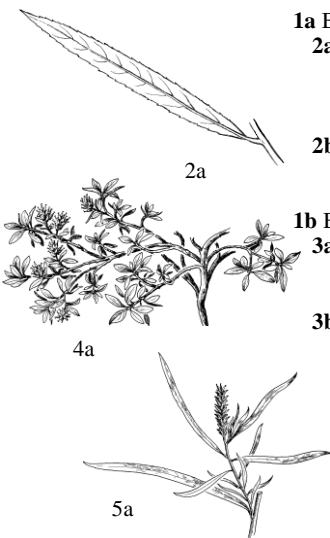


Added image of leaf blade of *S. ×sepulcralis*.

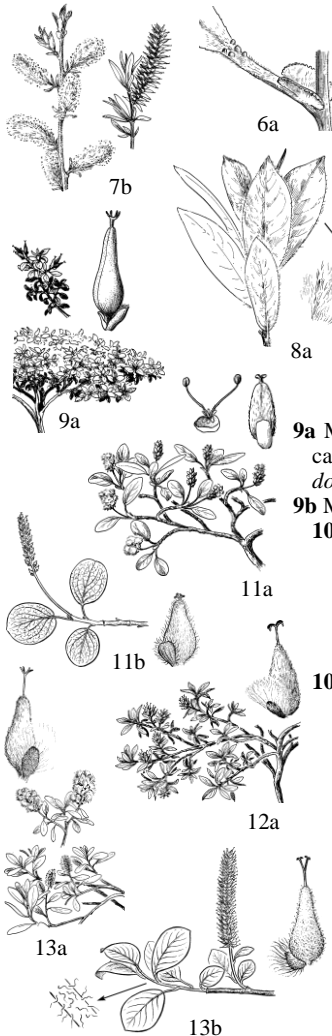
Salix L. Willow

Pls ♂, ♀; catkins gen erect or spreading, developing before the lvs (precocious), with them (coetaneous), or after them (serotinous); bracts subtending individual fls entire, erose, or slightly toothed; sepals reduced to 1 or 2 short and broad to slender and elongate nectaries; petals lacking; stamens (1)2(–8), filaments distinct to connate; stigmas 2, often bifid; caps 2-valved, often stipitate; seeds ∞, small, covered with long white hairs and very buoyant; shrubs or trees, sometimes prostrate, sometimes clonal by root sprouts; lvs linear-ovate, stips persistent or deciduous; bud scale 1, rarely resinous; pls gen in wet or moist places, esp along streams and around bodies of water (The classical L name).

Measure only mature catkins and caps; “terminal” catkins appear to arise on br tips, though close examination reveals they are actually subterminal. Lf descriptions and measurements are for the largest, mature preformed lvs on a brlet. Most *Salix* spp. can hybridize. Hybrids are gen sterile and may be detected by indehiscent pollen, aborted seeds, or caps with hairs in lines or patches. A specimen difficult to assign to a particular sp. is not, in itself, evidence of a hybrid; unusual, hard-to-key individuals are usually extremes of variation within one sp.



- 1a** Brs pendulous or contorted; intro trees, sometimes escaped in lowl
2a Brs pendulous, usually golden or bright yellow; wet habitats; European intro escaping cult; mostly w Cas in our area, e to Atl; weeping w. (*S. babylonica* misapplied, *S. pendulina* misapplied, *S. alba* × *S. babylonica*)
 1 *S. ×sepulcralis* Simonk.
2b Brs ascending, contorted, golden brown to reddish; wastelots, stream banks, and lakeshores; Asian intro rarely escaping cult in WA; scattered in N Am; corkscrew w.
 2 *S. matsudana* Koidz.
1b Brs not pendulous or contorted; native or intro trees or shrubs; lowl to alp
3a Some st nodes and lvs opp or nearly so; ditches, floodplains, and shores; European intro, shrub rarely escaping cult; scattered sw BC to CA and UT, widespread in e N Am; basket w.
 3 *S. purpurea* L.
3b St nodes and lvs alt; native or intro trees or shrubs
4a Depressed shrubs, seldom > 1(–2) dm, creeping or forming dense cushion-like mats (rarely distinct shrubs); gen near or above timberl
Group 1, lead 9a
4b Trees or shrubs to 25 m, rarely < 2 dm, not mat-forming; lowl to alp
5a Mature lvs linear or narrowly elliptic, gen 5.5–28 × as long as wide (elliptic and 3–7 × as long as wide in *S. sessilifolia*), hairs white, bls sessile or with petioles to ca 5 mm; pls clonal by root sprouts, gen forming thickets; sts whip-like, usually slender (rarely to 1 dm diam near base); pls gen of stream banks and floodplains, lowl to mont
Group 2, lead 14a

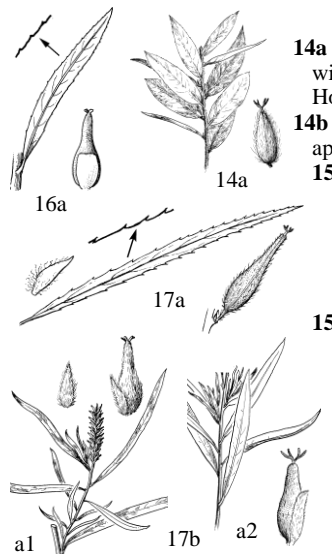


- 5b** Mature lvs gen wider, narrowly elliptic to ovate, lanceolate, oblanceolate, or obovate, hairs white and/or rusty-red; petioles usually > 5 mm; trees or distinct shrubs, not clonal; sts not whip-like, slender to thick, < or > 1 dm diam at base; pls of various habitats, lowl to alp
- 6a** Petioles with 2 or more wart-like glands near the base of the bl (best viewed at 10×); fl bracts usually tan, lacerate **Group 3**, lead 18a
- 6b** Petioles gen without glands; fl bracts black to tan or bicolor, entire to lacerate
- 7a** Mature lvs present; catkins present or absent
- 7b** Mature lvs absent; catkins present
- 8a** Mature lvs glaucous below or lower surface obscured by dense hairs; trees or shrubs **Group 4**, lead 22a
- 8b** Mature lvs not glaucous below, if hairy, the hairs not obscuring the lower surface; shrubs **Group 5**, lead 55a
- 9a** Mature lvs present; catkins present or absent **Group 6**, lead 63a

