliptic and acute at both ends to broadly elliptic-oblong or rhombic-obovate and acute to abruptly short-acuminate, 3-6 or 8 cm long, entire or somewhat undulate-crenate, pubescent and veins slightly incised above, glaucescent, rugose, and densely pubescent beneath; aments subcoetaneous, short-leafy-peduncled; scales narrow, acute, yellowish with reddish tips; capsules rostrate, 6-9 mm long, puberulent; pedicels 3-5 mm long; styles 0.2-0.4 mm long; stigmas slightly longer. (Rostratae, as also 32).
6. As described. 31. S. Bebbiana.
6. Leaves smaller, glabrate, nearly plane beneath. 31a. var. perrostrata.
4. Leaves linear-oblong to oblong or suboblong, 2-8 or 10 cm long, acute at both ends; aments coetaneous, somewhat pedunculate.

5. Low bog shrub, 0.5-1 m tall; twigs white- or gray-pubescent, slender; leaves linear-oblong to narrowly or rarely broadly oblanceolate, 3-8 or 10 cm long, thick, revolute, entire or rarely somewhat crenulate, thinly to densely white- or gray-tomentose, veins incised above, rugose beneath; aments coetaneous, 2-5 cm long, leafy-pedunculate; scales obovate, brown, white-pilose; capsules 6-8 mm long, subsessile, white-tomentose; styles 1-1.5 mm long, stigmas short. (Candidae).
 23. S. candida.
5. Meadow and upland shrubs, 2-6 m tall; twigs slender, green to brownish or blackish, somewhat pruinose; leaves narrowly oblanceolate or suboblanceolate to elliptic-oblong, 2-6 or 7 cm long, acute at both ends or short-acuminate at apex, glaucescent to glaucous beneath, almost plane on both sides; aments coetaneous, 1-2.5 cm long, subglobose, very short-pedunculate; scales narrow, oblanceolate, or linear-oblong, acute, yellowish with reddish tips; capsules 5-7 mm long, silvery-pubescent; pedicels 1.5-2.5 mm long; styles 0.1-0.3 mm long, stigmas longer. (Rostratae).
6. Twigs yellowish to brown, often pruinose.
7. Leaves thinly pubescent to glabrate on both sides.
 32. S. Geyeriana.
7. Leaves densely silvery-pubescent (pilose) on both sides. 32a. var. argentea.
6. Twigs brown to blackish, usually not pruinose.
 32b. var. meleina.
3. Leaves mostly densely sericeous, silvery-pubescent or silvery-tomentose and glaucous beneath; capsules sericeous.
4. Mountain shrub to 4 m tall; twigs yellowish to dark brown; leaves mostly elliptic to narrowly oval, sometimes broadest at base (elliptic-lanceolate), sometimes at apex (elliptic-oblanceolate),

sometimes oval, 3-7 or 10 cm long, revolute, entire or sometimes glandular micro-serrulate; aments precocious or sub-coetaneous, dense, sessile or subsessile; scales black, long-villous; capsules 4-6 mm long; pedicels 0.5-1.5 mm long; styles 0.8-1.2 mm long. (Pellitae).

5. Leaves mostly broadly elliptic-oblong to oval, obtuse and plicately apiculate at apex. 25. S. Drummondiana.

5. Leaves narrower (as in key 4 above), acute; twigs often pruinose.

6. Leaves oblong-lanceolate or oblong-oblancheolate; twigs stoutish. 25a. var. bella.

6. Leaves mostly oblong-oblancheolate or broader, thinner, sometimes becoming glabrate; twigs slender. 25b. var. subcoerulea.

4. Tall shrubs or small trees of valley and upland; twigs yellowish to dark brown, not pruinose; leaves elliptic-oblancheolate to elliptic-oval or obovate, mostly cuneate at base, 4-8 or 12 cm long.

5. Valley shrubs to 7 m tall; twigs mostly long, straight, ascending; leaves distinctly sericeous; aments subprecocious to coetaneous, slender, 2-8 or 10 cm long, on leafy peduncles 1-2 cm long; scales 1-2 mm long, brown; capsules 4-5 mm long, sessile, sericeous; styles 0.3-0.6 mm long; stigmas short. (Sitchenses).

6. Twigs stoutish, densely pubescent; leaves mostly elliptic-oval, thick, densely tomentose. . . . 26. S. Coulteri.

6. Twigs slender, thinly pubescent; leaves mostly oblancheolate to cuneate-obovate, thin, densely silvery-pubescent to becoming glabrate. 27. S. sitchensis.

5. Upland shrub or small tree to 10 m tall or occasionally to 15 m in valleys; twigs mostly stoutish, divaricate, light

to dark brown, more or less pubescent; leaves broadly oblanceolate to obovate, thick, cuneate at base, somewhat revolute, entire or shallowly crenate-serrulate; aments precocious, sessile-subsessile, stout; scales black, villous; capsules 7-9 mm long, tomentose; pedicels 1-2 mm long; styles 0.2-0.5 mm long; stigmas twice as long.

- (Discolores) 30. S. Scouleriana.
 6. Aments subcoetaneous. 30a. var. coetanea.
 6. Twigs slender, glabrate; leaves small, elliptic-oblan-
 ceolate. 30b. var. Thompsonii.

1. S. lasiandra Benth. Tree 5-15 m high; twigs yellow to red-brown, shining, glabrous; stipules reniform to semicordate, to 10 mm long; petioles stoutish, 6-15 mm long, glandular above at apex; leaves lanceolate, mostly long-acuminate, acutish to rounded at base, closely glandular-serrulate, shining above, glaucous beneath when unfolded; aments coetaneous, leafy-pedunculate, staminate 2-6 by 1-1.3 cm, pistillate 2-10 by 1.2-1.8 cm; scales elliptic-oblan-
 ceolate, 2-3 mm long, often shallowly toothed, pale yellow, crinkly-pilose, deciduous; stamens 4-5, pubescent at base; capsules 5-7 mm long, glabrous; pedicels 1.5-2.5 mm long, glabrous; styles and divided stigmas 0.2-0.4 mm long. Stream banks and valleys, Upper Sonoral and Transition Zones, Calif. to N. M., north to B. C. and Alta. and sparingly to Alaska and Yukon. N. Idaho, from Clearwater River northward.

1a. var. lancifolia (Anderson) Bebb. Young twigs, bud-scales, and petioles more or less densely pubescent. Habitats of the species. Idaho: sparingly in the northern half, from Washington Co. northward.

1b. var. Abramsi Ball. Smaller in every way; leaves 5-11 cm long, less serrulate; petioles less glandular. Range of the species in the U. S. but at higher elevations. Idaho: sparingly in the northern half, from Washington Co. northward.

2. S. caudata (Nuttall) Heller. Few-stemmed shrub or small tree, 2-5 m tall; twigs chestnut to reddish, more or less densely pubescent (as budscales and petioles); stipules semicordate to reniform, small; petioles stoutish, glandular above at apex; blades lanceolate, long-acuminate, 6-15 or 20 cm long, 1.5-3 or 4 cm wide, closely glandular-serrulate, green on both sides; aments coetaneous, leafy-pedunculate, 2.5-5 cm long, 1.5 cm wide; flowers as in S. lasiandra. Streambanks and valleys to 9000 ft. elev. Southeastern B. C. and S. Alta. to N. E. Calif. and N. Utah. Throughout Idaho.

2a. var. Bryantiana Ball & Bracelin. Twigs, budscales, and petioles glabrous. Range of the species and south to S. Calif. and N. M. With the species in Idaho but less common.

2b. var. parvifolia Ball. Smaller shrub of higher elevations; leaves 5-8 cm long, 7-12 mm wide. Sparingly with the species throughout Idaho.

3. S. amygdaloides Anderson. Peach-leaved Willow. Small to large tree with 2-4 leaning trunks, 3-12 m tall; glabrous throughout (except rachis and scales); twigs slender, yellowish, and somewhat pendent; petioles slender, 5-20 mm long; leaves lanceolate or broadly so to sometimes ovate-lanceolate, acutish to rounded at base, abruptly to gradually acuminate at apex, 5-10 or 13 cm long, 1.5-3 cm wide, finely serrulate, yellowish-green above, glaucescent to glaucous beneath, with tiny vein islets; aments coetaneous, leafy-pedunculate, lax, 3-8 cm long, 0.8-1.5 cm wide; scales lanceolate or broader, pale yellow, crisp-villous inside, deciduous; stamens 4-7, filaments pubescent below; capsules 3-5 mm long; pedicels filiform, 2 mm long; styles 0.3-0.5 mm long, stigmas shorter. Streambanks and valleys, southeastern B. C. and southward, east of the Cascade Mountains, to Nev. and east to Penn. and Que. Idaho: southern two-thirds, north to Nez Perce Co.

4. S. argophylla Nuttall. White-leaf Sandbar Willow. White shrub, 2-4 m tall; young twigs densely white-villous; blades linear to linear-oblongate, 4-6 or 8 cm long, 5-8 or 12 mm wide, acute at both ends, aristate at apex, entire to sparingly remote-denticulate, densely villous with shining white hairs; aments coetaneous, 1-3 together, 2-4 cm long, terminating leafy twigs; scales lanceolate, acute, villous, deciduous; stamens 2; capsules 5-6 mm long, densely white-villous; pedicels about 0.5 mm long; stigmas sessile, divided, about 0.5 mm long. B. C., Oreg., and Wash., east of Cascade Mts., east to N. W. Mont. and N. E. Utah. Idaho: throughout, fairly common.

5. S. exigua Nuttall. Gray Sandbar Willow. Grayish shrub, 2-4 m tall; twigs yellowish to light brown, gray-pubescent (seasonal twigs and young leaves often densely white-pubescent and then mistaken for S. argophylla); leaves linear or linear-elliptical, 2-7 or 10 cm long, 3-7 or 10 mm wide, acute at both ends, entire to sparingly denticulate, opaque, green and finely pubescent-puberulent on both sides; aments coetaneous to serotinous, 2-6 cm long, 1-3 together, terminating short leafy twigs; scales oblong-lanceolate, 2-3 mm long, gray-pubescent, deciduous; stamens 2; ovaries densely to thinly pubescent; capsules 4.5-5.5 mm long, glabrate to glabrous in age, sessile or short-pedicelled; stigmas sessile, divided, 0.4-0.6 mm long. Moist situations, Rocky Mts. and westward, north to Alta. and B. C. Abundant throughout Idaho.

5a. var. nevadensis (Watson) Schneider. Yellowish-green desert shrub, more glabrate throughout (developing twigs and leaves silvery-pubescent); twigs yellow-brown; leaves narrowly linear to linear, 3-6 cm long, 2-5 mm wide, greenish-yellow, glabrate. Great Basin area. Idaho: only Blaine Co. (Tikura, elev. 4500 ft., Nelson & Macbride 1300 (USN)).

295
5b. var. stenophylla (Rydberg) Schneider. Leaves narrower, 2-5 mm wide, silvery-pubescent; capsules silvery-pubescent, becoming glabrate, 5-7 mm long; pedicels 0.5-1 mm long. The southern form, common from Tex. to Calif., sparingly northward to Wyo., Idaho, Nev., S. E. Oreg., and N. E. Calif. Idaho: Fremont Co., St. Anthony, Merrill & Wilcox 307 (CRB); Merrill 450 (CRB, USN).

6. S. melanopsis Nuttall. Dark Sandbar Willow. Dark green shrub or small tree, 3-5 m tall; twigs somewhat divaricate, brown to black, glabrous; leaves linear to linear-elliptical, tapering at both ends, subsessile, 5-10 or 15 cm long, 0.6-1.5 or 2 cm wide, irregularly (spinulose)-denticulate, dark green above, paler to glaucescent beneath, glabrous; aments coetaneous to serotinous, 5-7 cm long, about 1 cm wide, 1-4 together, terminating leafy twigs; scales oblong or obovate, obtuse to sometimes erose, often 3-5-veined, yellowish-brown, glabrate, deciduous; stamens 2; capsules 4.5-6 mm long, glabrous; pedicels 0.3-0.6 mm long; style none; stigmas 0.3 mm long, divided. Mountain streambanks and bars from southern B. C. and Alta. south to S. Calif. and east to Utah and W. Wyo. and Mont. Common throughout Idaho.

6a. var. Bolanderiana (Rowlee) Schneider. Younger twigs, bud scales, stipules, petioles, and leaf-blades more or less densely gray-pubescent; flower scales more pubescent. Range of the species but more common northward. Idaho: from Idaho Co. northward.

6b. var. tenerrima (Henderson) Ball. Leaves narrowly linear, 4-10 or 14 cm long, 2-7 or 12 mm wide, usually more closely denticulate; pedicels longer, 0.5-1 mm long. Sparingly with the species. Idaho: southern, north to Valley Co.

7. S. lutea Nuttall. Yellow Willow. Shrub to 6 m tall; twigs yellow to yellow-gray, slender, glabrous; stipules ovate to lunate, to 10 mm long; leaves narrowly to broadly lanceolate, 4-10 or 15 cm

long, 1.5-3 or 5 cm wide, acute to acuminate at apex, rounded to subcordate at base, shallowly serrulate, yellowish-green, glaucous beneath, glabrous; aments coetaneous or slightly precocious, 2-5 cm long, subsessile on bracted peduncles; scales oblong, acutish, dark-brown, pubescent, persistent; stamens 2, filaments glabrous; capsules 4-6 mm long, glabrous; pedicels 1-2.5 mm long; styles 0.3-0.5 mm long; stigmas shorter. Streams and meadows to 7000 ft. elev., N. M. to Calif., north to Mack. and N. Alta. Common throughout Idaho.

7a. var. platyphylla Ball. Leaves proportionately broader, elliptical-oblongate to ovate, 4-8 cm by 1.5-3 or 4 cm; petioles slender and longer; pedicels longer, 2-3 or 4 mm long. With the species from N. Nev. and Wyo. northward. Idaho: common in the southern half, rarer northward to Nez Perce and Latah counties.

7b. var. Watsoni (Bebb) Jepson. Twigs shorter and more divaricate; yellowish-white (pipe-clay color); leaves smaller, 4-6 cm long, oblong, subentire; stipules smaller, rounder. Abundant in the Great Basin States, at somewhat higher elevations. Idaho: only in Custer Co., 20 mi. north of Challis (Hitchcock & Muhlick 8991).

8. S. mackenziana (Hooker) Barratt. Mackenzie Willow. Shrub or small tree to 6 m tall; twigs dark brown (seasonal yellowish), sometimes pubescent; stipules reniform to sublunate; leaves lanceolate, somewhat conic-lanceolate, or ovate-lanceolate, 6-10 or 14 cm long, 2-3.5 cm wide, short-acuminate at apex, rounded to cordate at base, glandular-serrulate, dark-green above, glaucous beneath, glabrous; aments coetaneous, 2.5-6 cm long, on short, small-leaved peduncles; scales oblongate, obtusish, dark brown, pubescent; persistent; stamens 2, filaments glabrous; capsules 4.5-5.5 mm long, glabrous; pedicels 2.5-4 mm long; styles about 0.5 mm long, stigmas shorter. Streams and meadows, to 5000 ft. elev., N. Utah to N. Calif., north to Mack. and N. Alta. Idaho: common in northern third, progressively

rarer southward.

9. S. Farrae Ball. Farr's Willow. Low shrub, 0.3-1.5 m tall; seasonal twigs yellowish, older reddish-brown, all puberulent; stipules wanting, or small, semicordate; leaves elliptic-oblongate to elliptic-oval, widest just above the middle, acute to abruptly acuminate at apex, rounded at base, 3-6 or 7.5 cm long, 1-2 cm wide, entire, yellowish-green above, glaucous beneath, glabrous; aments coetaneous, on short small-leaved peduncles, 1.5-3 cm long (often frosted); scales 1 mm long, dark brown, often glabrate; stamens 2, filaments glabrous; capsules 4-6 mm long, glabrous; pedicels 0.5-1.5 mm long; styles 0.4-0.8 mm long, stigmas short, divided. Mountain swamps and marshes, S. E. Wyo. (7-8000 ft.) to W. Mont. and Wallowa Mts., Oreg. (5-6000 ft), north to S. Alta. and B. C. (4-5000 ft.), common in its northern range. Idaho: Custer Co. only (W. Fk. Pahsimeroi R., north side of Lost R. Mts., elev. 10,000 ft., Hitchcock & Muhlick 11172).

10. S. pseudocordata (Andersson) Rydberg. Firm-Leaf Willow. Shrub to 4 m tall; twigs yellowish (young) to reddish-brown, somewhat pubescent to glabrous, shining; stipules narrowly ovate, to 10 mm long; leaves elliptic- or oblong-lanceolate to oblong-oval, acute to short-acuminate, rounded to cordate at base, 3-8 or 10 cm long, 1-3 cm wide, thickish, margins cartilaginous, glandular-serrulate, green above, pale green beneath, veiny and glabrous or younger thinly pubescent; aments coetaneous, 1.5-4 cm long, on 3-12 mm bracted peduncles; scales oblong-oblongate, 1-1.5 mm long, dark brown, acutish to truncate, glabrate outside; stamens 2, filaments glabrous; capsules 4-6 mm long, glabrous; pedicels 1-1.5 mm long; styles 0.3-0.7 mm long, stigmas short. Mountain streams, N. M. to Calif., north to Sask., Alaska, Alta., & B. C., to elev. of 10,000 ft. in south and lower northward. Idaho: common in southern half, north to Adams, Custer, and Valley counties.