Group 1

- 9a** Mature lvs not glaucous below, 3–7.5 × 3–5.5 mm; ♀ catkins 2–4(–7)-fld; moist, calcareous, alp slopes; AK to NWT, disjunct in sw MT and adj WY; Asia; least w. (*S. dodgeana*); ours var. **dodgeana** (Rydb.) A.E. Murray **4 S. rotundifolia** Trautv.
- 9b** Mature lvs glaucous below; ♀ catkins 4–80-fld; habitat and range various
- 10a** Catkins arising from both terminal and lateral buds
- 10b** Catkins arising from lateral buds only
- 11a** Lvs 4–15(–23) mm wide; caps 3–4 mm; catkins 7–21 mm; subalp and alp meadows and rocky slopes; BC, to CA, e to Alta and RMS; snow w. (*S. reticulata* misapplied, *S. r.* var. *nana*, *S. nivalis* var. *saximontana*) **5 S. nivalis** Hook.
- 11b** Lvs 8–50 mm wide; caps 4.5–5 mm; catkins 11–79 mm; alp meadows and rocky slopes; circumboreal, s to BC; netlf w. **6 S. reticulata** L.
- 12a** Lvs 3–5(–8) mm wide; petioles 1.5–5 mm; ♀ catkins 10–23 mm; subalp and alp rocky slopes and tundra; s BC to Mt Rainier, WA, occ e to w MT, WY, CO and UT; Cas w. **7 S. cascadenis** Cockerell
- 12b** Lvs 6–21(–60) mm wide; petioles 2–46 mm; ♀ catkins 20–70 mm; range various
- 13a** Caps 4–5 mm; brlets usually glab (hairy); lvs 19–44 × 7–21 mm; pls clonal by st layering; alp areas, often near melting snowbanks; BC to CA, e to RMS; RM w. (*S. arctica* misapplied, *S. a.* var. *petraea*) **8 S. petrophila** Rydb.
- 13b** Caps 4–9 mm; brlets usually densely hairy (glab); lvs 10–85 × 6–60 mm; pls distinct shrubs, not clonal; high mont to alp mesic slopes; circumboreal, s to nw WA; arctic w. **9 S. arctica** Pall.

Group 2



- 14a** Lvs narrowly elliptic to elliptic, gen 3–7 × as long as wide; brlets and lvs usually with spreading hairs, rarely glabrate; mostly w Cas, sw BC to Wi Va, e in CRG to to Hood R Co, OR; soft-lvd w. (*S. exigua* var. *s.*) **10 S. sessilifolia** Nutt.
- 14b** Lvs linear to narrowly elliptic, gen (5.5–)7–28 × as long as wide; brlets and lvs appressed-hairy to glabrate, range various
- 15a** Lvs narrowly elliptic, gen (5.5–)7–10 × as long as wide
- 15b** Lvs linear, gen 11–28 × as long as wide
- 16a** Lvs glab or nearly so; fl bracts mostly wide and blunt; caps glab; common in our area, though absent w of Wi Va, and the Cas of WA, BC to CA and NV, e to Alta and s in RM to CO; dusky w. (*S. exigua* subsp. *m.*) **11 S. melanopsis** Nutt.
- 16b** Lvs thinly appressed-hairy; fl bracts mostly narrow, acute to less commonly rounded; caps hairy (see lead 17b) **13 S. exigua** Nutt.
- 17a** Lvs linear, gen 11–28 × as long as wide
- 17b** Lvs prominently veiny, margins reg serrulate, often spinulose; entering our area in MT; e base RM to Atl; sandbar w. (*S. exigua* subsp. *i.*) **12 S. interior** Rowlee
- a1** Pls common e Cas; range of sp. (*S. exigua* subsp. *stenophylla*) var. **exigua**
- a2** Pls of CR w of the Deschutes R and lower Willamette R; Columbia w. (*S. c.*, *S. fluviatilis* misapplied) var. **columbiana** Dorn

Group 3



18a

18a Lvs densely hairy below, veins strongly impressed above; lvs 1.1–2.3 × as long as wide; low shrubs to 1.5 m; stamens 2 per fl; high mont and subalp open for and stream; s BC, n Cas, WA (where possibly extirpated), ne OR, e to Alta and w MT; also polar Can and Asia; rock w. (*S. fernaldii*)

14 *S. vestita* Pursh

18b Lvs glabrate to sparsely hairy below, veins not or slightly impressed above; lvs 2–10 × as long as wide; tall shrubs or trees to 25 m, seldom < 2 m; stamens 2–10 per fl

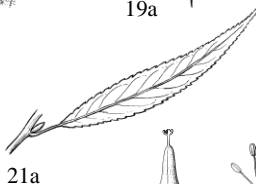


19a

19a Bud scales with evident overlapping margins adj to the br, not fused (unique among our spp.); buds gen pointed; lvs glaucous below; stips rudimentary and deciduous, or absent; at least some lvs pendulous at maturity; sts to 10(–12) m; stipes 1–3 mm; lowl wetlands, stream banks, and riparian areas; BC s, mostly e Cas, to OR and NV, e to Atl; peach-lf w.

15 *S. amygdaloides* Andersson

19b Bud scale margins fused; buds usually blunt; lvs glaucous below or not; stips lf-like and eventually deciduous, or absent; lvs rarely pendulous at maturity; sts to 25 m; stipes 0.2–2(–4) mm



21a

20a Lvs 2–4 × as long as wide, 20–50 mm wide, not glaucous below; juvenile lvs glab; lowl ditches, riparian areas, and other moist places; Eurasian intro escaping cult, sparingly naturalized; AK to sw BC, e to Atl, s to UT, NC; laurel w. (*S. pentandra* misapplied, *S. p.* × *S. euxina*)

16 *S. ×meyeriana* Rostk. ex Willd.

20b Lvs 3–10 × as long as wide, 10–30 mm wide, glaucous below or not; juvenile lvs hairy (sometimes soon glab)



21b

21a Juvenile lvs without rusty hairs; stips absent; brs very brittle at base; stipes 0.2–0.8(–1) mm; stamens 2 per fl; tree to 20(–25) m; lowl to mont irrigation channels, waterways and lake margins; European intro, often used in riparian plantings, occ escaping; scattered, w BC to OR, both sides Cas, e to Atl; crack w. (*S. ×rubens*, *S. alba* misapplied, *S. alba* × *S. euxina*)

17 *S. ×fragilis* L.

21b Juvenile lvs usually with rusty hairs; stips lflike, deciduous; brs flexible or brittle at base; stipes (0.5–)0.8–2(–4) mm; stamens 3–6 per fl; shrub or small tree to 6(–15) m; lowl to midmont stream banks, floodplains, lakeshores; both sides Cas, AK to CA, e to n Gr Pl; 2 vars.

18 *S. lasiandra* Benth.

a1 Mature lvs not glaucous below; upper lf surface with stomata; ♂ fl abaxial nectary 2–3-lobed, usually distinct, sometimes fused and shallowly cup-shaped; pls most common e Cas; whiplash w. (*S. lucida* subsp. c.)

var. *caudata* (Nutt.) Sudw.

a2 Mature lvs glaucous below; upper lf surface lacking stomata; ♂ fl abaxial nectary unlobed, distinct; pls most common w Cas; Pac w., shining w. (*S. lucida* var. *lasiandra*)

var. *lasiandra*



23a

Group 4

22a Mature lvs densely hairy below, the hairs usually obscuring the surface

23a Brlets and lower surfaces of the lvs densely white-tomentose; lvs slender, usually > 4 × as long as wide; low shrub of mont lakeshores, riparian areas, and wetlands; AK to ne WA, e to Alta, ID, and w MT, e across n US to Atl, seldom coll in our area; hoary w.

19 *S. candida* Flügge ex Willd.

23b Brlets and lvs glab or variously hairy, but not densely white-tomentose; lvs usually < 6 × as long as wide; shrubs or trees of various habitats

24a Shrubs < 1(–2) m; lvs similarly hairy on both surfaces; midmont to alp

25a Catkins arising from both terminal and lateral buds; ♀ catkins (3–)4–9 cm; buds and stips resinous; caps hairy; subalp and alp riparian areas, thickets, and meadows; rarely coll in our area; AK to BC, w MT, and WY, e to NWT and Alta; Barratt's w.

20 *S. barrattiana* Hook.

25b Catkins arising from lateral buds only; ♀ catkins 1.5–5(–6) cm; buds and stips not resinous; caps hairy or glab; mont to alp

26a Lvs gen 1.5–3(–3.5) × longer than wide, margins entire or serrulate, sometimes with glands, which are often confined to the proximal lf margins; caps glab; stream banks, wet meadows, lakeshores; AK to OR, e to NWT, Alta, ID, and w MT; variable w.

21 *S. commutata* Bebb

26b Lvs gen 3–4.5 × longer than wide, margins entire, lacking glands; caps glab or hairy; stream banks, wet meadows; ne OR to NV, e to w MT, WY, and CO; Wolf's w.; 2 vars.

22 *S. wolfii* Bebb

a1 Caps glab or occ subglab, stipes 0.2–0.9 mm; w MT s to ID and NV, e to WY, UT, and CO

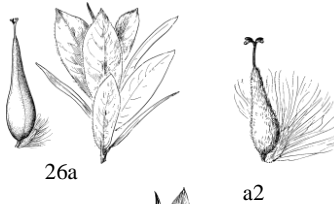
var. *wolfii*

a2 Caps hairy, stipes 0–0.4 mm; ne OR, ID, w MT, WY, and UT (*S. i.*)

var. *idahoensis* C.R. Ball



25a



26a

a2



26b



27a

24b Trees or shrubs to 20 m, seldom < 2 m; lvs less hairy above than below; lowl to subalp

27a Brlets and brs glaucous, at least behind buds, glab or glabrate; petioles (2–)4–6(–12) mm; midmont to subalp stream banks, terraces, wet meadows; Yukon s, e Cas, to CA, e to NWT, Sask, and RMS; Drummond's w.

24 **S. drummondiana** Barratt ex Hook.

27b Brlets and brs not glaucous, usually hairy; petioles (2–)5–20(–30) mm; lowl to mont, habitat various; both sides Cas

28a Lvs with dense, appressed, parallel, white hairs below, appearing satiny, bls gen dull green above, 17–32(–48) mm wide, veins impressed; caps hairy; stamen 1; lowl to midmont stream banks and moist woodl; s AK to CA, mainly in and w Cas, also Alta to e WA, ne OR, n ID, and w MT; ours var. **sitchensis**

24 **S. sitchensis** Sanson ex Bong.

28b Lvs with somewhat spreading, tangled hairs below, the hairs frequently both white and rusty-red, bls dull green or very shiny above, 9–63 mm wide, veins not or slightly impressed; caps hairy or glab; stamens 2; lowl to subalp; habitat various

29a Shrubs or trees to 12(–20) m, larger sts to 5(–10) dm diam; brs flexible at base; lvs 9–37 mm wide, dull green or slightly shiny above, gen obovate to broadly oblanceolate, gen widest above the middle; petioles 3–10(–18) mm; caps hairy; typically in mesic, often for habitats (unique among our spp.), less commonly stream banks, sloughs, and ditches, lowl to mont, rarely subalp; AK to CA, both sides Cas, e to NWT, RMS, and n Gr Pl; Scouler's w.

25 **S. scouleriana** Barratt ex Hook.

29b Shrubs (rarely trees) to 6(–8) m, larger sts to 3(–4) dm diam; brs quite brittle at base; lvs 18–63 mm wide, slightly or very shiny above, broadly elliptic or less often obovate, gen widest near the middle; petioles 4–20(–29) mm; caps glab, rarely hairy in coastal forms; wet or seasonally wet habitats, rarely mesic upland sites, lowl, less commonly midmont; coastal AK s, chiefly w Cas, to n CA, e in CRG to Bingen; Hooker's w. (*S. piperi*)

26 **S. hookeriana** Barratt ex Hook.

22b Mature lvs glab to hairy below, hairs if present not obscuring the surface

30a Trees or shrubs to 12(–20) m; brs flexible at base; lvs gen obovate to broadly oblanceolate, dull green or slightly shiny above, hairs if present often both white and rusty-red; lf margins usually entire, rarely serrulate; caps hairy; catkins precocious; typically in mesic, often for habitats (unique among our spp.), less commonly stream banks, sloughs, and ditches (see lead 29a)

25 **S. scouleriana** Barratt ex Hook.

30b Shrubs to 8 m (to 25 m in *S. ×fragilis*, which has brs brittle at base); brs flexible or brittle at the base; lf shape various, dull green to very shiny above, hairs white and/or rusty-red; lf margins serrate to entire; caps hairy or glab; catkins precocious to coetaneous; typically in wet or seasonally wet habitats

31a Lvs glab, margins entire, bls 5–20 mm wide; lower sts decumbent, rooting in *Sphagnum* moss or organic soil; caps glab; mont bogs and boggy meadows; Yukon s, e of BC Coast Mts, to Cas of WA and OR, e across n US (except MT) and Can to Atl; bog w.

27 **S. pedicellaris** Pursh

31b Lvs glab or hairy, margins serrate to entire, bls 5–63 mm wide; lower sts ascending to erect, gen not rooting; pls usually growing in mineral soil, less commonly in *Sphagnum* moss or organic soil; caps hairy or glab

32a Mature lvs relatively long and narrow, usually > 3 × longer than wide, the bls narrowly elliptic, oblong, lanceolate, or oblanceolate (if in doubt about lf morphology, try both leads of 32 to discover which choice is correct)

33a At least some lf bl bases abruptly contracted to the petiole, truncate or subcordate, or less often broadly rounded, margins finely serrate, rarely entire; stipes lf-like, usually persistent; caps glab; lowl to mont stream banks, lakeshores, wet meadows

34a Older brs ashy-gray to yellow-gray; fl bracts tawny or brown; e OR to CA, e to RMS; yellow w. (*S. eriocephala* var. *watsonii*, *S. mackenzieana* var. *w.*, *S. rigida* var. *w.*)

28 **S. lutea** Nutt.

34b Older brs usually reddish to reddish-brown; fl bracts brown

35a Lvs oblong to narrowly elliptic, gen 3–6 × as long as wide; stipes 1–2(–2.5) mm; c Cas, OR to CA, also WY to AZ, e to CO and NM; rarely coll in our area; strap-lf w. (*S. eriocephala* subsp. *mackenzieana* var. *l.*, *S. e.* var. *l.*)

29 **S. ligulifolia** (C.R. Ball) C.R. Ball ex C.K. Schneid.