10a. var. aequalis (Andersson) Ball. Leaves smaller, less veiny, entire, glabrous when mature; capsules to 7 mm long. Central part of species range. Idaho: extreme southeast corner (Bannock, Bear Lake, & Franklin counties., to 8000 ft. elev.).

11. S. monochroma Ball. Shrub to 3 m tall; twigs and budscales yellowish (young) to brown (old), glabrous, shining; stipules ovate to lunate; petioles slender, to 15 mm, sometimes puberulent; leaves broadly lanceolate, ovate, or oval, 4-8 or 10 cm long, 1.5-4 cm wide, acute to short-acuminate, rounded to subcordate at base, thin, shallowly crenulate-serrulate, green on both sides, glabrous when mature, veins slender; aments coetaneous, 2.5-6 cm long, lax, on 5-12 mm bracted peduncles; scales elliptic-ob lanceolate, about 1 mm long, dark brown, pubescent, persistent; stamens 2, filaments united below, glabrous; capsules 5-7 mm long, glabrous; pedicels 2-4 mm long; styles 0.3-0.7 mm long, stigmas shorter. Streambanks to 6000 ft. elev. W. Wyo., Utah, Nev., & Oreg., north to S. Alta. & B. C. Idaho: fairly common in southern half, occasional in Idaho, Nez Perce (type locality), and Latah counties; absent northward.

12. S. lasiolepis Benth. Arroyo Willow. Shrub (in Idaho) or small tree to 12 m tall; twigs yellowish (young) to dark brown (older), pubescent to glabrate; budscales short, obtuse; stipules none or ovate to roundish, 1-8 mm long; leaves narrowly to broadly oblanceolate, 6-10 or 15 cm long, 1-3 cm wide, acute to obtuse, narrowed to base, pubescent to glabrate, veiny, and glaucous beneath, subrevolute and nearly entire; aments precocious or subcoetaneous, 3-7 cm long, subsessile; scales obovate, rounded, 1 mm long, blackish, densely white-pubescent; stamens 2, filaments united below, glabrous; capsules 4-5.5 mm long, glabrous; pedicels 0.5-1.2 mm long; styles 0.4-0.8 mm long, sometimes bifid; stigmas short. Dry to moist watercourses, Lower and Upper Sonoran Zones, N. Mex. to Wash., east to N. M. and W. Idaho. Idaho: from Owyhee to Idaho counties.

297
12a. var. Sandbergii (Rydberg) Ball. More densely pubescent throughout; leaves oblanceolate to obovate-oval, thinly pubescent above, densely so beneath when mature. Northern part of the species range. Idaho: Ada and Elmore to Adams counties.

13. S. Wolfii Bebb. Wolf's Willow. Low shrub, 0.6-1 m tall; twigs yellowish (young) to chestnut-brown, leafy; stipules small or wanting; leaves oblanceolate, or rhombic-oblanceolate or elliptical, acute, rounded at base, 2-4.5 cm long, 8-13 mm wide, entire, dull green and silky-villous throughout, becoming glabrate; aments coetaneous, leafy-short-peduncled, 0.5-2.5 cm long, sometimes exceeded by peduncle leaves, dense, subglobose to oblong; scales obovate, blackish, sparsely villous; capsules 3.5-4.5 mm long, glabrous; pedicels about 0.5 mm long; styles 0.5-1 mm long, stigmas short. Moist locations, middle to high elevations, S. Colo. to Wyo., west to S. E. Idaho (Bear Lake and Clark counties).

13a. var. idahoensis Ball. Leaves larger, to 6.5 cm long and to 2 cm wide, more silvery-villous; aments to 3.5 cm long; capsules to 5 mm long, thinly to densely tomentose. Northern part of the species range, and west to Nev., Idaho, and N. E. Oreg. Idaho: central (Fremont, Blaine, and Custer counties, westward, and north to Idaho Co.).

14. S. Barclayi Andersson. Barclay Willow. Shrub to 4 m tall; twigs stoutish, younger yellow, older brown, all drying black, thinly pilose to glabrate; bud scales ovate, 4-8 mm long; stipules semicordate to ovate, 3-10 or 15 mm long; petioles stoutish; leaves broadly oblanceolate to elliptic-oval or obovate, acute to abruptly acuminate, narrowed to subcordate at base, 3-8 or 10 cm long, 1.5-3 or 4 cm wide, mostly crenate-serrulate, dark green and thinly pubescent to glabrate above, glaucescent-glaucous, veiny, and usually glabrous beneath; aments coetaneous, 2-6 or 8 cm long, 1.5 cm wide, on 1-3 cm leafy

peduncles; scales lanceolate, 2-3 mm long, blackish, villous; stamens 2, filaments glabrous; capsules 6-8 mm long, glabrous; pedicels 0.5-1 mm long; styles 1-1.5 mm long; stigmas 0.3-0.6 mm long. At middle elevations from Wyo. and Utah to Oreg., north to Alaska and Yukon. Idaho: sparingly in central, from Blaine and Elmore to Idaho and Shoshone counties.

15. S. commutata Bebb. Shrub to 3 m tall; twigs, bud scales, and stipules as in S. Barclayi; leaves elliptic-ob lanceolate or broadly lanceolate to mostly ovate-obovate, acute to abruptly cuspidate, narrowed to rounded at base, 3-7 or 10 cm long, 1.5-3 or 4 cm wide, minutely glandular-serrulate to subentire, green, obscurely veiny, and densely to thinly pubescent on both sides; aments coetaneous, 2-5 cm long, on 1-3 cm leafy peduncles; scales oblanceolate, obtuse, blackish, 1.5-2 mm long, villous; stamens 2, filaments glabrous; capsules 5-7 mm long, glabrous (see var. b); pedicels 1-2 mm long; styles 1-1.5 mm long; stigmas about 0.5 mm long. At middle elevations from Wyo. and Utah to N. Calif., north to S. Yukon and Alaska. Idaho: infrequent throughout.

15a. var. denudata Bebb. Leaves becoming glabrate to glabrous. With the species. Idaho: infrequent in Franklin, Owyhee, and Bonner-Boundary counties.

15b. var. puberula Bebb. Capsules thinly pubescent or puberulent. With the species but relatively rare. Idaho: sparingly in central to northern parts.

16. S. pseudementicola Ball. False Mountain Willow. Shrub to 6 mm tall; twigs divaricate, younger yellowish to reddish, pubescent to glabrous, older brownish, glabrous; bud scales 3-6 mm long; stipules semicordate to ovate, 5-10 or 15 mm long; leaves elliptic- or broadly oblong-ovate or ovate, acute to abruptly short-acuminate, rounded or

mostly subcordate at base, 4-7 or 10 cm long, 2-3.5 or 5 cm wide, coarsely crenate-serrate, often toothed at base, glabrous (or midrib pubescent above), glaucous beneath; aments coetaneous, 3-7 or 10 cm long, lax, sessile or subsessile; scales narrowly obovate, 1-1.5 mm long, dark brown, villous, persistent; stamens 2, filaments glabrous; capsules 6-8 mm long, glabrous; pedicels 1.5-2.5 mm long; styles 0.8-1.3 mm long; stigmas short. Streambanks and swampy plains, Humid, Transition and Canadian Zones, Rocky Mt. area and eastward; Colo. and S. D., north to N. Alta., Yukon, and Alaska, occasionally westward. Idaho: only from Clearwater Nat. For., elev. 6000 ft., Indian Graves Camp (Kirkwood 2006).

16a. var. padophylla (Rydberg) Ball. Aments on bracted peduncles to 1.5 cm long. With the species. Idaho: only from Josephine Lakes, Custer Co., and Clearwater Nat. For., Fish Lake Creek.

17. S. Tweedyi (Bebb) Ball. Tweedy's Willow. Shrub 0.5-4 m tall; twigs stout, divaricate, youngest light brown, older brownish-black, all more or less villous; bud scales 6-10 mm long, as the twigs; stipules broadly reniform to ovate, 0.5-1.5 cm long, clasping, denticulate; petioles 8-15 mm long, stoutish, hairy; leaves obovate and obtusish while expanding, mostly oval, oval-ovate, or broadly ovate when mature, acute or abruptly short-acute, rounded to cordate and toothed at base, 4-7 or 11 cm long, 2-4 or 5.5 cm wide, finely and sharply glandular-denticulate or the larger spinulose, glabrous or younger sparsely tomentose above, glaucescent-glaucous beneath; aments precocious to subcoetaneous, sessile on older twigs, 2-6 cm long, 1.5-2 cm wide, dense; scales elliptic-lanceolate to lanceolate, 2-3 mm long, acute, black, glabrate outside; stamens 2, filaments glabrous; capsules 7-8 mm long, glabrous (or occasionally pubescent apically); pedicels 0.5-1 mm long, stoutish; styles 1.5-2.5 mm long; stigmas 0.4-0.7 mm long. Mountain streams, springs, and bogs, at 6500-10,000 ft. N. Wyo. and

N. W. Mont. to Idaho and Okanogan Co., Wash. Idaho: Blaine, Custer, Idaho, and Lemhi counties, 7500-8500 ft. elev.

18a. S. pedicellaris Pursh, var. hypoglauca Fernald. Glaucous Bog Willow. Shrub 0.5-2 m tall, glabrous throughout; twigs slender, olive-brown to dark brown; stipules none; leaves narrowly to broadly elliptic-oblongate, to rarely narrowly-obovate, 2-5 or 8 cm long, 1-2 or 2.5 cm wide, mostly obtuse, narrowed at base, entire and somewhat revolute, firm, green above, glaucous beneath, finely net-veined on both sides; aments coetaneous, 1-3.5 cm long, 1-1.5 or 2 cm wide, on 1-4 cm leafy peduncles; scales oblongate to oval-obovate, 1-2 mm long, yellowish-brown, glabrate to glabrous, persistent; stamens 2, filaments glabrous; capsules narrow, 5-7 or 8 mm long, glabrous; pedicels 2-3.5 mm long; styles 0.1-0.2 mm long, stigmas very short. Wet meadows and bogs, N. J. to Que., west to E. Wash. and B. C.

Idaho: only Bonner Co., at Priest Lake (Piper).

Digitized by Hunt Institute for Botanical Documentation

19. S. nivalis Hooker. Snow Willow. Creeping shrub, 2-3 cm tall, from buried stems; buds tiny; petioles 2-7 mm long, yellowish; stipules none; leaves elliptic to oblong-obovate or rarely suborbicular, 7-12 mm long, 4-8 mm wide, mostly obtuse to retuse at apex, shining with veins somewhat depressed above, glaucous and strongly reticulate beneath, entire and somewhat revolute, glabrous (or long-villous beneath while unfolding); aments serotinous, 1 cm or less long, 3-10-flowered, oblong to globose, pseudo-terminal on short leafy twigs; scales oblong-obovate, 1 mm long, obtuse, yellowish-brown, glabrate, persistent; stamens 2, filaments short, glabrous; capsules ovate, 2.5-3.5 mm long, sessile, white-tomentose; styles 0.1-0.2 mm long, stigmas minute, divided. Moist alpine situations at high elevations, in the mountains from southern B. C. and Alta., south to Calif., Nev., Utah, and Colo. Idaho: only Custer Co., 10-11,300 ft. elev.

19a. var. saximontana (Rydberg) Schneider. Larger Snow Willow.

Plant larger, stouter; petioles 8-18 mm long; leaves 1.5-3.5 cm long, 0.8-2 cm wide; aments 1-2 cm long, 15-40-flowered. Range of the species, but south to N. M. Idaho: Blaine and Custer counties, 9000-11,500 ft. elev.

20a. S. anglorum Chamisso, var. antiplasta Schneider. Creeping shrub from subterranean stems; younger twigs yellowish and often somewhat pubescent, older brownish to purplish-black, glabrous, sometimes pruinose; buds similar; stipules none or very small; petioles 3-10 mm long, the younger sometimes pubescent; leaves elliptic-oblongate to broadly oblongate, the lower narrowly obovate, 2-3.5 or 4.5 cm long, 7-15 or 18 mm wide, acute, abruptly acute, or plicately acute or apiculate, narrowed to somewhat rounded at base, entire, glaucescent-glaucous and usually strongly veined beneath, glabrous (the young often hairy while unfolding); aments coetaneous to subserotinous, 1-6 cm long, to 1.4 cm wide, lax at base, on 2-5 cm ascending leafy peduncles; scales oblongate-obovate, 1.5-2 mm long, rounded or rarely erosa, dark brown, villous; stamens 2, filaments glabrous; capsules 5-7 mm long, sessile-subsessile, gray-tomentose; styles 1-1.5 mm long, sometimes divided; stigmas 0.4-0.6 mm long, more or less divided. (S. petrophila Rydberg). Alpine and arctic situations, to 8000-14,000 ft. elev. in western mountains. N. M. to Calif. and common northward to Alta. and B. C., less common north to the Arctic, and east to Baffin Island and Que. Idaho: Sawtooth Range in Blaine and Custer counties, at 8000 ft. elev. and up.

20b. var. araioclada Schneider. Leaves elliptic-oval, elliptic-obovate, or oval-obovate, 1.5-4 or 5 cm long, 1-2.5 or 3 cm wide, mostly obtuse to rounded, base broader, all more quickly glabrate; scales obovate-oval; capsules 5-7 or 8 mm long. Colo. to Oreg., north to Mont., Alta., and B. C., east in Canada to Que. and Baffin Island. Idaho: Blaine and Custer counties, 8000-10,000 ft. elev.

21. S. brachycarpa Nuttall. Alpine shrub 0.3-1.5 m tall, gray-pubescent; twigs slender, leafy, yellowish to reddish-brown, younger tomentose; bud scales 2-4 mm long; stipules none, or minute; petioles 3-7 mm long; leaves elliptic-oblong to somewhat oval (oblanceolate when base has not broadened), mostly abruptly acute, usually rounded or rarely subcordate at base, 2-3.5 or 5 cm long, 6-12 or 15 mm wide, entire, yellowish-green above, glaucescent beneath, somewhat veiny; aments coetaneous, numerous, often crowded, 0.5-2 cm long, subglobose to oblong, subsessile or on very short leafy-bracted peduncles; scales elliptic-oblanceolate or narrowly oval, about 1.5 mm long, light to dark brown; stamens 2, filaments pubescent at base; capsules 5-7 mm long, subsessile, whitish-tomentose; styles about 1 mm long, stigmas half as long. Wet places in mountains, 6000-12,000 ft. elev., N. M. to Utah and Oreg., north to Mont. and Alta., and B. C.; sparingly in Can. Arctic. Idaho: Teton and Custer counties, at 6000-8000 ft. elev.

21a. var. Sansoni Ball. Sanson's Willow. Smaller in every way; 1-7 dm tall; buds and petioles 1-2 mm long; leaves 1-2 or 2.5 cm long, 5-9 or 12 mm wide; aments globose, about 1 cm long, subsessile, bracted; capsules 4-6 mm long; styles 0.7-1 mm long. Northern part of the species range. Oreg. to B. C., east to Mont., Alta., and Que. Idaho: Caribou and Custer counties.

22. S. glaucops Andersson (or S. desertorum Richardson). Clumpy shrub, 0.4-1.5 or 2 m tall; twigs mostly short, stoutish, subdivaricate, younger chestnut and usually pubescent, older reddish-brown, glabrous, shining, epidermis separating as a gray paper membrane; stipules none, or broadly lanceolate, to 3 mm long; petioles 5-8 mm long, pubescent; leaves mostly elliptic-oblanceolate to narrowly oval or obovate, the upper sometimes elliptic-lanceolate to narrowly ovate, 3-5 or 6.5 cm by 1-1.8 or 2.5 cm, acute at apex, acute or larger rounded at base, entire to sparingly serrulate, glaucous and veiny beneath, more or less

203
pubescent to glabrate on both sides or becoming glabrous beneath; aments coetaneous, 1-5 cm (staminate 1-3) long, 1-1.5 cm wide, on 1-3 cm leafy peduncles; scales pale to brown, especially toward apex, oblong, villous, persistent; stamens 2, filaments pubescent below; capsules 6-7 or 8 mm long, gray-pubescent (ovaries white); pedicels stoutish, 0.8-1.5 mm long, pubescent; styles yellowish to brown, 0.7-1 mm long, entire to bifid; stigmas short. Commonly on stream and in meadows and sparingly in dry washes and on rocky slopes from N. M. to Mont. and Idaho, and far north in Canada, from 6000-12,000 ft. elev. in its southern range (commoner from 9000 ft. up). Idaho: Custer Co., forks of Pahsimeroi R., at 7600 ft. elev. (Arthur M. Cusick 18 (F. S. 59392); Bonneville Co., Big Basin at head of Waterfall Canyon (L. L. Richwine R3; F. S. 63229).

The form with smaller, narrower, more pubescent leaves has been named S. pseudolapponum von Seemen and S. wyomingensis Rydberg. The form with glabrate-glabrous leaves has been named S. nudescens Rydberg. The species also has been called S. glauca and var. glabrescens by some authors.

23. S. candida Fluegge. Hoary or Sage-leaf Willow. Low shrub 0.3-1 m tall, gray- to white-tomentose throughout; twigs yellowish to brown; buds stoutish; stipules lanceolate, 3-6 mm long, often deciduous; petioles 2-7 mm long; leaves linear-oblong to narrowly or sometimes broadly oblanceolate, 4-8 or 10 cm long, 0.7-1.5 or 2 cm wide, usually acute at both ends, thick, revolute, entire or rarely crenulate, dark green with sunken veins above, resembling sage leaves, rugose beneath; aments coetaneous, 1.5-5 cm long, 1-1.3 cm wide, on 1-2 cm leafy peduncles; scales obovate, brown, persistent; stamens 2, filaments glabrous; capsules 6-8 mm long, white-tomentose; pedicels 0.2-0.7 mm long; styles 1-1.5 mm long, partly divided, reddish; stigmas short. Cold bogs and marshes in glaciated areas from N. H. to Newf., west to S. D., Colo., Idaho, and B. C. Idaho: only Fremont Co., Henry's Lake (Christ 5534).

24. S. Lemmonii Bebb. Lemmon's Willow. Shrub to 5 m tall; younger twigs yellowish, thinly pubescent to glabrous, older brownish-black, subshining, sometimes pruinose; bud scales 4-10 mm long, as twigs; stipules minute and deciduous or lanceolate and to 8 mm long on vigorous shoots; petioles 3-10 mm long; leaves narrowly oblanceolate to oblanceolate or sub lanceolate, 3-8 or 11 cm long, 0.8-1.8 or 2.5 cm wide, acute to acuminate, mostly acute at base, entire or sparingly glandular-serrulate, deep green and shining above, glaucescent-glaucous and plane beneath; aments coetaneous (or subprecocious), 1-6 or 7 cm long, 1.3-2 cm wide, dense, on 0.5-1.5 cm leafy peduncles; scales narrowly obovate, obtuse to subtruncate, 1-1.5 mm long, brownish-black, thinly sericeous; persistent; stamens 2, filaments pilose below; capsules slender, 6-8 or 9 mm long, sericeous; pedicels 1-1.5 or 2 mm long, pubescent; styles 0.6-1.2 mm long, mostly entire; stigmas about 0.5 mm long, entire or bifid; gland ventral, filiform, 1 mm long. Mountain stream and ditches, 4000-10,000 ft. elev., from S. Calif. to Oreg., E. Nev., and Teton Co., Wyo. Idaho: sparingly in southern half (Owyhee, Blaine, Valley, and Fremont counties).

25. S. Drummondiana Barratt. Drummond Willow. Shrub to 4 m tall; twigs (younger) yellowish-brown, pubescent to puberulent, older dark or purplish brown, subshining, glabrous, never (?) pruinose; buds 2-7 or 10 mm long, as the twigs; stipules none, or minute, or 5-9 mm long on vigorous twigs; lanceolate-ovate, tomentose; petioles 5-10 mm long, pubescent to glabrous; leaves broadly elliptic-oblanceolate, oval, or oval-obovate, 3-7 or 10 cm long, 1-3 or 4 cm wide, obtuse to apiculate, acute to obtusish at base, revolute, entire or sparingly micro-serrulate, puberulent to glabrous with impressed veins above, densely silvery-tomentose beneath; aments precocious, sessile or subsessile and bracted at base, 1-5 or 6.5 cm long, 1-1.5 cm wide, dense; scales elliptic-oval, acutish, 1-2 mm long, black, villous; stamens 2, filaments glabrous; capsules 4-6 mm long, sericeous; pedicels 0.5-1.5

mm long; styles 0.8-1.2 mm long, entire; stigmas short. Moist locations in mountain areas, at 3000-7000 ft. elev., from central B. C. and Alta., south to E. Wash. and Oreg., N. Idaho, and N. W. Mont. Idaho: extreme northern part (Bonner, Kootenai, and Shoshone counties, rare).

25a. var. bella (Piper) Ball, ined. Twigs stoutish, often somewhat pruinose (as the buds); leaves narrower, lanceolate to oblong-lanceolate or oblong-oblancheolate, 4-7 or 12 cm long, 1-2.5 or 3.5 cm wide, yellowish midrib conspicuous beneath. Range of the species but more common near the international boundary, at 3000-5000 ft. elev. Idaho: northern third, common; one occurrence in Valley Co., near McCall.

25b. var. subcoerulea (Piper) Ball, ined. Twigs more slender, glabrate-glabrous, and mostly pruinose; leaves on flowering twigs narrowly oblong-oblancheolate and mostly acute, on summer shoots oblong-lanceolate, oblancheolate, or oval-lanceolate and acuminate, sparsely pubescent above, glaucescent and sericeous beneath, sometimes becoming glabrate. Northern B. C. and Alta., south to S. Calif. and east to N. M.; abundant in the Rocky Mt. System, sparingly throughout Idaho.

26. S. Coulteri Andersson. Coulter's Willow. Shrub to 4 m tall, silvery-tomentose or pubescent throughout; twigs long, stoutish, yellowish to dark brown; bud scales 4-10 mm long, as twigs; stipules subreniform to subovate; petioles stout, 0.5-1.5 or 2 cm long; leaves mostly elliptic-oblancheolate to elliptic-oval, sometimes elliptic-obovate, 4-8 or 12 cm long, 1.5-3 or 4.5 cm wide, acute to obtuse, cuneate to acute at base, thick, dark green with impressed veins above, densely white-tomentose and veiny beneath, revolute, entire or larger repand-crenulate; aments subprecocious to coetaneous, 3-8 or 10 cm long, to 1.2 cm wide, on 0.5-2 cm leafy peduncles; scales elliptic-oblancheolate, 1-2 mm long, brownish; stamens 1 (2 united), filaments

glabrous; capsules ovoid, 4-4.5 mm long, sessile-subsessile; styles 0.3-0.6 mm long, stigmas short. Streams, at low elevations, W. C. Calif. to southern B. C., N. Idaho, and N. W. Mont., rarer east of the Sierra Nevada-Cascade Range. Idaho: Idaho to Bonner counties, commoner northward.

27. S. sitchensis Sanson. Sitka Willow. Shrub or small tree to 7 m tall; vegetal organs all pubescent to glabrate-glabrous; twigs slender, younger yellowish-brown, older dark brown to black, dull, glabrate-glabrous; bud scales 2-7 mm long; stipules usually none, or minute to 5 mm long, broadly lanceolate; petioles 5-8 or 12 mm long; leaves broadly oblanceolate to mostly cuneate-obovate, 4-8 or 12 cm long, 1.5-3 or 4 cm wide, acute to obtuse, cuneate at base, thin, revolute, entire, dull green with subimpressed veins above, sericeous with raised veins beneath; aments precocious to coetaneous, 2-8 or 9 cm long, to 1.2 cm wide, on 1-2.5 cm leafy peduncles; scales elliptic-oblanceolate, scutish, 1-1.5 mm long, brown, thinly villous; stamen 1 (2 united), filament glabrous; capsule 4-5 or 6 mm long, sericeous; pedicels 0.3-0.6 mm long, pubescent; styles 0.3-0.6 mm long; stigmas short. Streams and moist places, at low elevations, from N. Calif. to Alaska, east to W. Mont. Idaho: common from Idaho Co., northward.

28. S. planifolia Pursh. (Parallel-veined Willow). Shrub 0.5-3 or 4 m tall; twigs divaricate, chestnut to light brown or brown, shining, glabrous; bud scales 3-7 or 10 mm long, as twigs; stipules none, or rarely minute; petioles 3-8 or 12 mm long, light brown, glabrous; leaves mostly narrowly to broadly elliptical, elliptic-oval, or elliptic-obovate, rarely sublanceolate, or cuneate-obovate, usually acutish at both ends, entire or sparsely crenulate, glabrous and plane above, glaucous with numerous parallel veins and subreticulate beneath, the younger thinly sericeous; aments precocious, 3-6 cm long, 1.3-1.7 cm wide, sessile to subsessile, dense; scales elliptical to oval, 1-2

mm long, black, villous; stamens 2, filaments glabrous; capsules 5-6 or 7 mm long, sessile to subsessile, sericeous; styles 0.6-1.2 or 1.5 mm long; stigmas 0.3-0.6 mm long, mostly entire. Labrador coast (to L. 58° N.) west to Hudson Bay, S. Mack., and C. Alta. and B. C., south to mountains of New Eng., N. Minn., and sparingly in N. W. States. Idaho: only Clearwater Co., Clearwater Nat. For., Crater Meadows, 6000 ft. elev. (S. phyllifolia of authors).

28a. var. monica (Bebb) Schneider. Ascending to erect shrub, 0.3-1 or 1.5 cm tall; leaves narrowly to broadly elliptic-oval, or the lower elliptic-obovate and acute at base, and upper elliptic-ovate with rounded base, 2-3.5 cm long, 0.8-1.5 or 2 cm wide, nearly entire; aments mostly shorter. The mountain form, 9000-12,000 ft. elev., from N. M. and Colo. to Calif., and northward to (sparingly) Mont., Alta., and B. C. Idaho: sparsely in west-central part; Custer and Valley counties, and Payette Nat. For. at 6000 ft.

28b. var. Nelsonii (Ball) Ball ~~ined.~~ Leaves narrowly oblanceolate or rarely narrowly lanceolate, 3-6 or 7 cm long, 8-15 mm wide, the larger shallowly glandular-crenate-serrate. With the species in the northern Rocky Mt. system, and eastward in Canada. Idaho: only Fremont Co., Henry's Lake (Rust 10180).

29a. S. discolor Muhl., var. prinoides (Pursh) Andersson. Western Pussy Willow. Shrub to 4 m tall, all vegetal organs glabrous, or occasionally thinly pubescent-puberulent when very young; twigs divaricate, younger yellowish, older reddish-brown to brown, mostly drying blackish; bud scales 4-8 or 10 mm long; stipules only on vigorous shoots, 3-8 or 12 mm long, lance-ovate, serrate; petioles 5-12 mm long; yellowish; leaves mostly narrowly to broadly elliptical or narrowly oval, 4-8 or 12 cm long, 1-3 or 4.5 cm wide, rarely oblong-lanceolate or lower obovate, mostly acute at both ends, mostly shallowly crenulate-serrulate, or the larger closely crenate-dentate, dark-green above, 233

306
glaucous and coarsely reticulate beneath; aments precocious, sessile-subsessile, 3-7 cm long, 1.5-2 cm wide, dense; scales elliptic-obovate to oval, 1.5-2.5 mm long, black, villous, persistent; stamens 2, filaments pubescent; capsules rostrate, 6-7 or 9 mm long, densely pubescent; pedicels 1-2 or 3 mm long, puberulent; styles 0.3-0.6 mm long, entire, equaled by the entire to bifid stigmas.

The western form, separated (doubtfully) by narrower and more serrulate-dentate leaves and shorter capsules. N. E. and E. Can., west to S. D. (Black Hills) and adjacent Nebr., thence to Wyo., Mont., Idaho, and southeastern B. C. and north to C. Alta. Idaho: Idaho Co. (Salmon R. 6 mi. south of Riggins, at 1200 ft. elev.) and Valley Co. (granite outcrops on west side of Payette Lake).

30. S. scouleriana Barratt. Scouler Willow. Shrub or small tree 3-10 m tall, or to 15 m in rich valleys; vegetal organs densely to thinly pubescent; twigs stoutish, divaricate, younger yellowish, older brown to blackish, glabrate; bud scales stout, 2-8 mm long, as twigs; stipules to 8 mm long, subreniform to semiovate; petioles 5-10 or 15 mm long; leaves mostly oblanceolate to obovate, 3-8 or 12 cm long, 1.5-3 or 4 cm wide, mostly abruptly acute at apex and cuneate at base, larger oblong-elliptical and acute, sub-revolute, entire (or shallowly crenate-serrulate), dull green above, glaucous and coarsely veiny beneath; aments precocious, 2-6 or 7.5 cm long, 1.5-2 cm wide, sessile or subsessile, dense; scales obovate, 1.5-2.5 mm long, black, villous; stamens 2, filaments glabrous; capsules rostrate, 7-9 mm long, gray-tomentose; pedicels 1-2 mm long; styles 0.2-0.5 mm long, entire; stigmas longer, 0.5-1 mm long, entire to bifid. Transition and Canadian Zones, from sea level to 8000 or 10,000 ft. elev. in southern mountains. Common on hillsides and one of first shrubs to appear on burned-over areas. N. M. to Calif. and north to Alaska and Yukon. Common to abundant throughout Idaho.

30a. var. coetanea Ball. Shrub to 5 m tall; aments subprecocious to coetaneous, on bracted peduncles 0.5-1.5 cm long, pistillate aments laxer. With the species in the central part of its range, from Utah to N. Calif., north to S. Alta., and B. C. Idaho: from Valley and Adams counties, northward.

30b. var. Thompsoni Ball. Shrub to 6 m tall; twigs slender, elongated, glabrate to glabrous; stipules wanting, to 2 mm long; petioles 5-10 mm long; leaves relatively small and narrow, mostly narrowly elliptical to oblanceolate or narrowly obovate, 3-7.5 cm long, 1-2.5 cm wide; aments precocious, 1-3 or 4 cm long, 1-1.4 cm wide, subsessile; capsules 6-7 mm long. Lower elevations from N. Calif. to southwest B. C., rarer eastward. Idaho: from Valley and Lemhi counties, north to Clearwater and Kootenai counties.

31. S. Bebbiana Sargent. Beaked or Bebb Willow. Shrub or small tree to 5 m tall; twigs mostly short, slender, divaricate, brownish, pubescent-glabrate; bud scales small; stipules none, or small, semi-ovate; petioles slender, 4-10 mm long; leaves narrowly elliptic and acute at both ends to broadly elliptic-oblanceolate or rhombic-obovate and abruptly short-acuminate, (upper sometimes ovate), 3-6 or 8 cm long, 1-2 or 3 cm wide, entire or somewhat undulate-crenate, dull green, pubescent, and veins subimpressed above, glaucescent, rugose, and pubescent beneath, sometimes glabrate in age; aments precocious to subcoetaneous, staminate subsessile, 1-2.5 cm long, pistillate 3-7 cm long, on 0.5-2 cm bracted or leafy peduncles, very lax in fruit; scales oblong-lanceolate, acute, 1-2 mm long, yellowish with reddish tips, pilose, persistent; stamens 2, filaments pubescent-glabrous; capsules rostrate, 6-9 or 10 mm long, puberulent; pedicels capillary, 2.5-4 or 5 mm long; styles 0.1-0.4 mm long; stigmas 0.3-0.5 mm long, entire to deeply bifid. In moist situations at rather low elevations, from N. J. west to S. D., south in the mountains to N. M. and west to

①

Willows of Idaho

Keys Based Primarily on Vegetative Characters

1. Leafblades, linear, lanceolate, or ovate-lanceolate, acute, acuminate, or long-acuminate at apex, acute, rounded, or subcordate at base; margins remotely denticulate,

or closely serrulate, or coarsely serrate or crenate-serrate

Cespitose shrubs, 2-4 m. high;

2. Blades narrowly to broadly linear, 7-15 times as long as wide, subentire to remotely denticulate, tapering at both ends, the base into an indefinite petiole; stamens 2, flower scales yellow. (Longifoliae)

Young
3. Twigs yellowish to brown, hairy; ovaries always and capsules usually more or less hairy (except 5a)

young branchlets
4. Aspect white; twigs, leaves, and capsules densely white-villous

4. *S. argophylla*

young often the
4. Aspect gray; twigs, leaves, and capsules finely gray-pubescent or puberulent

5. *S. exigua*

3. Aspect dark green; young twigs dark brown to blackish; glabrous; leaves and capsules glabrous

6. *S. melanopsis*

2. Blades as in 1 (above), excluding "linear" and "remotely denticulate"

3. Trees 5-15 m. high (No. 2 sometimes a shrub); twigs and petioles glabrous or pubescent; blades lanceolate, acuminate or long-acuminate, closely serrulate (Fruticosa)

4. Petioles stoutish, glandular above at apex; twigs stoutish; leaf vein-islets coarse (Incisae)

5. Blades glaucous beneath (when unfolded)

1. *S. lasiandra*

5. Blades green beneath

2. *S. caudata*

4. Petioles slender, not glandular; young twigs slender, yellow, drooping; ~~leaves~~ leaves glaucous beneath, with tiny vein-islets (Triandrae)

3. *S. amygdaloides*

Budscales several, imbricated; flower scales deeply cut or lacerate; ^{cup-shaped} stamens 10-30 (rarely 5) - *Populus*

Budscales one; flower scales entire, or rarely erose or shallowly toothed at apex; stamens 2, or ~~3-8~~ 3-8 (mostly 4-5) - ^{usually} *Salix*

Keys to *Salix* species, based primarily on floral characters:

1. Flower scales pale yellow, 2-3 mm. long, deciduous (in Nos. yellow but persistent); aments coetaneous to serotinous, leafy-peduncled; styles short, 0-0.4 mm. long - usually
2. Stamens 3-8 (~~mostly~~ 4-5); aments coetaneous, solitary; capsules glabrous (un Idaho species); pedicels 2-4 mm. long; styles 0.2-0.4 mm. long; blades lanceolate, ^{usually} closely serrulate, usually 4-5 times as long as wide, distinctly petioled - *long-acum*
3. Aments broadly oblong, 1.5-2 cm. wide; flower scales broad, often erose at apex; petioles stoutish, glandular above at apex; leaf vein-islets coarse (*Incidae*)
4. Blades glaucous beneath (when expanded) 1. *S. lasiandra*
4. Blades green beneath 2. *S. caudata*
3. Aments linear-oblong, 0.8-1.5 cm. wide; scales narrower, mostly entire; petioles slender, not glandular; leaf vein-islets tiny (*Triandrae*) 3. *S. amygdaloides*
2. Stamens 2; aments coetaneous to serotinous, 1-3 together, terminating leafy seasonal twigs; pedicels 0-1.5 mm. long; styles none (in Idaho species); blades linear or broadly linear, entire to remotely denticulate, 8-12 times as long as wide, the base tapering gradually into the indefinite petioles (*Longifoliae*)
3. Ovaries always (and capsules usually) hairy; scales lanceolate, hairy; young twigs yellow to brownish, mostly hairy -
4. Capsules white-pilose; 1-year twigs and blades white-pilose - 4. *S. argophylla*
4. Capsules gray-pubescent to glabrate or glabrous; twigs and blades finely gray-pubescent or puberulent 5. *S. exigua*
3. Ovaries and capsules glabrous; scales broad, veiny, glabrate; twigs dark-brown to blackish, glabrous 6. *S. melanopsis*
1. Flower scales brown to black (yellow in Nos.), persistent; aments solitary, sessile to leafy-peduncled; blade length from 3-4 times width to equalling width

1. S. lasiandra Benth.

Tree 5-15 m. high; twigs yellow

to red-brown, shining, glabrous; stipules reniform to semicordate, to ~~10~~ 10 mm.

long; petioles stoutish, 6-15 mm. long, glandular above at apex; blades lanceolate,

^{mostly long} acuminate, 6-20 (28) cm. long, 1.5-4 (6) cm. wide, acutish to rounded at base, shin-

ing above, glaucous beneath when unfolded, closely glandular-serrulate. Aments oco-

tanecous, leafy-pedunculate, staminate 2-6 by 1-1.3 cm., pistillate 2-10 by 1.2-1.8

cm., scales elliptical-oblanccolate, 2-3 ^{mm} cm. long, often shallowly dentate, pale

yellow, crinkly pilose, deciduous; capsules 5-7 mm. long, glabrous; pedicels 1.5-

2-5 mm. long, glabrous; styles and divided stigmas 0.2-0.4 mm. long; stamens 4-5,

pubescent at base.

Stream banks and valleys, Upper Sonoran and Transition zones,

Calif. to N.M., no. to B.C. and Alta. and sparingly to Alaska and Yukon. Northern

third of Idaho, ~~from~~ Clearwater River northward.

1a. Var. lancifolia (Anderss.) Bebb. Young twigs and petioles more or less
densely pubescent. With the species. Sparingly throughout Idaho, ^{in northern part of}
~~Washington Co. northward.~~ ^{from}

1b. Var. Abramsi Ball. Smaller in every way; leaves 5-11 mm. long, less ser-
rulate; petioles less glandular. ~~XX HYPERX HYPERICIFOLIA~~. Range of the species in the

U.S. but at higher elevations. Sparingly throughout Idaho.

as lancifolia

2. S. candata (Nutt.) Heller.

Few-stemmed shrub or small

tree, 2-5 m. high; twigs chestnut to reddish, ~~stoutish~~ more or less densely pubescent (as bud scales and petioles); stipules semicordate to reniform, small; petioles stoutish, glandular above at apex; blades lanceolate, long-acuminate, 6-15 (20) cm. long, 1.5-3 (4) cm. wide, closely glandular-serrulate, green on both sides; aments coetaneous, leafy-pedunculate, 2.5-5 cm. long, 1.5 cm. wide; flowers as in S. lasiandra. Stream banks and valleys to 9000 feet, SE. B.C. and SW. Alta. to NE. Calif. and N. Utah. Throughout Idaho.

2a. Var. Bryantiana Ball and Bracelin. Twigs, bud scales, and petioles glabrous. Range of the species and south to S. Calif. and N.M. less common ^{with} than the species in Idaho, ^{but} 

2b. Var. parvifolia Ball. Smaller shrub of higher elevations; blades 5-8 cm. long, 7-12 mm. wide. Sparingly with the species throughout but ~~less common~~. ^{Idaho}

Digitized by Hunt Institute for Botanical Documentation

3. S. amygdaloides Anderss. Small to large tree with 2-4 leaning trunks, 2-12 m. high; glabrous throughout (except rachis and scales); twigs slender, youngest yellow and drooping; petioles slender, 5-20 mm. long; blades lanceolate or broader, acutish to rounded at base, abruptly to gradually acuminate at apex, 5-10 (13) cm. long, 1.5-3 cm. wide, finely serrulate, yellowish-green above, glaucous or glaucescent beneath, with tiny vein-islets; aments coetaneous, leafy-pedunculate, lax, 3-8 cm. long; ^{0.8-1.5 cm. wide;} scales lanceolate or broader, crisp villous inside, pale yellow, deciduous; stamens 4-7, filaments pubescent below; capsules 3-5 mm. long; pedicels filiform, 2 mm. long; ^{0.3-0.5 mm. long;} styles and stigmas only 0.1-0.2 mm. long. ~~SE~~ ^{with} B.C. and so. east of the Cascades, to Nev. and east to Penn. and Quebec. Idaho: southern two-thirds, ^{with} north to ^{Big Bend}

Sandbar

4. S. argophylla Nutt. White-Leaf Willow. White shrub, 2-4 m. high; young twigs densely white-villous; blades linear to linear-oblongate, 4-6 (8) cm. long, 5-6 (12) mm. wide, acute at both ends, aristate at apex; entire to sparingly remote-denticulate, densely villous with shining white hairs; aments coetaneous, terminating leafy twigs, 1-3 together, 2-4 cm. long; scales lanceolate, acute, villous, deciduous; stamens 2; capsules lanceolate, 4 5-6 mm. long, densely white-villous; pedicel about 0.5 mm. long; stigmas sessile, divided, about 0.5 mm. long;

Wash. and Oreg., east of Cascade Mts., east to NW. Mont. and NE. Utah. Occasional throughout Idaho: *throughout, highly common*

5. S. exigua Nutt. Gray Sandbar Willow. Grayish shrub 2-4 m. high; twigs yellowish to light-brown, seasonal twigs (and young leaves) ^{often} densely white pubescent (and then mistaken for S. argophylla), 1-year twigs gray-pubescent; blades linear or linear-elliptical 3-7 (10) cm. long, 3-7 (10) mm. wide, acute at both ends, entire to sparingly denticulate, opaque, green and finely gray-pubescent or puberulent on both sides; 1-3 together, ^{2-6 cm. long} aments coetaneous or serotinous, terminating short leafy twigs, scales oblong-lanceolate, 2-3 mm. long, crinkly gray-pubescent, ^{deciduous} stamens 2; capsules 4.5-5.5 mm. long, densely to thinly pubescent when young, glabrate to glabrous in age, sessile or short-pedicelled; stigmas sessile, divided, 0.4-0.6 mm. long. Moist situations, Rocky Mtns. and westward, north to Alta. and B.C.; ^{abundant} throughout Idaho.

5a. Var. nevadensis (Watson) Schn. Yellowish-green desert shrub, more glabrate throughout (developing twigs and leaves silvery-pubescent), twigs yellow-brown; leaves narrowly linear to linear. 3-6 cm. long, 2-5 mm. wide, greenish-yellow, glabrate; Great Basin area. *Idaho, Blaine Co., Ticker, elev. 4500 ft.*

5b. Var. stenophylla (Rydb.) Schn. Leaves narrower, 2-5 mm. wide, silvery-pubescent; capsules silvery-pubescent, becoming glabrate, 5-7 mm. long; pedicels 0.5-1 mm. long.

Common, sparingly Southern form, Texas to Calif., north to Idaho and Wyo. *Fresno Co., St. An - thony?*

6. S. melanopsis Nutt. Dark Sandbar Willow. Dark-green shrub or small tree, 3-5 m. high; branches somewhat spreading, brown to black, ^{dwarfed} glabrous; leaves subsessile, linear to linear-elliptical, tapering at both ends, 5-10 (18) cm. long, 0.6-1.5 (2) cm. wide, irregularly (spinulose)-denticulate, dark green above, paler to glaucescent beneath, glabrous; aments coetaneous or serotinous, 5-7 cm. long, about 1 cm. wide, solitary or 2-4 together, terminating leafy twigs; scales oblong or obovate, obtuse to sometimes erose, often 3-5 veined, yellowish-brown, ^{glabrate} deciduous ^(?); stamens 2; capsules ovate-lanceolate, 4.5-6 mm. long, glabrous; pedicels 0.3-0.6 mm. long; stigma sessile, 0.3 mm. long, divided. Mountain stream banks and bars from so. B.C. and Alta. so. to so. Calif. and east to Utah and western Wyo. and Mont. Throughout Idaho.

6a. Var. Bolanderiana (Rowl.) Schn. Younger twigs, bud scales, stipules, petioles, and blades more or less densely gray-pubescent, and flower scales more pubescent. Range of the species, but more common northward. Idaho: northern half.

6a. Var. tenerrima (Henderson) Ball. Leaves narrowly linear, 4-9 (14) cm. long, 2-7 (12) mm. wide, usually more closely denticulate; pedicels longer, 0.5-1 mm. long. Sparingly, with the species. Idaho: southern half.

7. S. lutea Nutt. Yellow Willow. Caespitose shrub, 2-6 m. high; twigs yellow to yellow-gray, glabrous; stipules ovate to lunate, to 10 mm.; leaves narrowly to broadly lanceolate, 4-10 (20) cm. long, 1.5-3 (5) cm. wide, acute to acuminate at apex, rounded to rarely cordate at base, shallowly serrulate, yellowish green, glaucous beneath, glabrous; aments coetaneous or slightly precocious, 2-5 cm. long, subsessile on bracted peduncles; scales oblong, acutish, brown, crinkly pubescent, persistent; stamens 2, filaments glabrous, usually free; capsules 4-6 mm. long, glabrous; pedicels 1-2.5 mm. long; styles 0.3-0.5 mm. long, stigmas short, notched or entire. Streams and meadows to 7000 ft. elev., N.M. to Calif. and north to no. Alta and Mack. *Common throughout*

Idaho.

7a. S. lutea var. platyphylla Ball. Differs from the species in somewhat slender and longer ^{petioles} pedicels, proportionately broader leaves, elliptical-oblongate to ovate, 4-8 by 1.5-3 or 4 cm., and longer pedicels, 2-3 or 4 mm. long. With the species from northern Nevada and Wyoming northward. *Common in Idaho. Southern half, rare northward to Sugar Lake Co.*

7b. S. lutea var. Watsoni (Bebb) Jepson. Differs from the species in shorter and more divaricate, yellowish-white (pipe-clay) twigs; smaller, oblong, subentire leaves, 4-6 cm. long, and smaller, rounder stipules. Abundant in the Great Basin States, at slightly higher elevations than the species. Idaho: ^{only} Custer Co., 20 miles north of Challis.

Hitchcock + Muhlberg 8991 (CRB)

8. S. mackenziana (Hook.) Barr. Mackenzie Willow. Shrub or small tree, 2-6 m. high; twigs dark brown, (seasonal yellowish), sometimes pubescent; stipules reniform to subulate; leaves lanceolate, conc-lanceolate, or ovate-lanceolate, 2-3.5 cm. wide, 6-10 cm. long, short-acuminate at apex, rounded to cordate at base, glandular-serrulate, dark green above, glaucous beneath, glabrous; aments coetaneous, 2.5-6 cm. long, on short, small-leaved peduncles; scales oblanceolate, obtusish, brown, pubescent; stamens 2, filaments glabrous; capsules 4.5-5.5 mm. long, glabrous; pedicels 2.5-4 mm. long; styles about 0.5 mm. long, stigmas short, ?
Streams and meadows, to 5000 ft. elevation, Mackenzie and no. Alta. south to no. Calif. and east to northern Utah. ~~Common in northern part in~~ Northern ~~southern~~ of Idaho.

Common in northern third, progressively rarer southward

9. S. Farrae Ball. Farr's Willow. Low shrub, 0.3-1.5 m. high; seasonal twigs yellowish, older reddish brown, all puberulent; stipules wanting, or small, semicordate; leaves small, elliptic-oblanceolate to elliptic-oval, widest just above the middle, acute to abruptly acuminate at apex, rounded at base, 1-2 cm. wide, 3-6 (7.5) cm. long, entire, yellowish-green ^{above}, glaucous beneath, glabrous; aments coetaneous, on short, small-leaved peduncles, 1.5-3 cm. long (often frosted); scales dark brown, 1 mm. long, thinly pilose to glabrate; ~~stamens~~ ^{0.5} stamens 2, filaments glabrous, free; capsules 4-6 mm. long, glabrous; pedicels ^{0.5} 1-1.5 mm. long, glabrous; styles 0.4-0.8 mm. long, stigmas short, common in divided. Mountain swamps and marshes; southern B.C. and Alta. at 4-5000 ft. elev., ~~Walla Walla~~ ^{northern} Walla Mts. of Oreg. Glacier Nat. Park, Mont., elev. 5-6000 ft., Custer Co., Idaho, and Medicine Bow Mts., SE. Wyoming, 7-8000 ft. elev.

▲ north side Lost R. Mts., elev. 10,000 ft.,

W. J. K. Palmeri R.,

Hitchcock + Muhlisch
11172 (C&D)

10. *S. pseudocordata* (Anders.) Rydb. Firm-Leaf Willow. Cespitose shrub, 1-4 m. high; ^{fall}seasonal twigs yellowish and sometimes pubescent, older chestnut to reddish-brown, glabrous, shining; ^{narrowly}stipules semicordate to ovate, acute, to 10 mm. long; leaves lanceolate, elliptic- or oblong-lanceolate, or oval-oblong, acute to short-acuminate at apex, rounded to cordate at base, 1-3 cm. wide, 3-8 (10) cm. long, coriaceous ^{thick} (thick), margins cartilaginous, closely glandular-serrulate, green on both sides, darker above, veins ^{thick} prominent, glabrous or younger thinly pubescent; aments coetaneous, 1.5-4 cm. ~~long~~ long, on short (3-12 mm.), leafy-bracted peduncles; scales oblong-elliptical or oblanceolate, 1-1.5 mm. long, acutish to truncate, dark brown, glabrate outside, long-villous inside; stamens 2, filaments glabrous, free; capsules 4-6 mm. long, glabrous; pedicels 1-1.5 mm. long, often pubescent while young; styles 0.3-0.7 mm. long, stigmas short, entire or notched. Mountain streams, B.C. to Sask., south to Calif. and N.M., from elevation 6500 to 10,000 ft. in the south. ^{Common in South Valley to Valley of the Red River mountains throughout Idaho.}

10a. Var. *equalis* (Anders.) Ball. Leaves smaller, entire, less ~~reticulate~~ ^{veiny} veiny, glabrous when mature; capsules to 7 mm. long. Central part of species range; Idaho: Cub River, Franklin Co.; ^{Cache Valley, through Salmon Co. 8000 ft.} Shrub 1-3 m. high; twigs

(and bud scales) yellowish when young, becoming chestnut to brown with age, glabrous, shining; stipules ovate to lunate; petioles slender, to 15 mm., glabrous or puberulent; ^{leaves} blades broadly lanceolate, ovate, or oval, 1.5-4 cm. wide, 4-8 (10) cm. long, acute to short-acuminate at apex, rounded to subcordate at base, thin, translucent, shallowly crenulate-serrulate, green on both sides, glabrous or the young sometimes thinly pubescent, veins slender; aments coetaneous, lax, 2.5-6 cm. long, on short (5-12 mm.) leafy-bracted peduncles; scales elliptic-oblong to oblanceolate, acutish, about 1 mm. long, ^{dark} brown to black, crinkly pilose, persistent; stamens 2, filaments ^{below} united (in lower half), glabrous; capsules 5-7 mm. long, glabrous; pedicels slender, 2-4 mm. long, glabrous; style 0.3-0.7 mm. long, stigmas short, mostly notched; gland linear-clavate, 0.6-1.3 mm. long. Stream banks to 6000 feet elevation, southern B.C. and Alta. south to Oregon, Nev., ^{Utah} and Wyo. ^{Throughout} Northern two-thirds of Idaho; type locality: Hatwai Creek, Nez Perce Co. ^{Fairly common except in Co. north of Patah.}

12. S. lasiolepis Benth. Arroyo Willow. Shrub (in Idaho) or small tree, 2-12 m. tall; younger twigs yellowish, older dark brown, pubescent to glabrate; bud scales short, stout, obtuse; stigmas, if present, ovate to roundish, 1-5 (8) mm. long; leaves narrowly to broadly oblanceolate, 6-10 (15) cm. long, 1-2.5 (3.5) cm. wide, acute to obtuse at apex, narrowed to base, often shining above, pubescent to glabrate, veiny, and glaucous beneath, somewhat revolute and nearly entire; aments precocious or subcoetaneous, subsessile, 3-7 cm. long; scales obovate, rounded, about 1 mm. long, densely blackish, glabrous, white, pilose on both sides; stamens 2, filaments united in basal third; capsules 4-5.5 mm. long, glabrous; pedicels 0.5-1.2 mm. long; styles 0.4-0.8 mm. long, ^{below} ~~stigmas~~ sometimes bifid, stigmas short, usually notched.