28a



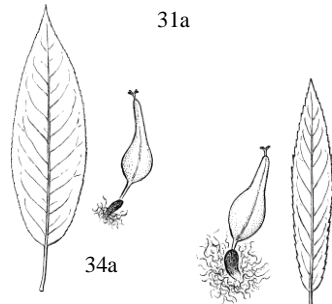
29a



30a



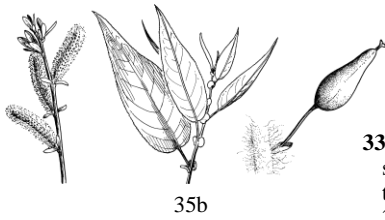
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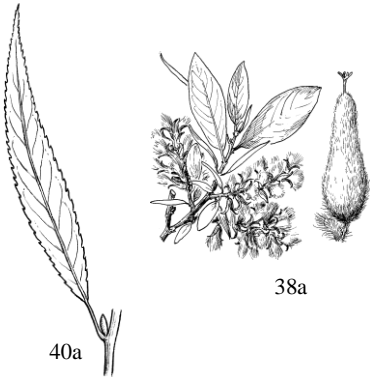
35b



37a



37b



40a



38a



41a



42b

35b Lvs broadly lanceolate to elliptic, gen 2.5–4.5 × as long as wide; stipes 2–4(–5) mm; widespread in our area but not coastal; AK to CA, e to NWT, s to ID, MT, and WY; MacKenzie's w. (*S. eriocephala* subsp. *mackenzieana* var. *m.*, *S. m.* var. *macrogramma*, *S. rigida* var. *macrogramma*)

30 S. prolixa Andersson

33b Lf bl bases tapered to the petiole, less often rounded, margins entire or serrate; stips rudimentary and deciduous, or absent; caps hairy or glab; low to above timberl, habitat various

36a Brlets and second-year brs glaucous, at least behind the buds; lvs lanceolate to lance-elliptic, or elliptic; margins entire or inconspicuously toothed; caps hairy; stream banks, lakeshores, wet meadows

37a Lvs sparsely hairy and silvery or gray-green above, bl gen 6–12 mm wide; petioles 2–5(–9) mm; ♀ catkins 1–1.5(–2.5) cm; shrub gen with straight, nearly erect sts to 5 m; foothills to high mont, but to near sea level w Cas; s BC to CA e to RMS; widespread in our area but not coastal; Geyer's w. (*S. g.* var. *meleiana*)

31 S. geyeriana Andersson

37b Lvs glab and usually shiny above, bl 6–22 mm wide; petioles 4–10(–16) mm; ♀ catkins 2–5 cm; shrub with spreading to ascending sts to 4 m; foothills to near timberl; e Cas, OR to CA and NV, e to ID, w MT, and WY; Lemmon's w.

32 S. lemmonii Bebb

36b Brlets and second-year brs not glaucous; lvs various; caps glab or hairy; habitat various

38a Brlets densely to moderately appressed-hairy, 2nd year brs often with a translucent, peeling, waxy layer; lvs entire or sometimes serrulate toward base, bl hairs white; caps hairy; midmont to above timberl, moist places to open slopes; BC, Alta, n WA, w MT; AK, nw Can s in mts to NM; gray w.; ours var. *villosa* Andersson

33 S. glauca L.

38b Brlets glab to sparsely hairy, 2nd year brs without translucent, peeling, waxy layer; lvs entire to serrate, hairs if present white and/or rusty-red; caps hairy or glab; low to mont

39a Petioles 2–5(–9) mm; lvs narrowly elliptic to lanceolate, gen 6–12 mm wide; ♀ catkins ± spheric, 1–1.5(–2.5) cm (see lead 37a)

31 S. geyeriana Andersson

39b Petioles (3–)5–16 mm; lvs elliptic or oblong, less commonly oblanceolate, 6–35 mm wide; ♀ catkins cylindric, 2–11 cm

40a Tree to 20(–25) m; sts to 10 dm diam; petioles often with wart-like glands near the base of the bl; lf margins serrate with fine, gland-tipped teeth; brs very brittle at base; caps glab; mostly e Cas in our area (see lead 21a)

17 S. ×fragilis L.

40b Shrubs or small trees to 6(–8) m; sts to 2 dm diam; petioles without wart-like glands; lf margins serrulate to entire, the teeth minutely gland-tipped or not; brs flexible to brittle at base; caps hairy or glab; habitat various; e and w Cas

41a Mature lvs densely hairy to glabrate below, margins strongly to slightly rolled under, entire or occ remotely and irreg shallowly toothed; hairs of fl bracts forming a dense fringe, the bract apex broadly rounded; caps glab; low to mid-mont streams and washes; WA to CA, mostly e Cas but local in Wi Va, e to ID, UT, and TX; arroyo w.

34 S. lasiolepis Benth.

41b Mature lvs glab or sparsely hairy below, margins not strongly rolled under, entire or serrulate to crenate-undulate; hairs of fl bracts not dense, the bract apex narrowly rounded or acute; caps hairy

42a Lvs 6–22 mm wide, margins entire to inconspicuously serrulate, not undulate; ♀ catkins 2–5 cm; foothills to near timberl (see lead 37b)

32 S. lemmonii Bebb

42b Lvs (12–)20–35 mm wide, at least some with irreg marginal teeth, margins undulate; ♀ catkins 2.5–11 cm; mostly in wet low to mont sites; sc BC and w MT, occ planted elsewhere, e across n US and Can to Atl; pussy w.

35 S. discolor Muhl.

32b Mature lvs shorter or wider, usually < 3 × longer than wide, the bls broadly elliptic to ovate or obovate

43a At least some lf bl bases abruptly contracted to the petiole, truncate, subcordate, or broadly rounded; stips lflike, usually persistent; lf margins finely serrate (rarely entire); caps glab



44a

44a Lvs gen > 2.5 × as long as wide; brs and brlets sometimes with sparkling wax crystals; styles 0.3–0.7 mm; fl bracts 0.8–1.6 mm; ♀ catkins coetaneous; lowl to midmont (see lead 35b) **30 S. prolifica** Andersson

44b Lvs gen 1.5–3 × as long as wide; brs without sparkling wax crystals; styles (0.5–)0.6–2.5 mm; fl bracts 1–2.8 mm; ♀ catkins coetaneous or precocious; mont to subalp



45a

45a Stips large, obvious at arm's length; ♀ catkins precocious; catkin brlets 0–5 mm; styles (0.5–)0.7–1.8 mm; fens, for openings, and floodplains; AK s, e of Coast Mts in BC, to n Cas, WA, e across Can to Atl, s to ID, MT, and US n Gr Pl; false mt w. (*S. padifolia*, *S. padophylla*, *S. barclayi* var. *padophylla*, *S. cordata* var. *monticola*, *Salix m.* misapplied)