Dry to moist watercourses, Lower and Upper Sonoran Zones, northern Mexico to Wash., east to western Idaho and N. Mex. Idaho, rare, Owyhee to Idaho Cos.

12a. Var. Sandbergii (Rydb.) Ball. More densely pubescent throughout; leaves lanceolate to obovate-oval, thinly gray-pubescent above, densely so beneath when mature.

Northern part of species range. West-central Idaho; type locality, Hatwai Creek, Nez Perce Co.

13. S. Wolfii Bebb. Wolf's Willow. Low shrub, 6-10 dm. tall; twigs yellowish (younger) to chestnut brown, leafy; ~~stems~~ stipules small or wanting; leaves oblanceolate or rhombic-oblanceolate, or elliptical, acute at apex, rounded at base, 2-4.5 cm. long, 8-13 mm. wide, entire, dull green and silky-villous throughout, becoming glabrate; aments coetaneous, leafy short-pedunculate, 0.5-2.5 cm. long, sometimes exceeded by peduncle leaves, dense, subglobose to oblong; scales blackish, obovate, sparsely (long-) villous; capsules 3.5-4.5 mm. long, greenish to reddish, glabrous; pedicels about 0.5 mm. long; styles 0.5-1 mm. long, stigmas short,

Moist locations, middle to high elevations, southern Colo. to Wyo., west to Ida. ^{eastern} ~~Mont. & Wyo.~~ (Clark Co.).

13a. Var. idahoensis Ball. Leaves larger, to 6 cm. long, more silvery-villous; aments to 3.5 cm. long; capsules to 5 mm. long, thinly to densely tomentose. Northern part of the species range, to Idaho and NE. Oreg. Central Idaho; type locality, Forks of Wood River, elev. 6000 ft. (1800 m.)

14. S. Barclayi Anderss. Barclay Willow. Shrub 1-4 m. tall; twigs stoutish, younger yellow [in nature], older darker, all drying black, thinly long-pubescent to ^{pilose} glabrate; budscales large, ovate, 4-8 mm. long; stipules semicordate to ovate, 3-10 (15) mm. long; petioles stoutish; leaves broadly oblanceolate to elliptic-oval or obovate, acute to abruptly acuminate at apex, narrowed to rounded or subcordate at base, 1.5-3 (4) cm. wide, 3-8 (10) cm. long, ^{mostly} crenate-serrulate to sometimes subentire, thinly pubescent to glabrate and dark green above, veiny, glaucescent to glaucous, and usually glabrous beneath; aments coetaneous or slightly precocious, 2-6 (8) cm. long, 1.5 cm. wide, on leafy peduncles 1-3 cm. long; scales lanceolate, acutish, 2-3.5 mm. long, ^{grayish-} brown, ^{blackish} drying black, long-villous; stamens 2, filaments glabrous, free; capsules 5-8 mm. long, glabrous, pedicels 0.5-1 mm. long; styles 1-1.5 (2) mm. long, entire or occasionally bifid, stigmas 0.3-0.6 mm. long, divided? ^{Utah,} ^{central}

Alaska and Yukon, south to Ore. and Wyo., at middle elevations. Sparingly in Idaho at 4000-8000 ft.

15. S. commutata Bebb. ^{Sparingly} Shrub, 1-3 m. tall; twigs, budscales, and stipules as in S. Barclayi; leaves elliptical to broadly lanceolate or ^{mostly} obovate-oval, acute to abruptly cuspidate at apex, narrowed to rounded or cordate at base, 1.5-3 (4) cm. wide, 3-7 or 8 cm. long, minutely glandular-serrulate to subentire, green, obscurely reticulate, and densely to thinly pubescent on both sides; aments coetaneous, 2-5 cm. long, on leafy peduncles 1-3 cm. long; scales oblanceolate, obtuse, brown to black, 1.5-2 mm. long, long-villous; stamens 2, filaments glabrous, free; capsules 5-7 mm. long, glabrous; (see var.); pedicels 1.5 or 2 mm. long, ¹⁻² somewhat hairy; styles 1-1.5 mm. long, entire; stigmas about 0.5 mm. long, entire. ^{Utah,} ^{throughout}

Southern Alaska and Yukon south to northern Calif. and Wyo. Infrequent in Idaho.

15a. Var. demidata Bebb. Leaves becoming glabrate to glabrous; With the species; ~~in the central part of the range~~ infrequent in Idaho.

15b. Var. puberula Bebb. Capsules thinly pubescent or puberulous. ^{ent} With the species but relatively rare. ^{West} ^{Central} Idaho.

Osmitt from *Wahs*

16. S. Eastwoodiae Ckll. Eastwood Willow. Low mountain shrub, 0.5-2 m. tall; twigs short, divaricate, brownish-black, younger gray-tomentose; buds short, obtuse, hairy; stipules ^{to ovate} ~~ovate~~-lanceolate, acute; leaves lanceolate or narrowly elliptical and acute at both ends to obovate with acute or cuspidate apex and rounded base, 3-6 cm. long, 1-2 cm. wide, glandular or glandular-serrulate, green and more or less densely gray-tomentose on both sides, sometimes glabrate in age; aments coetaneous, 1-5 cm. long, dense. on leafy peduncles 1-2 cm. long; scales lanceolate to ovate-lanceolate, acute or obtusish, dark brown, villous; stamens 2, filaments hairy at base, free; capsules 5-6.5 mm. long, gray-tomentose; pedicels 0.7-1 mm. long, pubescent; style 1-1.5 mm. long, entire, stigmas short, entire. ^{or notched divaricate}

Mountain lakes and streams, often in rocky soil; 5000-10,000 feet elevation. Sierra Nevada-Cascade system, Calif. and western Nev. to B.C., sporadically in the Wahsatch system, in ~~Iron Co.~~ Utah, and Valley Co., Idaho. ?

Digitized by *Ellip albano* Institute for Botanical Documentation

lvs ellip lance to narrowly oval, ellip ovate + cordate at base

Beholder 2-5-7 (10) pink

17. S. monticola Bebb.

Shrub 3-6 m. tall; twigs stout-

ish, divaricate, younger yellowish, older darker to red-brown, all drying blackish, usually glabrous; buds acute, to 1 mm. cm. long; stipules large, ovate or semicordate, acute; leaves lanceolate, oblong-lanceolate, or elliptic-oval, acute or short-acuminate at apex, narrowed to rounded or subcordate at base, 5-7 (10) cm. long, 2-3 (4) cm. wide, crenate-serrulate, dark green and glabrous or thinly pubescent above, glaucescent to glaucous, veiny, and glabrous beneath; aments precocious or coetaneous, dense, 2-6 cm. long, 1-1.5 cm. wide, sessile or subsessile (bracted peduncles 4-6 mm. long); scales obovate-oval, obtuse, dark brown, long-villous; stamens 2, filaments capsules 5-7 mm. long, sessile or subsessile, reddish, glabrous; styles 1-1.5 mm. long, entire, stigmas short, bifid or entire. Common in streams and meadows, at middle elevations (5000-9000 feet), Rocky Mtns., N.M. to Alta., occasional westward. Idaho: Clearwater Forest, Fish Lake Creek, elev. 5000 feet. *Probably not in Idaho*

18. S. pseudomonticola Ball. False Mountain Willow. Shrub 2-6 m. ~~high~~ tall; twigs divaricate, the younger yellowish or reddish, ~~the older~~ ^{dark to} glabrous ^{or more or less pubescent}, the older ~~reddish~~ brownish, glabrous; bud scales ovate-lanceolate, acutish, 3-6 mm. long; stipules ovate to semicordate, 5-10 (15) mm. long, glabrous; leaves elliptic-ovate, broadly oblong-ovate, or ovate, acute or abruptly short-acuminate at apex, rounded to mostly subcordate or cordate at base, 4-7 (10) cm. long, 2-3.5 (5) cm. wide, coarsely crenate-serrate, often toothed at base, glabrous or midrib pubescent above, glaucescent to glaucous and glabrous beneath; aments coetaneous, 2.5-7 (10) cm. long, lax, sessile or subsessile ^{on} (3-6 mm. bracted peduncles), scales obovate or elliptical, obtusish, 1-1.5 mm. long, brown, white-villous; stamens 2, filaments glabrous, free; capsules 6-8 mm. long, glabrous; pedicels 1.5-2.5 mm. long, glabrous; styles 0.8-1.3 mm. long, entire, stigmas short, notched. Stream banks and swampy plains, humid Transition and Canadian Zones, Rocky Mtn. area and eastward, Colo. and S.D. north to northern Alta., and Alaska; occasional westward. Idaho: Clearwater Forest, 5000 ft. elevation. *Central Idaho, rare.*

19a. Var paophylla (Rydb.) Ball. Aments on short, bracted peduncles cm. long
With the species. Idaho: Custer Co. Josephus Lakes,

17.
30.

S. Tweedyi (Bebb) Ball. Tweedy Willow. Shrub 0.5-3.5 m. tall; twigs stout, divaricate, youngest light brown, older dark brown to blackish, all more or less gray-pubescent villous; buds 6-10 mm. long, acute, colored and clothed as the twigs; stipules ^{large,} broadly reniform to ovate, 0.5-1.5 cm. long, clasping, glandular-denticulate and obtusish; petioles 8-15 mm. long, hairy; leaves (mostly ^{broadly} obovate ^{and obtusish} wile expanding), mostly oval, oval-ovate or ^{broadly} ovate, acute or abruptly short-acute at apex, rounded to cordate and toothed at base, 4-7 (11) cm. long, 2-4 (5.5) cm. wide, finely and sharply glandular-denticulate or the larger irregularly spinulose-denticulate, glabrous throughout of the younger sparsely gray-tomentose above, ^{above} green ~~below~~, paler, glaucouscent, or glaucous beneath; aments precocious to subcoetaneous, sessile on older twigs, stout, dense, 2-6 cm. long, 1.5-2 cm. wide; scales elliptic-lanceolate to lanceolate, acute, black, 2-3 mm. long, glabrate outside, ^{persistent;} villous inside; stamens 2, filaments glabrous, free; capsules 7-8 mm. long, glabrous (or occasionally finely pubescent at apex); pedicels 0.5-1 mm. long, stoutish; styles 1.5-2.5 mm. long, slender, stigmas 0.4-0.7 mm. long, bifid to divided; gland 1 mm. long.

Mountain streams, springs, and bogs, elevation 2000-3000 m. (6500-10,000 ft); relatively rare; Big Horn and Teton Mtns. of Wyo., north to Glacier National Park, Mont., and west to central Idaho (Blaine, Ouster, Idaho, and Cos.) and ^a Tiffany Peaks, Okanogan Co. Wash.

18a.

20. S. pedicellaris Pursh, var. hypoglauca Fern. Glaucous Bog Willow. Shrub, 0.5-2 m. tall; glabrous throughout; twigs slender, olive-brown to dark brown; stipules none; leaves/elliptic-oblongate to ~~oblong-ovate~~ ^{narrowly} rarely ~~oblong-ovate~~ ^{obovate}, 2-5 (8) cm. long, 1-2 (2.5) cm. wide, acutish to mostly obtuse at apex, narrowed at base, entire and somewhat revolute, firm, green above, glaucous beneath, finely net-veined on both surfaces; aments co~~ex~~aneous, 1-3.5 cm. long, 1-1.5 (2) cm. wide, ^{1-4 cm.} on leafy-bracted peduncles 1-4 (5) cm. long; scales oblongate to (obovate-oval) 1-2 mm. long, obtuse or acutish, yellowish-brown, glabrate to glabrous; persistent; stamens 2, filaments glabrous, free; capsules narrow, 5-7 (8) mm. long, ^{pedicels sessile, 2-3 or 4 mm. long} glabrous; styles 0.1-0.2 mm. long, ^{stigma} stigmas very short, entire or bifid; gland about 1 mm. long.

Wet meadows and sphagnum bogs, N.J. to Que., west to eastern Wash. and B.C. Idaho: Bonner Co., Priest Lake (Piper).

19.

21. S. nivalis Hooker. Snow Willow. Creeping shrub, 2-3 cm. tall, from buried stems; buds tiny; petioles 2-7 mm. long, yellowish; stipules none; leaves elliptic to oblong-obovate or rarely suborbicular, 7-12 mm. long, 4-8 mm. wide, mostly obtuse to retuse at apex, shining with somewhat depressed veins above, glaucous and strongly reticulate beneath, entire and somewhat revolute, glabrous (or somewhat long-villous beneath while unfolding); aments serotinous, 1 cm. or less long, 3-10-flowered, oblong to globose, pseudo-terminal on short leafy twigs; scales oblong-obovate, ^{1 mm. long} obtuse, yellowish-brown, glabrate, persistent; stamens 2, filaments short, glabrous, free; capsules ovate, sessile, 2.5-3.5 mm. long, white-tomentose; styles 0.1-0.2 mm. long, stigmas minute, divided.

Moist alpine situations, at high elevations, in the mountains from southern B.C. and Alta. south to Calif., Nev. Utah, and Colo. Idaho: Custer Co., 10, -11,300 ft. elev.

19a.

21a. Var. saximontana (Rydb.) Schn. Larger Snow W. Plant larger, stouter; petioles 8-18 mm. long; leaves 1.5-3.5 cm. long, 0.8-2 cm. wide; aments 1-2 cm. long, 15-40 flowered. Range of the species, ^{but} south to N.M. Idaho: Elaine and Custer Cos., 9000-11,500 ft. elev.

22a. Salix anglorum Cham., var. antiplasta Schn.

Creeping shrub from subterranean stems, younger twigs yellowish and often somewhat hairy, older brownish to purplish black, sometimes pruinose, glabrous; buds colored as the twigs; stipules none, or very small; petioles 3-10 mm. long, the younger sometimes pubescent; leaves elliptic-oblongate to narrowly or broadly oblongate, the lower ~~narrowly~~ narrowly obovate, 2-3.5 (4.5) cm. long, 0.7-1.5 (1.8) cm. wide, acute to abruptly acute, plicately acute, or plicately apiculate ~~apex~~, or sometimes obtusish at apex, acute to somewhat rounded at base, firm, practically entire, green above, glaucescent to glaucous and rather strongly veined and somewhat reticulate beneath, the young often somewhat pubescent above and pilose beneath while developing, the margins sometimes remaining ciliate; aments coetaneous to somewhat serotinous, lax at base and sometimes throughout, 1.5-5 (6) cm. long, 1.2-1.4 cm. wide, on erect or ascending leafy peduncles 2-5 cm. long, scales oblongate to narrowly obovate or obovate-oval, 1.5-2 mm. long, rarely (sometimes) erose) or sometimes acutish at apex, brown to dark brown, villous; stamens 2, filaments glabrous, free; capsules 5-6.5, rarely 7, mm. long, sessile or subsessile, gray-tomentose; styles 1-1.5 (1.5) mm. long, sometimes bifid, stigmas 0.4-0.6 mm. long, more or less divided; (S. petrophila Rydb.).

Alpine situations at 8000-14000 ft. elevation in the West; N.M. to Calif. and north to B.C. and Alta., eastward in Canada to Baffin Island and Que. Idaho: Blaine and Custer Cos., 8000 ft. and up.

22b. Var. araioclada Schn. Differs from var. antiplasta in leaves elliptic-oval, elliptic-obovate, or oval-obovate, 1.5-4 (5) cm. long, 1-2.4 (2.9) cm. wide, mostly obtuse to rounded, rarely retuse, base broader, all more quickly glabrate; scales obovate-oval; capsules 5-7 (8) mm. long. Colo. to Oreg., north to Mont., Alta., and B.C.; east in Canada to Baffin Id. and southern Quebec. Idaho: Blaine and Custer Cos., 8000-10000 ft. elev.

20. S. brachycarpa Nutt.

Alpine shrub 0.3-1.5 m. tall;

twigs slender, leafy, yellowish to reddish-brown, the younger gray-tomentose; buds 2-4 mm. long, narrowly ovate, pubescent; stipules none, or minute; petioles short, 3-7 mm. long, pubescent; blades elliptic-oblong to somewhat oval, or elliptic-oblancoelate when base fails to broaden, obtusish or abruptly acute at apex, acutish to usually rounded or occasionally subcordate at base, 2-3.5 (5) cm. long, 6-12 (15) mm. wide, entire, light green and gray pubescent above, pale green to glaucescent and gray-pubescent beneath, sometimes becoming glabrate;

aments coetaneous, numerous, often crowded, 0.5-2 cm. long, subglobose to oblong, subsessile or on very short leafy-bracted peduncles; scales elliptical-oblancoelate or obtuse, narrowly oval, about 1.5 mm. long, light brown to brownish-black, ~~whitish~~ gray-pubescent; stamens 2, filaments pubescent at base, ; capsules ovate-lanceolate, subsessile, 5-7 mm. long, densely whitish-tomentose; styles about 1 mm. long, stigmas about 0.5 mm. long, bifid to divided. gland

Wet places in mountain, 6000-12,000 feet elevation, N.M. to Mont. and Alta. ^{and arctic Canada,} west to Utah, Oreg., and B.C. Central Idaho, rare. ~~Idaho and Custer Cos.~~

21a. Var. Sansonii Ball. Sanson's Willow. Smaller in every way; 1-7 dm. tall; buds and petioles 1-2 mm. long; leaves 1-2 or 2.5 cm. long, 5-9 or 12 mm. wide; aments globose, about 1 cm. long, subsessile and bracted at base; capsules 4-6 mm. long, styles 0.7-1 mm. long. Northern part of the species range; Oreg. to B.C., east to Mont., Alta., and Quebec. Idaho: Caribou and Custer Cos.

22 = *deuterium* or *glauco*

Idaho mss

22. *S. glaucops* Andersson (or *S. desertorum* Richardson). ^{clumpy} ~~Low~~ shrub 0.3-1.5 or 2 m. tall; twigs mostly short, stoutish, subdivaricate, younger chestnut brown and usually ~~densely~~ ^{summer} pubescent, older reddish brown, glabrous, shining, the epidermis ~~partly~~ separating in spring as ^{at} gray papery membrane; stipules none, or minute, lanceolate to ovate; ^{to 3 mm} petioles yellowish-brown, 5-10 ^{8 or} mm. long, pubescent; leaves mostly elliptic-ob lanceolate to narrowly oval or obovate, the later (upper) sometimes elliptic-lanceolate to narrowly ovate, 3-6 or 7 cm. long, 1-1.7 or 2.5 cm. wide, acute to the narrower short-acuminate at apex, acute or the larger rounded at base, entire or sometimes sparingly serrulate, dark green above, glaucous and veiny beneath, more or less pubescent to glabrate on both sides or becoming glabrous beneath;

aments coetaneous, 1-5 (staminate 1-3) cm. long, 1-1.5 cm. wide, rather lax, on 1-3-cm. leafy peduncles; scales greenish but becoming brown to dark brown, especially apically, oblong, villous; stamens 2, filaments pubescent below; capsules 6-7 or 8 mm. long, gray-pubescent (ovaries white); pedicels stout, 0.6-1.5 mm. long, pubescent; styles yellowish to brown, 0.7-1 mm. long, entire to bifid; stigmas

Common on streams and in meadows and sparingly in dry washes and on rocky slopes from N.M. to Mont. and Idaho, and far north in Canada, at 6000-12,000 ft. elev. in the southern ^(common from 9000 ft.) its range. (Idaho: (Custer Co., forks of Pahsimeroi River at 7600 ft. elev. Arthur M. Casick 18 in 1928 (F.S. 59,392); ~~Bonnerville~~ ^{the smaller} Co. (10 in. high; Tragic Nat. For.,

The form with narrower, more pubescent leaves has been named *S. pseudolappinum* ~~*S. Seemannii* Rydberg,~~ von Seemen, and *S. wyomingensis* Rydberg. The form with more glabrate leaves has been named *S. nivescens* Rydberg. Called *S. glauca* L., and var. *glabrescens* Andersson by some authors).

Big Basin, head of waterfall Canon, Richwine, L.L., R 3 in 1929 F.S. 63229)

219
119
129
0219

(gray-pubes to white toment)

23. S. candida Fluegge. Hoary or Sage-leaf Willow. Low shrub 0.3-1 m. tall; twigs yellowish to brown, the youngest densely white-tomentose, the older less so; buds ~~about~~ ^{about} ~~white~~ ^{white}; stipules lanceolate, 3-6 mm. long, acute, glandular, tomentose, often deciduous; petioles 2-7 mm. long, tomentose; leaves linear-oblong to narrowly or occasionally broadly oblanceolate, 3.5-8 (10) cm. long, 0.7-1.5 (2) cm. wide, usually acute at both ends, thick, revolute, entire (or rarely glandular-cremulate), dark green, dull, and thinly gray-tomentose above, with sunken veins, resembling sage leaves, densely white- or gray-tomentose and rugose beneath; anthers coetaneous, 1.5-5 cm. long, 1-1.3 cm. wide, on short leafy peduncles 1-2 cm. long; scales obovate, brown, persistent, thinly white-pilose; stamens 2, filaments glabrous, capsules 6-8 mm. long, white-tomentose; pedicels short 0.2-0.7 mm; styles 1-1.5 mm. long, entire or partly divided, reddish or orange, stigmas short, notched; gland

and marshes

Cold bogs in glaciated areas from Newfoundland to N.J. and west to S.D., Colo., Idaho, and B.C. Idaho, Fremont Co. Henry's Fork

24, S. Lemmoni Bebb. Lemmon's Willow. Shrub 2-5 m. tall; younger twigs yellowish, thinly pubescent to glabrous, the older brownish black, somewhat shining, sometimes pruinose; buds ovoid-lanceolate, 4-10 mm. long, colored as the twigs; stipules none, or minute and ^{decid}caducous, or lanceolate or broader and to 6 or 8 mm. long on vigorous shoots; petioles 3-10 mm. long, younger often thinly pubescent; leaves narrowly oblanceolate to oblanceolate or suboblanceolate, 3-8 (11) cm. long, 0.8-1.8 (2.5) cm. wide, acute to acuminate at apex, mostly acute at base, entire or sparingly glandular-serulate, deep green and shining above, glaucescent to glaucous and plane beneath, aments coetaneous (or subprecocious), 1-6 (7) cm. long, 1.3-2 cm. wide, dense, on short leafy peduncles 0.5-1.5 cm. long; scales narrowly obovate, obtuse to subtruncate, 1-1.5 mm. long, brownish-black, thinly silky-pilose, persistent; stamens 2, filaments pilose below, usually free; capsules slender, 6-8 (9) mm. long, silvery pubescent; pedicels 1-1.5 (2) mm. long, pubescent; styles 0.6-1 (1.2) mm. long, mostly entire, stigmas about 0.5 mm. long, entire or bifid; gland filiform, about 1 mm. long, ventral.

Mountain streams and ditches, 4000-10,000 feet elevation, southern Calif. to Oregon, eastern Nev., ^{and Idaho} south-central Idaho (Blaine, Valley, ^{Fremont} and Payette Cos.), and Teton Co., Wyoming.

change order to West-East

Dwyker, Blaine, Valley & Fremont Cos

25. S. Drummondiana Barratt. Drummond Willow. Shrub 1-4 m. tall; twigs ascending, younger yellowish to light brown, pubescent to puberulent, older ~~dark~~ brown to purplish brown, ^{and -} more or less shining, glabrous, apparently not pruinose; buds 2-7 (10) mm. long, puberulent to glabrous, colored as the twigs; stipules ^{none,} wanting or minute, or 5-9 mm. long on vigorous ^{- ovate;} sterile shoots, silvery tomentose beneath, lanceolate to semi-ovate, acute; petioles 5-10 mm. long, younger pubescent, older glabrous; leaves (oblanceolate while developing) elliptical, broadly elliptic-oblong, oval, or oval-obovate, 3-7 (10) cm. long, 1-3 (4) cm. wide, obtuse and mostly plicately apiculate at apex, acute to obtusish at base, revolute and entire or sparingly glandular micro-serulate, green, somewhat shining, puberulent to glabrous, and with impressed veins above, densely silvery white-tomentose beneath; aments precocious (or subcoetaneous), sessile or subsessile and bracted at base, 1-5 (6.5) cm. long, 1-1.5 cm. wide, dense, often injured by cold; scales elliptical to narrowly oval, or somewhat broader at apex, mostly acutish, 1-1.5 (2) mm. long, black, long-villous; stamens 2, filaments glabrous, free; capsules 4-6 mm. long, silvery-pubescent; pedicels 0.5-1.5 mm. long; styles 0.8-1.2 mm. long, entire, stigmas short, thick, bifid; gland ^{central}

Typical locations in mountains, 3000-7000 feet elevation, ~~central~~ B.C. and Alta, eastern Wash. & Oreg., south to northern Idaho and NW. Mont. Idaho: Bonner ^{Kootenai} and Shoshone Cos.

25a. Var. bella (Piper) Ball. Twigs stoutish, often somewhat pruinose, as are the buds; leaves ^{narrower} lanceolate to oblong-lanceolate or oblong-oblanceolate, 1-2 (3.5) cm. wide, 4-7 (12) cm. long, the yellowish midrib conspicuous beneath.

Range of the species but more common near the international boundary, at 3000-5000 feet elevation. : Common northward, Idaho/south to Valley Co.

25b. Var. subcoerulea (Piper) Ball. Bluish Willow. Twigs more slender, ~~and~~ glabrous, and mostly pruinose; leaves on flowering twigs/oblanceolate and mostly acute, on seasonal shoots oblong-lanceolate, ~~oblanceolate~~, or oval-lanceolate and acuminate, sparsely pubescent above, paler and more or less densely silvery short-pubescent beneath, sometimes becoming glabrate.

Northern Alta. and B.C., south to southern Calif. and east to N.M., abundant in the Rocky Mountain System. Sparingly throughout Idaho.

26 S. Coulteri Andersson. Coulter Willow. Shrub 2-4 m. tall; ^{lomentose pub throughout} twigs long, straight, ^{to older darkened} stoutish, the younger yellowish, ~~lomentose~~ brown, ~~and~~ ^{older darkened} densely tomentose to pubescent; buds stout, 4-8 (10) mm. long, brown, pubescent; stipules subreniform and obtuse to subovate and acutish, pubescent; petioles stout, 0.5-1.5 (2) cm. long, pubescent; leaves mostly elliptic-oblancoelate to elliptic-oval, sometimes elliptic-obovate, 4-8 (12) cm. long, 1.5-3 (4.5) cm. wide, acute to obtuse at apex, ^{thick,} cuneate to acute at base, dark green and pubescent to glabrate, with impressed veins, above, densely white-tomentose with raised secondary ^{veins} veins beneath, revolute, entire or the larger glandular repand-cremulate; aments subprecocious to coetaneous, slender, 3-8 (10) cm. long, 1 ^{1/2} cm. wide, on short leafy peduncles 0.5-2 cm. long; scales elliptical-oblancoelate, 1-2 mm. long, acute to obtusish, brownish, densely white-hairy; stamen 1 (2 united), filament ^{stamens - and anthers} glabrous; capsules ovoid, 4-4.5 mm. long, subsessile, silvery pubescent; pedicels very short or none; styles 0.3-0.6 mm. long, stigmas short, entire or bifid; gland capitate, 0.3-0.6 mm. long.

20
Streams, west-central Calif. to B.C. northern Idaho, and NW. Mont., rarer east of the Sierra Nevada, Cascade Range.

27 S. sitchensis Sanson. Sitka Willow. Shrub or small tree, 2-7 m. tall; ^{very rare found to glabrous} twigs slender, younger yellowish brown and somewhat pubescent or puberulent; ^{older dark-brown} older dark-brown to black, dull to subshining, glabrate to glabrous; buds 2-5 () mm. long, pubescent; stipules usually none or minute, on vigorous shoots 3-5 () mm. long, broadly lanceolate; petioles 3-8 (12) mm. long, pubescent to glabrous; leaves broadly oblanceolate ¹² to mostly cuneate-obovate, 4-8 (14) cm. long, 1.5-2.5 (4) cm. wide, acute to apiculate or obtuse at apex, cuneate at base, revolute, ^{sub}entire, dark green and dull with impressed veins ~~stamens~~ and the younger puberulent to pubescent above, silvery short-pubescent with raised veins beneath and midribs pubescent; aments precocious to coetaneous, slender, 2-8 () cm. long, 0.8-1.2 cm. wide, on leafy peduncles 1-2 (3) cm. long; scales elliptical-oblancoelate, acutish, 1-1.5 mm. long, brown, thinly villous; stamen 1 (2 united), filament glabrous; capsule ovoid-conic, 4-5 (6) mm. long, ~~sessile~~ to subsessile, silvery short-pubescent; styles 0.5-0.6 mm. long, stigmas short, ^{sub}entire, notched or bifid; gland

Streams and moist places, low elevations, northern Calif to Alaska, east to western Montana. Idaho: Idaho Co. northward.

Pedicels 0.3-0.6 mm. long, pubescent

28. *S. planifolia* Pursh.

Shrub 0.5-3 (4) M. tall:

~~Chestnut~~ Twigs chestnut to light brown, or brown, shining, glabrous, divaricate; bud s 3-7 (10) mm. long, colored as the twigs; stipules none, or rarely minute; petioles 3-8 (12) mm. long, (chestnut or light brown, glabrous; leaves ^{narrowly} narrowly to broadly elliptical, elliptic-oval, or elliptic-obovate, rarely some elliptic-lanceolate and obtuse at base, or obovate and cuneate at base. 2.5-7 cm. long, 1-2.5 cm. wide, acute or short-acuminate at apex, acute or rarely obtusish at base, somewhat revolute and ^{or} entire to sparsely glandular crenulate, especially on central part, glabrous and mostly plane above, glaucescent to glaucous, ~~anx~~ with numerous parallel or secondaries and finely raised tertiaries beneath, glabrous the younger thinly silvery ^{appressed} short-pilose beneath.

1.3-1.7 cm. wide,

Aments precocious, 3-5 (6) cm. long, mostly sessile, sometimes on 0.5-cm. bracted peduncles, dense; scales broadly elliptic-oval and obtusish to narrowly elliptical and acutish, 1-2 mm. long, black, long-villous; on both sides; stamens 2, filaments brown, flex; capsules ovate-conic, 5-6 (7) mm. long, sessile to subsessile, rather densely silvery pubescent; pedicels 0-0.3 (0.5) mm. long, puberulent; styles 0.6-1.2 (1.5) mm. long, often puberulent at base; stigmas 0.3-0.6 mm. long, entire or notched; gland

Labrador west to Hudson Bay and B.C., south to N.E., northern Minn., and sparingly in the western mountains to our NW States. *Shade: Clearwater Co*

a. Var. monica (Bebb) Schn. Ascending or erect shrub, 0.3-1 (1.5) m. tall; ^{and aside at base,} leaves narrowly to broadly elliptic-oval, or lower elliptic-obovate and upper elliptic-ovate and rounded at base, 2-3.5 cm. long, 0.8-1.5 (2) cm. wide, nearly entire; ^{n m +} aments mostly shorter. The mountain form, 9000-12,000 feet elevation, Colo. to ^{Mont.,} Calif. and northward to Alta. and B.C. (sparingly). *Ida.: Custer, Payette?, + Valley*

b. Var. Nelsoni (Hall) Leaves narrowly oblanceolate or rarely narrowly lanceolate, 3-6 (7) cm. long, 8-15 mm. wide, the larger shallowly crenate-serrate and glandular. With the species in the Rocky Mountain system, and eastward in Canada. Idaho: Fremont Co., Henry's Lake.

29a S. discolor Muhl., var. princoides (Pursh) Andersson. Pussy Willow. Shrub
 1-4 m. tall, ^{vegetal organs glabrous or pubescent} divaricately branched; ^{shiny} twigs divaricate, the younger yellowish or ~~orange~~
 orange, the older reddish-brown to brown, all glabrous and mostly drying dark brown
 to black, new shoots occasionally thinly pubescent; buds 4-8 (10) mm. long, color-
 ed as the twigs, glabrous, acute, or the young occasionally thinly puberulent;
 stipules only on ^{stems} vigorous foliage/shoots, 3-8 (12) mm. long, lanceolate to ovate (bi-
 laterally unequal), acute, serrate; petioles 5-10 (12) mm. long, ^{yellowish} colored ~~as the twigs~~
 and clothed as the twigs and buds but remaining yellowish; leaves mostly narrowly to
 broadly elliptical or narrowly oval, 4-8 cm. long, 1-3 cm. wide (larger 11-12 by 4-5
 cm.), rarely oblong-lanceolate, oblanceolate while developing and the lower some-
 times obovate, acute or short acuminate at apex, acute or the larger rarely obtuse
 at base, mostly shallowly glandular crenulate-serrulate, on vigorous shoots close-
 ly crenate-dentate, dark green and rather plane above, glaucous and with slender
 raised secondaries and tertiary veins beneath, glabrous or the young occasionally
 somewhat pubescent.

aments precocious, sessile (or subsessile, ^{or bristly} with bracts at base (these sometimes
 deciduous)) 3-7 cm. long, 1.5-2 cm. wide, dense; scales broadly to narrowly obovate
 or oval, 1.5-2 (2.5) mm. long, obtuse or acutish, black, long-villous, persistent;
 stamens 2, filaments ^{long, pubescent, gray}; capsules narrowly
 rostrate, 6-7 mm. long, densely silvery pubescent, becoming gray; pedicels 1-2
 (3) mm. long, slender, puberulent; styles 0.3-0.6 mm. long, entire; stigmas about
 equal to styles, entire, notched or bifid; gland ^{enlarged by}

Differs from the species in narrower and more serrulate-dentate leaves and ^{or}
 more western range. New England and eastern Canada west to central Sask. and ^{Alta.} ~~Ida.~~,
 and south to the Black Hills of So. Dak. and adjacent Nebr., Wyo., Mont., ~~Ida.~~ ^{Ida.},
 and SE. B.C. (lat. 50° N.). Idaho: Central (Valley and Idaho Cos.).