36 S. pseudomonticola C.R. Ball

45b Stips smaller, not obvious; ♀ catkins coetaneous; catkin brlets 4–24 mm; styles 0.6–2.5 mm; stream banks, wet meadows, lakeshores; AK to BC, OM and Cas in WA, e to NWT and s in RM to ID, MT, and WY; Barclay's w. (*S. conjuncta*) **37 S. barclayi** Andersson

43b Characters not combined as above: lf bl bases tapered to the petiole or less commonly broadly rounded, stips rudimentary (rarely lflike) and early deciduous, or absent; lf margins entire to crenate; caps hairy or glab

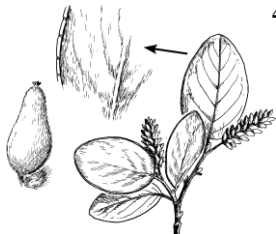


46a

46a Shrubs < 1(–3) m; mont to alp

47a Lvs shiny, veins strongly impressed above, lower surface with sparse to dense appressed hairs; fl from both terminal and lateral buds (see lead 18a) **14 S. vestita** Pursh

47b Lvs dull green to shiny, veins not or slightly impressed above, lower surface glab or hairy; fl from lateral buds only



48a Lvs (1–)2–3 cm; petioles 1–3(–4) mm; ♀ catkins 1.5–2 cm; caps hairy; mont, subalp meadows; Yukon s, e Cas, to CA, e across Can and s to RMS; short-fr w.; ours var. **brachycarpa**

38 S. brachycarpa Nutt

48b Lvs (2.5–)3–6(–8) cm; petioles (1–)3–10(–14) mm; ♀ catkins 1.5–8 cm; caps hairy or glab

49a Lvs finely serrate, bls mostly broadly elliptic to obovate; stips lf-like, sometimes reduced; caps glab; mont to subalp (see lead 45b)

37 S. barclayi Andersson

49b Lvs entire or minutely and obscurely serrulate, bls elliptic, less commonly elliptic-obovate; stips rudimentary and early deciduous, or absent; caps glab or hairy; mont to alp



48a



50a

50a Brlets densely to moderately appressed-hairy, second-year brs often with a translucent, peeling, waxy layer; caps hairy (see lead 38a) **33 S. glauca** L.

50b Brlets glab to sparsely spreading-hairy, second-year brs without translucent, peeling, waxy layer; caps hairy or glab

51a Lvs dark green and shiny above, ♀ catkins precocious to coetaneous, catkin brlets 0–6 mm; caps hairy; widespread cordilleran sp.; 2 vars. **39 S. planifolia** Pursh

a1 Pls < 1(–2) m; high mont to alp meadows, seeps, snowmelt areas; w MT, c ID, se OR, CA, UT, NM; alp plane-lf w. (*S. m.*, *S. phyllicifolia* var. *m.*) var. **monica** (Bebb) C.K. Schneid.

a2 Pls 2–4 m, mont, often near timberl; stream banks, lakeshores, wet meadows, for wetlands and seeps; s AK s, in Cas, to Mt Jefferson, OR, and s in RM to NM, e in Can and n US to Newf; diamondlf w. (*S. phyllicifolia* var. *planifolia*, *S. ph.* var. *pennata*) var. **planifolia**

51b Lvs dull green above; ♀ catkins coetaneous, catkin brlets 1.5–14 mm; caps glab; mont and subalp wet meadows and stream banks; Yukon to n WA and ne OR, e to NWT, Alta, ID, MT, and WY; Farr's w. **40 S. farriae** C.R. Ball



51a



51b

46b Shrubs or small trees to 8 m, seldom < 2 m; lowl to mont

52a At least some lvs with irreg marginal teeth, rusty-red hairs usually dense on juvenile lvs; mature bls gen 3–8 cm, usually dull above; lowl to mont; local in s BC and MT (see lead 42b) **35 S. discolor** Muhl.

52b Lf margins entire to obscurely crenate; rusty-red hairs absent or sparse on juvenile lvs; mature bls gen 3–12.5 cm, shiny to dull above

53a Mature lvs dull green above, gen 3–5 cm, margins entire, glandless; caps hairy, stipes 2–5 mm; mature ♀ catkins loosely-fl'd; stream banks



52a



53a



54a



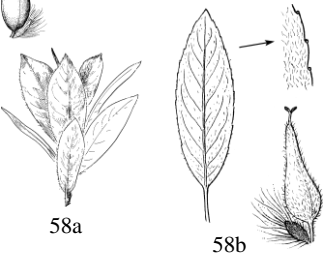
54b



55a



56a



58a

58b



60a



59a



61a



62a

from lowl to midmont; AK s, e Cas in our area, to CA, e to RMS and across Can and n US to Atl; Bebb's w. (*S. b.* var. *perrostrata*)

41 *S. bebbiana* Sarg.

53b Mature lvs dark green and shiny above, gen 3.5–12.5 cm, margins obscurely crenate or entire, usually with minute, widely-spaced glands proximally; caps hairy or glab, stipes 0.5–1.8(–2) mm; mature ♀ catkins densely fld

54a Lvs 18–63 mm wide; petioles 4–20(–29) mm; caps glab, rarely hairy in coastal forms; shrub or small tree to 6(–8) m; lowl, less commonly mid-mont; mostly w Cas and in CRG (see lead 29b)

26 *S. hookeriana* Barratt ex Hook.

54b Lvs 9–15(–22) mm wide; petioles (1)–5–8(–10) mm; caps hairy; shrub to 4 m; mont, often near timberl; stream banks, lakeshores, wet meadows, for wetlands, and seeps; mostly in and e Cas (see lead 51a)

39 *S. planifolia* Pursh

Group 5

55a Mature lvs entire; margins of lvs and stips lacking glands; bls persistently hairy on both sides (see lead 26b) 22 *S. wolfii* Bebb

55b Mature lvs serrulate or entire; margins of lvs and stips usually with glands (best viewed at 10×); bls glab or hairy on one or both sides

56a Catkins fl from both terminal and lateral buds; brlets with long, spreading hairs; lvs 1–2.5 × as long as wide; caps glab; midmont to subalp in moist to boggy areas; sc BC and adj nc WA, e to ID, w MT, and WY; Tweedy's w.

42 *S. tweedyi* (Bebb ex Rose) C.R. Ball

56b Catkins fl from lateral buds only; brlets glab or hairy, hairs if present not long and spreading; lvs 1–6 × as long as wide; caps glab or hairy

57a Mature lvs hairy on one or both sides

58a Caps glab; lvs gen 1.5–3(–3.5) × longer than wide, occ with glands, these often confined to proximal margins (see lead 26a) 21 *S. commutata* Bebb

58b Caps hairy; lvs gen 2–5 × longer than wide, usually with glands, the glands sometimes sparse or rarely lacking; mont to subalp, wet meadows and stream banks; in and e Cas, OR to CA and NV, e to ID, w MT, and WY; Eastwood's w.

43 *S. eastwoodiae* Cockerell ex A. Heller

57b Mature lvs glab or glabrate

59a At least some lf bl bases abruptly contracted to the petiole, truncate or subcordate, less often broadly rounded; stips lf-like, gen persistent; bl margins finely serrate; caps glab; mont stream banks; se WA to e side Cas in OR, e to c ID; one-color w. (*S. eriocephala* subsp. *mackenzjeana* var. *mo.*, *S. eriocephala* var. *mo.*, *S. rigida* var. *ma.* in part) 44 *S. monochroma* C.R. Ball

59b Lf bl bases tapered to the petiole or rounded; stips lf-like and eventually deciduous, or rudimentary; bl margins serrulate or entire; caps glab or hairy

60a Lvs dark green and very shiny above, juvenile lvs with white and rusty-red hairs; brs red, very shiny; caps 7–11 mm; mont meadows, wetlands, stream banks, and lakeshores; Yukon to n WA, e across Can to Que; MacCalla's w.

45 *S. maccalliana* Rowlee

60b Lvs dull green or slightly shiny above; juvenile lvs glab or with white and/or rusty-red hairs; brs yellow-brown, red-brown or gray-brown (occ darkening to nearly black when dried), dull to slightly shiny; caps 3–7 mm

61a Shrub to 0.6(–1) m, forming clones by st layering; sts decumbent; juvenile lvs glab; stips rudimentary and soon deciduous; mont, subalp, organic soils and mosses in meadows, wetlands, and along streams; AK to s BC, e across Can to New Brunswick, and disjunct in WY and CO, rarely coll in our area; blueberry w.

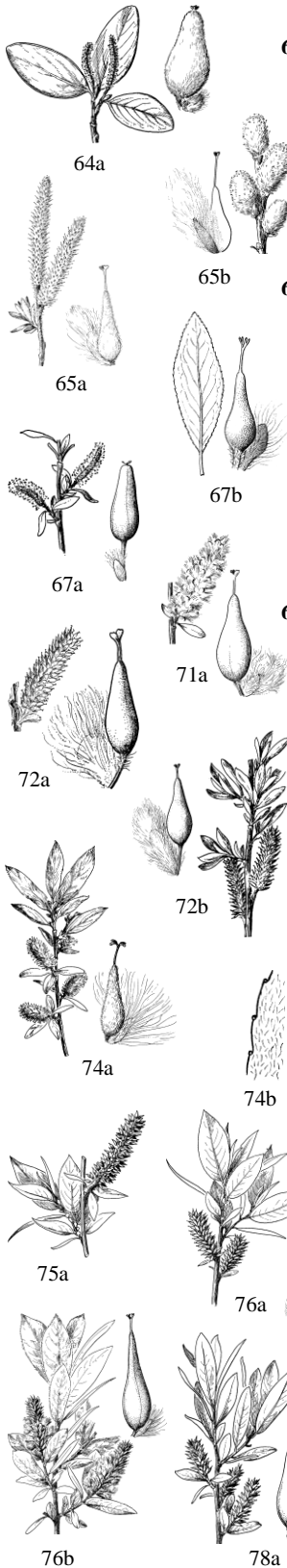
46 *S. myrtilifolia* Andersson

61b Shrubs to 6 m, not forming clones; sts ascending to erect; juvenile lvs hairy; stips rudimentary or lf-like

62a Caps glab; lvs toothed with forward pointing glands, or entire; juvenile lvs with white and/or rusty-red hairs; mont to alp streams, lakeshores, wet meadows; common in and e Cas, BC to CA, e to Sask and RMS; Booth's w. (*S. myrtilifolia* misapplied) 47 *S. boothii* Dorn

62b Caps hairy; lvs entire to serrulate, with small, bead-like glands oriented perpendicular to the lf margin, the glands sometimes sparse or rarely lacking; juvenile lvs with white hairs; OR Cas e to sw MT, and s (see lead 58b) 43 *S. eastwoodiae* Cockerell ex A. Heller

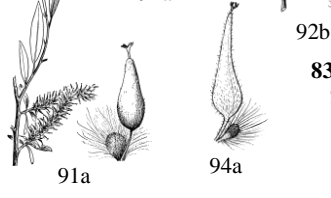
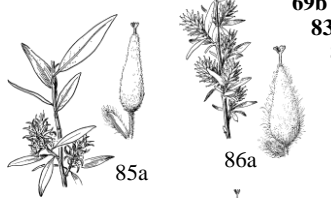
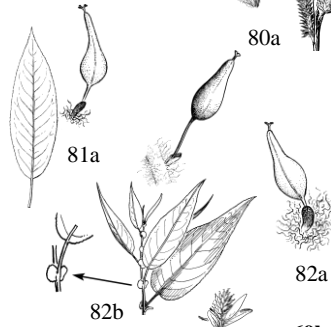
Group 6



- 63a** Catkins arising from both terminal and lateral buds; pls uncommon in our area
- 64a** Fl bracts tawny, 0.8–1.6 mm; caps hairy (see lead 18a) 14 *S. vestita* Pursh
- 64b** Fl bracts dark brown to black, 1.8–5.2 mm; caps hairy or glab
- 65a** Caps hairy; lvs densely hairy below, not glaucous; anthers 0.4–0.6 mm; scales, stips, and brlets resinous, exuding a yellowish oily substance that stains pressing papers yellow or green; rarely coll in our area, in RM (see lead 25a) 20 *S. barrattiana* Hook.
- 65b** Caps glab; lvs sparsely hairy below, sometimes glaucous; anthers 0.6–1.0 mm; scales, stips, and brlets not resinous, not exuding an oily substance; uncommon in our area (see lead 56a) 42 *S. tweedyi* (Bebb ex Rose) C.R. Ball
- 66b** Catkins arising from lateral buds only; pls common or uncommon in our area
- 66a** Lower sts decumbent, rooting in *Sphagnum* moss or organic soil of bogs, also growing in mineral soil; shrubs to 1(–1.5) m; caps glab
- 67a** Lvs glaucous below and often above; anthers yellow; stipes 2.1–3.2 mm; Cas and RM, and n (see lead 31a) 27 *S. pedicellaris* Pursh
- 67b** Lvs not glaucous below; anthers purple turning yellow; stipes 0.6–1.7 mm; BC, Alta, and n (see lead 61a) 46 *S. myrtilifolia* Andersson
- 66b** Lower sts spreading to erect; habitat various; lvs usually without the above combination of characters; shrubs or trees to 25 m; caps glab or hairy
- 68a** Pls ♀
- 68b** Pls ♂