30. S. Scouleriana Barratt. Scouler Willow. Shrub or small tree, 3-10
m. tall, or ~~up~~ ^{veg. or pubescent densely to thinly} to 15 m. in rich bottoms; twigs stoutish, divaricate, the younger yellowish, ^{about} densely to thinly pubescent, older brown to blackish, glabrate to glabrous;
buds 2-7 (8) mm. long, colored and clothed as the twigs; stipules minute to 8 mm.
long, subreniform to semi-ovate, denticulate; petioles 5-10 (15) mm. long, ^{clothes for the} leaves mostly oblanceolate to obovate, 3-8 (12) cm. long, 1.5-3 (4) cm. wide, obtuse
to mostly abruptly acute at apex, mostly cuneate at base, or on vigorous shoots narrowly to broadly oblong-elliptical and acute at both ends, somewhat revolute, entire to
shallowly crenate-serrulate, dull green and pubescent to glabrous above, glaucous and
more or less gray pubescent and veiny beneath; aments precocious, sessile or the pistillate subsessile on very short bracted peduncles, ^{6-7 mm.} 2-5.5 cm. long, 1.4-1.8 (2) cm. wide,
dense; scales obovate, ^{1.5-2.5 mm.} obtuse, black, long-villous, persistent; stamens 2, filament glabrous, free; capsules rostrate, 7-9 mm. long, gray tomentose; pedicels 1-2 mm. long, pubescent; styles 0.2-0.5 mm. long, entire, stigmas 0.5-1 mm. long, entire, bifid, or divided; gland

Transition and Canadian Zones, from sea-level to 8000 or even 10,000 feet elevation, in southern mountains, N.M. to So. Calif. and north to Yukon, and Alaska. Common on hillsides away from streams and one of the first shrubs to appear on burned-over areas. Common throughout most of Idaho.

30a. Var. coetanea Ball. Shrub 2-5 m. tall; aments coetaneous, sub-pedunculate, the staminate peduncles ~~exserted~~ 5 mm. long, bracted, the pistillate peduncles 5-15 mm. long, with 3-5 small leaf-like bracts 0.5-2 cm. long, pistillate aments laxer than in the species.

With the species in the central part of its range, from Utah to northern Calif., and north to southern Alta. and B.C. Western part of Idaho, from Valley and Adams Cos. north to Clearwater and Benewah Cos.

30b. Var. Thompsoni Ball. Shrub to 6 m. tall; ^{twigs} slender, elongated, glabrate to glabrous; stipules wanting to 2 mm. long; petioles 5-10 mm. long, pubescent to glabrous; ^{or narrower} leaves relatively small and narrow, mostly narrowly elliptical to oblanceolate, 3-7.5 cm. long, 1-2.5 cm. wide, obtusish to acute or ~~mostly~~ abruptly short-acuminate at apex, cuneate at base; aments precocious, 1-3 (4) cm. long, 1-1.4 cm. wide, very short-pedunculate; capsules 6-7 mm. long.

Lower elevations, western Oregon to SW. B.C., rarer eastward to NW. Mont. Northern ^{north} part of Idaho from Valley and Lemhi Cos. to Clearwater and Kootenai Cos.

Neither in FS

31. S. Bebbiana Sargent. Beaked or Bebb Willow. Few-stemmed shrub or small tree, 2-5 m. tall; twigs mostly short, divaricate, slender, orange brown to brown, pubescent to glabrate, full of bud-scars; buds small, stipules none, or small, ^{mm.} long, semi-ovate, acute, dnetate; petioles slender, 4-7 (10) mm. long, puberulent; ^{leaves} narrowly elliptic and acute at both ends to broadly elliptic-oblongate or rhombic-obovate and acute to abruptly short-acuminate, the upper sometime ovate, 3-6 (8) cm. long, 1-2 (3) cm. wide, entire to somewhat undulate glandular-crenate, dull green, ^{more less pubescent-puberulent,} and the veins plane or somewhat impressed above, glaucescent to glaucous, rugose-reticulate, and more or less densely pubescent beneath, sometimes glabrate ^{in age}; aments precocious to subcoetaneous, staminate subsessile, 1-2.5 cm. long, pistillate 3-6 (7) cm. long, on short bracted or small-leaved peduncles 0.5-2 cm. long, very lax in fruit; scales oblong-lanceolate, acute, 1-2 mm. long, yellowish or with reddish tips. densely to thinly pilose, persistent; stamens 2, filaments pubescent to glabrous, free; capsules rostrate, 6-9 (10) mm. long, thinly short-pubescent; pedicels capillary, 2.5-4 (5) mm. long, puberulent; styles almost obsolete to 0.2-0.4 mm. long, stigmas 0.3-0.5 mm. long, entire to deeply bifid; gland

N.J. west to S.D., south in the mountains to N.M., west to central Calif., north to Newflda., Que., Yukon, and Alaska. Throughout Idaho except southwest; common northward. In moist situations at rather low elevations.

31a. Var. Barrostrata (Rydberg) Schneider. Leaves smaller, 2-5 (6) cm. long, 1-1.5 (2) cm. wide, not rugose but finely veined beneath, glabrate to glabrous on both sides; aments shorter. Range of the species in the West but less common; rare eastward. In Idaho, from ^{Onida} Teton, ^{Bozice} Bonneville, Fremont, Custer, and Valley Cos. northward.

32. S. Geyeriana Andersson. Geyer Willow. Shrub 1-4, rarely 5-6, m. tall; twigs slender, ascending, leafy, olive-green to brown, becoming black, more or less pruinose, glabrous; buds short, stout, 2-3 (5) mm. long, colored as the twigs; stipules none; petioles slender, yellowish to brown, 4-8 (10) mm. long, mostly glabrous; leaves small, narrowly oblanceolate or suboblanceolate, or elliptic-oblong, 2-6 (7.5) cm. long, 6-10 (15) mm. wide, acute ^{at both ends} or short-acuminate at apex, acute at base, entire, (slightly revolute, dark green and plane above, glaucescent to glaucous and plane or the secondaries somewhat raised beneath, thinly silky pubescent on both sides, or becoming glabrate; aments coetaneous, subglobose to oval, 1-2 (2.5) cm. long, 1-1.5 cm. wide, on short leafy peduncles 0.5-1 cm. long, the leaves sometimes exceeding the ament; scales oblanceolate or linear-oblong, acute, 1-1.5 (2) mm. long, yellowish with reddish apices, thinly pubescent, obovate when developing and then often drying blackish and simulating those of S. Lemmonii; stamens 2, filaments mostly ^{locally} pubescent toward base, free; capsules ovoid-rostrate, 5-6.5 (7.5) mm. long, silvery pubescent; pedicels 1.5-2.5 mm. long, puberulent; styles none or very short, 0.1-0.3 (0.4) mm. long, ^{stigma} ~~styles~~ 0.3-0.5 mm. long, bifid or divided; gland

Moist meadows and stream banks at middle elevations, 3000-7500 feet, in the western mountain areas. Colo., ^{to} western Nehr. and S.D., and Montana, west to Ariz., Calif., and SE. B.C.. ^{common} Throughout Idaho.

32a. Var. argentea (Bebb) Schneider. Silvery Geyer Willow. Twigs more or less pubescent; leaves permanently silvery pilose on both sides. Sparingly with the species in the central part of its range. Colo. and Wyo. to Calif. and Idaho. In Idaho, from Teton, Bannock, Fremont, Ouster, and Valley Cos. (sparingly) northward.

32b. Var. melaina Henry. Shrub to 7 m. tall; twigs mostly dark brown to black, not or only faintly pruinose, glabrous; leaves more commonly oblong-lanceolate, to 10 cm. long, becoming glabrous above, more densely glaucous beneath and the thin pubescence somewhat brownish. Mostly west of the Cascade Mtns. from NW. Oreg. to SW. B.C., sparingly eastward with the species in the northern part of its range. Idaho: Fremont Co. ^{sparingly throughout except SW corner.} ^{Henry's Lake & Mack's Inn.}

Rough draft sent Sam
J. H. S. Williams

Nos. 1-6 (and 8 var)

13 Oct. 48

Keys (fl. + veg) for 1 of each

" " "

Nos 7-19 (trans)

20 " 48

Keys (both) p. 2

" " "

No. 16. *S. eastwoodiae* doubtful } both ex

No. 17. *S. monticola* doubtful } cluded

also

S. petrophila } see letter 2 - Nov. 48

S. cretacea

No. 18 (previous 16-17 & 18) - 25.

2 - Nov - 48

Digitized by Hunt Institute for Botanical Documentation

see
Nos. 25 (2) - 32.

25 - " 48

(both *S. bella* + *S. subserulata* reduced
to name of var. under *S. Drummondiana*)

28 b. *S. planifolia* var. *Nelsonii* Ball (Ball) Ball ined
Should be (Ball) Ball ined

Idaho Williams
Mrs Joe Ray Davis

Passable Choices

Use by Davis

high or tall
(tall tree, tall shrub)

tall OK

meric system OK

OK

coriaceous or thickened
cartilaginous " "

Digitized by Hunt Institute for Botanical Documentation

precocious {aments | before | the
coetaneous {appears - | shrub | has
serotinous {ing - | after | ven

shining or lustrous

shiny

Citing distribution

Quebec to D.C., south
to Fla. and Texas.
S.W. Idaho, Nev., Calif.
dry soil of plains and hills,

2nd draft

EXTENSIVE AND TENTATIVE KEYS TO IDAHO WILLOWS

Generic Keys: Populus and Salix

- Bud scales several, imbricated; flower scales cup-shaped, deeply cut or ~~lacerate~~ lacerate; 10-30, rarely 5. stamens Populus
- Bud scale one (with inner lining); flower scales not cup-shaped or lacerate, mostly elongated, entire or rarely erose or shallowly toothed at apex; stamens 2, or 3-8 (mostly 4-5) in a few warm-temperate, mostly tree-like species. Salix

Keys (Vegetative-floral) to Salix Species and Varieties

1. Leaves closely serrulate, serrate, or crenate-serrate, or (Nos. 4-6) linear and remotely denticulate; aments coctaneous or serotinous, mostly leafy-peduncled (or rarely entire or subentire (Nos. 9, 10a, 12, 13 in key 2, second));
2. Leaves 4 or 5 to 10 times as long as wide (except No. 3), acuminate to long-acuminate; scales yellow (see also Nos. 21, 22, 31, 32), 2-3 mm. long, deciduous; styles short, 0.0-0.4 mm. long.
3. Trees 5-15 m. high (No. 2 sometimes shrubby); leaves narrowly to broadly lanceolate (No. 3 sometimes ovate-lanceolate), closely serrulate, stipulate, distinctly petioled; aments coctaneous, solitary; stamens 3-8 (mostly 4-5); capsules glabrous; pedicels 1.5-2.5 mm. long; styles 0.1-0.4 mm. long.
4. Twigs stoutish, yellow to reddish; leaves long, narrowly lanceolate, long-acuminate; vein islets large; petioles stoutish, glandular above at apex; aments broadly oblong, 1.5-2 cm. wide; scales broad, often erose at apex (Incidae)
5. Leaves glaucous beneath (when expanded)
 6. Twigs, bud scales, and petioles glabrous-glabrate.
 7. Leaves large, 6-20 cm. long, 2.5-4 cm. wide. 1. S. lasiandra
 7. Leaves mid-sized, 5-10 cm. long, to 1.5 cm. wide. 1a. var. Abramsi
 6. Twigs, bud scales, and petioles more or less pubescent. 1b. var. lancifolia
5. Leaves green beneath when expanded, large, 6-20 cm. long.
 6. Twigs, bud scales, and petioles pubescent. 2. S. candata
 6. Twigs, bud scales, and petioles glabrous. 2a. var. Bryantiana
4. Twigs slender, yellowish; blades glaucescent beneath, 3-4 times as long as wide, vein islets tiny, petioles long, slender, not glandular; aments linear-oblong, to 1.5 cm. wide; scales narrower, mostly entire. (Taiandreae) 3. S. amygdaloides

3. Caespitose shrub, forming large clumps; twigs slender, mostly ascending; leaves narrowly to broadly linear, 7-15 times as long as wide, subentire to remotely and irregularly denticulate, acute, the base tapering to an indefinite petiole; scarcely stipulate; anthers serotinous, 1-3 together, terminating seasonal leafy twigs; stamens 2; pedicels 0-1.5 mm. long; styles none (in Idaho species). (Longifoliae)
4. Twigs yellowish to brownish, hairy; scales lanceolate, hairy; ovaries and capsules usually hairy.
5. Aspect white; 1-year twigs, leaves, and capsules densely white-pilose 4. S. argophylla
5. Aspect gray; 1-year twigs, and leaves finely gray-pubescent or gray-puberulent (except 5b); ovaries mostly, and capsules often, gray-pubescent or puberulent (except 5b) to glabrate-glabrous
6. Leaves 5-10 or 12 cm. long -
7. Leaves 4-10 mm. wide 5. S. exigua
7. Leaves 2-5 mm. wide 5a. var. stenophylla
6. Leaves 3-6 cm. long, 2-4 mm. wide, glabrate, yellowish-green; capsules glabrous. 5b. var. nevadensis
4. Twigs (young) dark brown to blackish; aspect dark green; scales broad, veiny, glabrate; capsules glabrous
5. Twigs, bud scales, petioles, and leaves glabrous
6. Blades 4-10 cm. long, 8-15 mm. wide 6. S. melanopsis
6. Leaves 4-10 cm. long, 2-7 mm. wide 6a. var. tenerrima
5. Twigs, bud scales, petioles, and ^{leaves} blades (especially beneath) more or less pubescent 6b. var. Bolanderiana
2. Leaves 2-4 times as long as wide, mostly closely serrate, crenate-serrulate, or crenate-serrate, rarely subentire or entire (see Nos. 9, 10a, 12, 13); anthers coetaneous, short-leafy-pedunculate, or rarely sessile, ^{subsessile} (No. 16); scales dark brown to blackish, persistent; capsules mostly glabrous (except 13a, 15b); stigmas shorter than the styles; stamens 2.
3. Leaves lanceolate and glabrous when mature, or linear-oblongate to broadly oblongate (Broader in 12a) and pubescent or pilose when mature.
4. Leaves lanceolate, acute, rounded to cordate at base, serrate-serrulate or rarely entire (Nos. 9, 10a), acute or short-acuminate; capsules glabrous, 4-6 or 7 mm. long; pedicels 1-4 mm. long; styles ~~0.5-1.5~~ ^{0.3-0.5} mm. long. (Cordatae)

5. Leaves glaucous beneath, glabrous.

6. Twigs, bud scales, and petioles yellowish, glabrous.

7. Twigs mostly ascending, leaves 4-8 or 12 cm. long.

8. Leaves 5-12 cm. long; pedicels 1-2.5 mm. long.

7. S. lutea

8. Leaves 4-8 cm. ~~long~~, broad; pedicels 2-4 mm. long. 7a. var. platyphlla

7. Twigs shorter, divaricate, pipe-clay-colored;
leaves 3-6 cm. long, subentire.

7b. var. Watsoni

6. Twigs reddish-brown to dark brown (seasonal yellowish),
glabrate, puberulent, or pubescent.

7. Shrub to 6 m. tall; leaves 6-10 cm. long, serrulate;
pedicels 2.5-4 mm. long

8. S. Mackenziana

7. Shrub to 1.5 m. tall; leaves 3-6 cm. long, entire;
pedicels 0.5-1.5 mm. long

9. S. Farrae

5. Leaves green beneath, glabrous when full grown; shrubs
1-4 m. tall.

6. Leaves lanceolate to oblong-oval, thickish; pedicels
1-1.5 mm. long.

6. Leaves 3-8 or 10 cm. long, serrulate

10. S. pseudocordata

7. Leaves 3-5 or 6 cm. long, entire

10a. var. aqualis

6. Leaves broadly lanceolate to oval, thinnish; pedicels
2-4 mm. long.

11. S. monochroma

4. Leaves oblanceolate or broadly so to suboval and pubescent,
or linear-ob lanceolate or -lanceolate and pilose; all entire
or subentire; scales obovate, blackish; capsules 3.5-5.5 mm.
long, glabrous (except No. 13a); styles 0.4-1 mm. long;
stigmas short.

5. Leaves 6-10 or 15 cm. long, oblanceolate or lanceolate to
oval-obovate, shrub (in Idaho) or small tree to 12 m. tall;
veiny and glaucous beneath, somewhat revolute; anthers precocious
to subecotaneous, to 7 cm., subsessile; scales densely pubescent
on both sides; capsules 4-5.5 mm. long; pedicels 0.5-12
mm. long.