Subgroup 6a Pls ♀

- 69a** Caps glab
- 70a** Catkins emerging before the lvs, sessile or nearly so
- 71a** Older brs (3+ years old) with longitudinal splits in the bark, the epidermis around the splits yellow-edged, contrasting with the dark red-brown epidermis still clinging to the br; mont to subalp; RM and e of Coast Mts in s BC (see lead 45a) 36 *S. pseudomonticola* C.R. Ball
- 71b** Older brs lacking the distinctive yellow-edged splits described above; lowl to midmont; coastal BC to OR, e to ID
- 72a** Mature caps 5–10 mm; fl bracts rounded to acute; internodes of brs of previous year 3–5.3 mm diam (measured just above the lowest catkin); coastal and inl w Cas (see lead 29b) 26 *S. hookeriana* Barratt ex Hook.
- 72b** Mature caps 2.4–5.5 mm; fl bracts broadly rounded; internodes of brs of previous year 1.3–2.7(–3.3) mm diam (measured just above the lowest catkin); widespread but not at immediate coast (see lead 41a) 34 *S. lasiolepis* Benth.
- 70b** Catkins emerging with the lvs on lfy brlets
- 73a** Lvs not glaucous below
- 74a** Lf margins entire and not gland-dotted; ♀ catkins 8.5–19 mm; RM n to ID and MT (see lead 26b) 22 *S. wolfii* Bebb
- 74b** Lf margins ± serrate and usually gland-dotted; ♀ catkins 11–60 mm; widespread
- 75a** Stipes (1.5–)2–3.5 mm; juvenile lvs often reddish (green), glab to sparsely hairy; brs of previous year glab; brlets glab or puberulent, sometimes weakly glaucous with sparkling wax crystals; lf hairs white; se WA to e side Cas in OR, e to c ID (see lead 59a) 44 *S. monochroma* C.R. Ball
- 75b** Stipes 0.4–2(–2.5) mm; juvenile lvs green, sparsely to densely hairy; brs of previous year and brlets glab or with spreading hairs, not glaucous; lf hairs white, sometimes also rusty-red
- 76a** Juvenile lvs pilose to densely villous, hairs white, sometimes also rusty-red; brs and brlets sometimes glab; catkin brlets 1–9 mm; fl bracts brown, sometimes blackish distally, 0.7–2.1 mm; mature caps 2.5–6 mm; common in and e Cas (see lead 62a) 47 *S. boothii* Dorn
- 76b** Juvenile lvs sparsely to densely long-silky-tomentose, hairs white; brs and brlets hairy; catkin brlets 3–15(–30) mm; fl bracts tawny, brown, or bicolor, 1–3 mm; mature caps 3.5–8 mm; widespread in mts in our area (see lead 26a) 21 *S. commutata* Bebb
- 73b** Lvs glaucous below
- 77a** Pls mont to subalp; stipes 0.4–1.5 mm; brlets with sparkling wax crystals
- 78a** Lf margins gen entire; juvenile lvs gen with white and rusty-red hairs; lf midribs gen with some rusty hairs; Yukon s to n WA, ne OR, ID, and WY (see lead 51b) 40 *S. farriae* C.R. Ball



- 78b** Lf margins always toothed; juvenile lvs with only white hairs; lf midribs with only white hairs; widespread (see lead 45b) 37 *S. barclayi* Andersson
- 77b** Pls low to midmont; stipes 0.5–4.2 mm, if < 0.9 mm, pls of low; brlets with or without sparkling wax crystals
- 79a** Mature caps 5–10 mm; internodes of brs of previous year usually 3–5.3 mm diam (measured just above the lowest catkin); low; coastal and inl w Cas (see lead 29b) 26 *S. hookeriana* Barratt ex Hook.
- 79b** Mature caps 2.4–5.5 mm; internodes of brs of previous year usually 1.3–2.7(–3.3) mm diam (measured just above the lowest catkin); low to midmont; widespread but not at the immediate coast
- 80a** Stipes 1–2 mm; fl bracts dark brown to black, hairy throughout or distally, 1–2.4 mm, apex broadly rounded; e WA, and Wi Va e to w ID, and s (see lead 41a) 34 *S. lasiolepis* Benth.
- 80b** Stipes 0.9–4.2 mm; fl bracts tawny to black or bicolored, glab to sparsely hairy or hairy only at base, 0.5–1.6 mm, apex narrowly rounded or acute
- 81a** Brs ashy-gray to yellow-gray; brlets yellow-brown; e OR to CA, e to RMS (see lead 34a) 28 *S. lutea* Nutt.
- 81b** Brs and brlets usually reddish to reddish-brown
- 82a** Stipes (0.5–)1–2(–2.5) mm; ♀ catkins 1.5–5 cm, appearing more densely-fl'd, rachis hidden; c OR Cas and s; rarely coll in our area (see lead 35a) 29 *S. ligulifolia* (C.R. Ball) C.R. Ball ex C.K. Schneid.
- 82b** Stipes (1.5–)2–4(–5) mm; ♀ catkins 2–6.5 cm, appearing more open, rachis visible; widespread (see lead 35b) 30 *S. proluxa* Andersson
- 69b** Caps hairy
- 83a** Catkins emerging with the lvs on lfy brlets
- 84a** Catkins 1–2 cm
- 85a** Stipes (0.4–)1–2.8 mm; lvs glaucous below, hairs white or white and rusty-red; mont to subalp; widespread (see lead 37a) 31 *S. geyeriana* Andersson
- 85b** Stipes 0–0.6(–0.9) mm; lvs not glaucous below, hairs white; subalp to alpe
- 86a** Fl bracts tawny to greenish, 1–3 mm; scattered e Cas (see lead 48a) 38 *S. brachycarpa* Nutt.
- 86b** Fl bracts brown, black, or bicolor, 0.8–2 mm; ne OR to NV, e to RM (see lead 26b) 22 *S. wolfii* Bebb
- 84b** Catkins (1)1.5–7(–11.5) cm
- 87a** Stipes of mature caps 2–6 mm, > fl bracts; widespread e Cas (see lead 53a) 41 *S. bebbiana* Sarg.
- 87b** Stipes of mature caps 0–2.1 mm, usually < fl bracts
- 88a** Shrubs < 1(–3) m; arctic or alp
- 89a** Catkin-bearing brlets and lower surfaces of lvs densely white tomentose; RM (see lead 23a) 19 *S. candida* Flueggé ex Willd.
- 89b** Catkin-bearing brlets and lower surfaces of lvs densely to moderately appressed-hairy but not densely white-tomentose; in our area from BC to n WA and w MT (see lead 38a) 33 *S. glauca* L.
- 88b** Shrubs to 8 m, seldom < 2 m; foothills to alp
- 90a** Caps 7–11 mm; brs dark red, very shiny; mont to subalp; in our area in BC and n WA (see lead 60a) 45 *S. maccalliana* Rowlee
- 90b** Caps 3–7 mm; brs yellow-brown, red-brown, or gray-brown; dull to slightly shiny; low to subalp; widespread
- 91a** Brs often glaucous, occ only behind buds; lvs glaucous below; lf hairs white or white and rusty-red; OR Cas e to sw MT, and s (see lead 37b) 32 *S. lemmonii* Bebb
- 91b** Brs gen not glaucous; lvs green below or so densely hairy the surface color cannot be determined; lf hairs white or white and yellow
- 92a** Hairs of caps somewhat spreading, tangled; lf hairs white or white and yellow; OR Cas e to sw MT, and s (see lead 58b) 43 *S. eastwoodiae* Cockerell ex A. Heller
- 92b** Hairs of caps ± appressed, parallel, satiny; lf hairs white; both sides Cas, e to nw MT (see lead 28a) 24 *S. sitchensis* Sanson ex Bong.
- 83b** Catkins emerging before the lvs, sessile or nearly so
- 93a** Brlets and brs of previous year usually glaucous, occ only behind the buds
- 94a** Brs flexible at base; caps 6–11 mm; catkins 12–33 mm wide; local in s BC and w MT, occ planted elsewhere (see lead 42b) 35 *S. discolor* Muhl.