(Lasiolopes)

6. Leaves oblanceolate, often becoming glabrate beneath. 12. S. lasiolepis

6. Leaves oblanceolate to oval-obovate, densely pubes-
cent beneath

12a. var. Sandbergii

5. Leaves 2-6.5 cm. long, linear-ob lanceolate, -lanceolate,
or -elliptical, mostly rounded at base, entire, green,
plane, and more or less pilose on both sides; low mead-
ow shrub to 1 m. tall; twigs slender, leafy; anthers
ecotaneous, short-leafy-pedunculate, dense; capsules 3.5-
4.5 mm. long; pedicels about 0.5 mm. long. (Wolfianae)

6. Leaves 2-4.5 cm. long, thinly villous to glabrate; anthers
to 2.5 cm. long; capsules glabrous.

13. S. Wolfii

6. Leaves 3-6.5 cm. long, silvery-villous; anthers to 3.5 cm.
long; capsules thinly to densely tomentose.

13a. var. idahoensis

3. Leaves broadly oblanceolate, obovate-oval, or obovate, to elliptic-ovate or broadly ovate, rounded to cordate at base, acute or short-acuminate at apex, serrulate (No. 15 rarely subentire) to crenate, crenate-serrate, or denticulate; shrubs 2-6 m. tall; aments 2-6 or 8 cm. long, leafy-pedunculate (sessile in Nos. 16, 17); scales 1-3 mm. long, black, villous; capsules 5-8 mm. long.
4. Twigs stoutish (subslender in No. 16), younger yellowish, older brownish or reddish-brown, thinly pubescent to glabrate; leaves broadly oblanceolate to elliptic-oval, elliptic-ovate, or obovate, 4-7 or 10 cm. long, crenate-serrulate, serrulate, or crenate-serrate, narrowed to rounded or subcordate at base; aments coetaneous, leafy-peduncled (sessile in No. 16); capsules 5-8 mm. long, mostly glabrous; pedicels 0.5-2.5 mm. long; styles 0.8-1.5 mm. long. (Committatae)
5. Leaves glaucous beneath.
6. Twigs stoutish; leaves broadly oblanceolate to obovate, crenate-serrulate, narrowed to subcordate at base; scales 2-3.5 mm. long, aments leafy-peduncled; pedicels 0.5-1 mm. long. 14. S. Barclayi
6. Twigs slender, divaricate; leaves narrowly to broadly ovate, mostly subcordate to cordate at base, coarsely crenate-serrate; scales 1-1.5 mm. long, brown; pedicels 1.5-2.5 mm. long, aments sessile; 16. S. pseudomonticola
5. Leaves green beneath, elliptic-lanceolate to oval-obovate, glandular-serrate or rarely subentire, more or less pubescent; capsules glabrous. 15. S. commitata
6. Leaves glabrate-glabrous; " " " 15a. var. demdata
6. Capsules thinly pubescent; *lvs. pub.* 15b. var. puberula
4. Twigs stout, divaricate, dark, long-villous; stipules large, broadly reniform to ovate, clasping, denticulate; leaves oval to broadly ovate, 4-7 or 10 cm. by 2-4 or 5.5 cm., denticulate, glaucous beneath; aments precocious, sessile on old wood, stout, dense; scales 2-3 mm. long; capsules 7-8 mm. long, glabrous (or sometimes pubescent at apex); pedicels 0.5-1 mm. long; styles 1.5-2.5 mm. long. (Chrysanthae) 17. S. Tweedyi

5 Idaho keys

1. Leaves entire (or merely remotely serrulate or sparsely crenate or crenate-dentate (see also Nos. 9, 10a, 12 & 13, with entire leaves, in key 2 (2nd.) above), of varying shapes, distinctly petioled; scales brown to black (except Nos. 21, 22, 31, 32), persistent; stamens 2 (or filaments united sometimes in Nos. 26, 27).
2. Leaves glabrous (or long-villous beneath while unfolding), entire, glaucous beneath; twigs, bud scales, and petioles glabrous (or rarely thinly pubescent while young).
3. Prostrate and sometimes rooting mountain shrubs; leaves oblanceolate, oval, obovate, or suborbicular.
 4. Leaves elliptic-obovate or oval to suborbicular, veins depressed above, strongly reticulate beneath; aments serotinous, on ~~long~~ leafy peduncles; capsules ovate, sessile, short 3 mm. long, tomentose; styles 0.1-0.2 mm. long. (Reticulatae)
 5. Leaves 7-12 mm. long; aments 1 cm. long, 3-10-flowered. 19. S. nivalis
 5. Leaves 1-3 cm. long; aments 1-2 cm. long, 15-40-flowered. 19a. var. saximontana
 4. Leaves oblanceolate or narrowly elliptical to obovate, strongly veined beneath; aments coetaneous, 2-5 cm. long, on long leafy peduncles; capsules 5-6.5 mm. long, subsessile, tomentose; styles 1-1.5 mm. long. (Ovalifoliae).
 5. Leaves narrowly to broadly oblanceolate; 2-5 cm. long, to 1.5 or 1.8 cm. wide. 20a. S. anglorum var. antiplasta
 5. Leaves elliptic-oval to oval-obovate, 1-4 cm. long, to 2.8 cm. wide. 20b. S. anglorum var. araioclada
3. Erect shrubs, 0.5-6 m. tall; leaves lanceolate or oblanceolate to elliptical, elliptic-oval, elliptic-obovate, or subobovate, glaucous beneath, entire or nearly so.
 4. Twigs slender; leaves narrowly oblanceolate to oblanceolate or sub lanceolate; aments coetaneous, leafy-peduncled; capsules 5-8 mm. long, pedicelled.
 5. Bog shrub to 2 m. tall; twigs ascending, brown; leaves narrowly to broadly elliptic-oblanceolate, entire, finely net-veined on both sides; scales pale brown, glabrate; capsules 5-7 mm. long, glabrous; pedicels 2-3.5 mm. long; styles and stigmas minute. (Roseae) 18a. S. pedicellaris var. hypoglauca
 5. Non-bog mountain shrub to 5 m. tall; twigs yellowish to dark brown, divaricate, subshining, sometimes pruinose; leaves oblanceolate or sub lanceolate, acute, entire or often sparsely glandular-serrulate, plane; scales blackish; capsules silvery-pubescent; pedicels 1-1.5 mm. long; styles 0.6-1 mm. long. (Sericeae) 24. S. Lemmonii

4. Twigs stoutish, divaricate, chestnut to brown, shining; leaves broader, elliptical, elliptic-oval, elliptic-ovate, or obovate (oblanceolate in 28b); aments precocious, ~~sessile~~ sessile or subsessile and bracted; scales black; capsules hairy, 5-7 mm. long, short-pedicelled.
5. Shrubs 0.5-3 m. tall; twigs chestnut to brown; leaves elliptical, elliptic-oval, or elliptic-obovate, entire or sparsely glandular-serrulate, yellowish-green and plane above, secondary veins numerous and parallel beneath; capsules subsessile, silvery-pubescent; styles 0.6-1.3 mm. long; stigmas 0.3-0.6 mm. long. (*Phyllicifoliae*)
6. Leaves as described -
7. Tall shrub; leaves 3-7 cm. long; aments 3-6 cm. long. 28. *S. planifolia*
7. Low, sometimes ascending, mountain shrub; leaves 2-4 cm. long; aments shorter. 28a. var. *monica*
6. Leaves oblanceolate or suboblanceolate, more crenate-serrulate 28b. var. *Nelsonii*
5. Stout shrubs to 6 m. tall; twigs yellowish to brown; leaves narrowly to broadly elliptical or narrowly oval, mostly shallowly crenulate-serrulate or the larger crenate-dentate; capsules gray-pubescent; pedicels 1-2 mm. long; styles and stigmas equal, 0.3-0.6 mm. long. (*Discolores*) 29a. *S. discolor* var. *prinoides*
2. Leaves more or less hairy on both sides; twigs (young), bud scales, and petioles usually more or less hairy (see also Nos. 12, 13, previously, under "leaves serrate", etc.)
3. Leaves, twigs, bud scales, and petioles white- to gray-pubescent or -tomentose; leaves glaucescent to glaucous beneath, 3-7 or rarely 10 cm. long, plane, evidently veiny, or rugose.
4. Leaves elliptic-oblong or elliptical to oval or oval-obovate, 3-6 or 8 cm. long, acutish to obtusish at both ends; aments coetaneous, short-leafy-peduncled. 0.5-2 m. tall;
5. Low shrubs, leaves entire, ~~with~~ veins somewhat raised-reticulate on both sides; twigs often white- or gray-pubescent ~~pubescent~~ pubescent, sometimes becoming glabrate; ~~aments coetaneous, short-leafy-peduncled~~ scales light to dark brown, oblanceolate oval, 1-2 mm. long; capsules 5-7 mm. long, subsessile, white-to-gray-tomentose; styles about 1 mm. long; stigmas shorter. (*Glaucæ*)
6. Leaves elliptic-oblong to narrowly oval, yellowish-green above, usually rounded at base, short-petioled, gray-pubescent on both sides
7. Leaves 2-4 or 5 cm. long; aments 1-2 cm. long. 21. *S. brachycarpa*
7. Leaves 1-2.5 cm. long; aments 1 cm. long; peduncles, capsules, and styles averaging shorter. 21a. var. *Sansoni*

6. Leaves elliptic-oblanccolate to elliptic-oval or oval-
obovate, 3-6 or rarely 7 cm. long, to 2 cm. wide, acute
or short-acute at apex, acute or larger rounded at base,
green above, glaucous beneath, pubescent to glabrate on
both sides or becoming glabrous beneath; aments 2-4 or 5
cm. long, on leafy-peduncles to 2.5 cm. long; pedicels
0.6-1.5 mm. long.

22. *S. glaucops*

5. Shrub to 5 m. tall; twigs slender, divaricate, pubescent to
glabrate; leaves narrowly elliptic and acute at both ends ~~to~~
to broadly elliptic-oblanccolate or rhombic-obovate and
abruptly short-acuminate, 3-6 or 8 cm. long, entire or some-
what undulate crenate, pubescent and veins slightly incised
above, glaucescent, rugose, and densely pubescent beneath;
aments subcoetaneous, short-leafy-peduncled; scales narrow,
acute, yellowish with reddish tips; capsules rostrate, 6-9
mm. long, puberulent; pedicels 3-5 mm. long; styles 0.2-0.4
mm. long; stigmas slightly longer. (*Rostratae*, as also 32)

6. As described

31. *S. Bobbiana*

6. Leaves smaller, glabrate, nearly plane beneath. 31a. var. *perrostrata*

4. Leaves linear-oblong to oblanceolate or sublanccolate, 2-8 or 10
cm. long, acute at both ends; aments coetaneous, somewhat ped-
unculate

5. Low bog shrub, 0.5-1 m. tall; twigs ~~slender, greenish-brown~~
white- or gray-pubescent,
slender; leaves linear-oblong to narrowly or rarely broadly
oblanceolate, 3-8 or 10 cm. long, thick, revolute, entire
or rarely somewhat crenulate, thinly to densely white- or
gray-tomentose, veins incised above, rugose beneath; aments
coetaneous, 2-5 cm. long, leafy-pedunculate; scales obovate,
brown, white-pilose; capsules 6-8 mm. long, subsessile, white-
tomentose; styles 1-1.5 mm. long, stigmas short. (*Candidae*) 23. *S. candida*

5. Meadow and upland shrubs, 2-6 m. tall; twigs slender, green
to brown or blackish, somewhat pruinose; leaves narrowly ob-
lanccolate or sublanccolate to elliptic-oblong, 2-6 or 7
cm. long, acute at both ends or short-acuminate at apex,
glaucous to glaucous beneath, almost plane on both sides; ~~coetaneous~~
aments coetaneous, 1-2.5 cm. long, subglobose, very short-
pedunculate; scales narrow, oblanceolate, or linear-oblong,
acute, yellowish with reddish tips; capsules 5-7 mm. long,
silvery-pubescent; pedicels 1.5-2.5 mm. long; styles 0.1-
0.3 mm. long, stigmas longer. (*Rostratae*)

6. Twigs yellowish to brown, often pruinose

7. Leaves thinly pubescent to glabrate on both sides. 32. *S. Geyeriana*

7. Leaves densely silvery-pubescent (pilose) on both
sides

32a. var. *argentea*

6. Twigs brown to blackish, usually not pruinose

32b. var. *melaina*

3. Leaves mostly densely sericeous (silvery-pubescent or silvery-tomentose) beneath (and glaucous); capsules sericeous
4. Mountain shrub to 4 m. tall; twigs yellowish to dark brown; leaves mostly elliptic to narrowly oval, sometimes broadest at base (elliptic-lanceolate), sometimes at apex (elliptic-oblanccolate), sometimes oval, 3-7 or 10 cm. long, revolute, entire or sometimes glandular micro-serrulate; aments precocious or subcoetaneous, dense, sessile or subsessile; scales black, long-villous; capsules 4-6 mm. long; pedicels 0.5-1.5 mm. long; styles 0.8-1.2 mm. long. (Pellitae)
5. Leaves mostly broadly elliptic-oblong to oval, obtuse and plicately apiculate at apex 25. S. Drummondiana
5. Leaves narrower (as in key 4 above), acute; twigs often pruinose.
6. Leaves oblong-lanceolate or oblong-oblanccolate; twigs stoutish. 25a. var. bella
6. Leaves mostly oblong-oblanccolate or broader, thinner, sometimes becoming glabrate; twigs slender 25b. var. subcoerulea
4. Tall shrubs or small trees of valley and upland; twigs yellowish to dark brown, not pruinose; leaves elliptic-oblanccolate to elliptic-~~and~~ oval or obovate, mostly cuneate at base, 4-8 or 12 cm. long.
5. Valley shrubs to 7 m. tall; twigs mostly long, straight, ascending; leaves distinctly sericeous; aments subprecocious to coetaneous, slender, 2-8 or 10 cm. long, on leafy peduncles 1-2 cm. long; scales 1-2 mm. long, brown; capsules 4-5 mm. long, sessile, sericeous; styles 0.3-0.6 mm. long; stigmas short. (Sitchenses)
6. Twigs stoutish, densely pubescent; leaves mostly elliptic-oval, thick, densely tomentose. 26. S. Coulteri
6. Twigs slender, thinly pubescent; leaves mostly oblanccolate to cuneate-obovate, thin, densely silvery-pubescent to becoming glabrate beneath 27. S. sitchensis
5. Upland shrub or small tree to 10 m. tall or occasionally to 15 m. in valleys; twigs stoutish, divaricate, light to dark brown, more or less pubescent; leaves broadly oblanccolate to obovate, thick, cuneate at base, somewhat revolute, entire or shallowly crenate-serrulate; aments precocious, ^{sessile}subsessile, stout; scales black, ^{1.5-2.5}mm. long, villous; capsules 7-9 mm. long, tomentose; pedicels 1-2 mm. long; styles 0.2-0.5 mm. long; stigmas twice as long. (Discolores) 30. S. Scouleriana
6. Aments subcoetaneous 30a. var. coetanea
6. Twigs slender, glabrate; leaves small, elliptic-oblanccolate 30b. var. Thompsonii

Professor Ray J. Davis,
Department of Botany,
Idaho State College, Pocatello, Ida.

3814 Jocelyn St., N.W.,
Washington 15, D. C.,

3 May, 1951.

Dear Professor Davis:

I have just finished determining the 1950 Idaho Salix collections of J. H. and C. B. Christ. A few seem to extend the range as known when I wrote the manuscript on Idaho Salix for you. If you care to add any or all of these records to the mss. before publication, here is how the insertions would go in.

7b. *S. lutea*, var. *Watsoni* (Bebb) "epson. After "Idaho: only in" insert "Owyhee Co., 1 mi. east of De Lamar, (J.H. and C.B. Christ 19525), and"

10a. *S. pseudocordata*, var. *aequalis* (Andersson) Ball. At end of text, change period to semicolon and add: "occasional in Boise Co.;"

13. *S. Wolfii* Bebb. Last line: In parenthesis, after "Bear Lake" insert ", Franklin, ""

24. *S. Hemmoni* Bebb. Last line: After Owyhee, insert "Cassia, "

28. *S. planifolia* Pursh. In 2nd paragraph, after "Idaho: only" insert "Idaho Co., Jersey Mtn., 15 mi. southwest of Dixie, and ""

Have had blizzards, flu, spring fever, and extra work, so progress has been slow. Hope you are making speed, outside the Legislature.

Cordially yours,

Carleton R. Ball

Prof. Ralph R. Wilson,
School of Forestry,
Idaho State College,
Pocatello, Idaho.

3814 Jocelyn St., N.W.,
Washington 15, D.C.

9 May, 1951.

Dear Professor Wilson:

Thinking that it may be of use to you, I am giving you (above) a copy of my recent letter to Prof. Ray J. Davis, listing new occurrences of certain Idaho willows.

Hoping that all goes well with you, I am

Cordially yours,

Carleton R. Ball