95a

95b



97a



98a



100b



97b, 99a

94b Brs brittle at base (occ flexible in *S. lemmonii*); caps 2.5–7 mm; catkins 8–18 mm wide; widespread in and e Cas

95a Brs ± erect, purple-black, occ wine-red in life; midmont to subalp (see lead 27a) 23 *S. drummondiana* Barratt ex Hook.

95b Brs spreading to ascending, yellow-brown to red-brown in life; foothills to mont; OR Cas e to sw MT, and s (see lead 37b) 32 *S. lemmonii* Bebb

93b Brlets and brs of previous year not glaucous or weakly so

96a Pls of lowl w Cas

97a Shrubs (rarely trees) to 6(–8) m, larger sts to 3(–4) dm diam; brs brittle at base; caps glab, rarely hairy in coastal forms; styles (0.5–)0.6–2.3 mm; wet or seasonally wet habitats, rarely mesic upland sites (see lead 29b)

26 *S. hookeriana* Barratt ex Hook.

97b Shrubs or trees to 12(–20) m, larger sts to 5(–10) dm diam; brs flexible at base; caps hairy; styles 0.2–0.6 mm; typically in mesic, often for habitats (unique among our spp.), less commonly shores of streams, sloughs, and ditches (see lead 29a) 25 *S. scouleriana* Barratt ex Hook.

96b Pls in and e Cas

98a Stigmas 0.2–0.4 mm; OR e to sw MT, s to CA, NV, and WY (see lead 37b) 32 *S. lemmonii* Bebb

98b Stigmas 0.4–1 mm

99a Shrubs or trees to 12(–20) m; styles 0.2–0.6 mm; typically in mesic, often for habitats (unique among our spp.), less commonly shores of streams, sloughs, and ditches, lowl to midmont; widespread throughout our area (see lead 29a) 25 *S. scouleriana* Barratt ex Hook.

99b Shrubs to 4 m; styles 0.3–2 mm; lowl to alp wet habitats; Cas and RM

100a Stipes (1–)1.6–2.7 mm; caps 6–11 mm; local in s BC and w MT, occ planted elsewhere (see lead 42b) 35 *S. discolor* Muhl.

100b Stipes 0.3–0.8 mm; caps 5–6 mm; in our area RM, also Cas s to Mt Jefferson, OR (see lead 51a) 39 *S. planifolia* Pursh

Subgroup 6b Pls ♂

101a Stamens 1; both sides Cas (see lead 28a) 24 *S. sitchensis* Sanson ex Bong.

101b Stamens 2

102a Catkins emerging before the lvs, sessile or nearly so

103a Pls of lowl to moderate elev w of Cas

104a Anthers 0.7–1.3 mm, cylindric; shrubs or trees to 12(–20) m, larger sts to 5(–10) dm diam; brs flexible at base; internodes of brs of previous year usually 1.4–2.8(–3.2) mm diam; typically in mesic, often for habitats, less commonly shores of streams, ditches; widespread (see lead 29a) 25 *S. scouleriana* Barratt ex Hook.

104b Anthers (0.3–)0.5–0.9(–1.0) mm, orbicular to cylindric; shrubs (rarely trees) to 6(–8) m, larger sts to 3(–4) dm diam; brs brittle or flexible at base; internodes of brs of previous year usually 1.3–5.3 mm wide; wet or seasonally wet habitats, rarely mesic upland sites

105a Anthers yellow (sometimes red-tipped when very young), (0.5–)0.6–0.9(–1) mm; internodes of brs of previous year (2–)3–5.3 mm diam (measured above lowest catkin); catkins 10–27 mm wide (see lead 29b) 26 *S. hookeriana* Barratt ex Hook.

105b Anthers purple, becoming yellow with age but usually remaining tinged with purple at the tip or brownish throughout, 0.4–0.7 mm; internodes of previous year's brs 1.3–2.7(–3.5) mm diam (measured above lowest catkin) except to 4.8 mm diam in RM and mts of s BC; catkins 5–15 mm wide

106a Anthers 0.4–0.5 mm; brs flexible at base; older brs (3+ yrs old) with longitudinal splits in bark, the epidermis around splits yellow-edged, contrasting with the dark red-brown epidermis still clinging to the br; mont to alp; mts of s BC to n Cas, WA, e to RM and n Gr Pl (see lead 45a) 36 *S. pseudomonticola* C.R. Ball

106b Anthers 0.4–0.7 mm; brs usually brittle at base; brs > 2 yrs old gen lacking longitudinal splits in bark or splits not ringed with yellow-edged epidermis; lowl to midmont; widespread, mostly e Cas, also w Cas in OR (see lead 41a) 34 *S. lasiolepis* Benth.

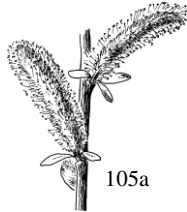
103b Pls of lowl to alp, in or e Cas, or in OM



101a



104a



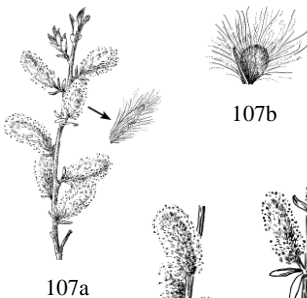
105a



106a



106b



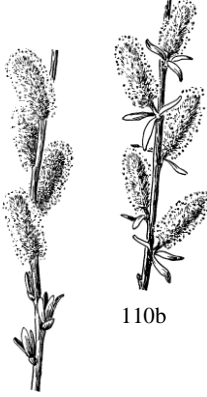
107a



107b



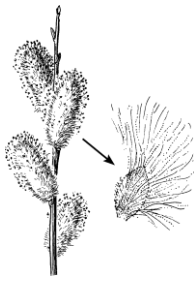
111a



110a



110b



112a, 114b



115a



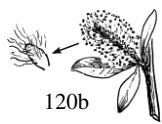
115b



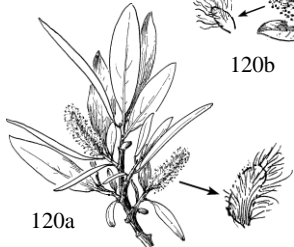
117a



119a



120b



120a

107a Fl bracts light tan to medium reddish brown; widespread e Cas (see lead 53a) 41 *S. bebbiana* Sarg.

107b Fl bracts dark brown to black or bicolored

108a Brlets and younger brs strongly glaucous, sometimes only in lf axils or behind buds

109a Brs flexible at base; local in s BC and w MT, occ planted elsewhere (see lead 42b) 35 *S. discolor* Muhl.

109b Brs brittle at base (occ flexible in *S. lemmonii*); widespread, Cas and e

110a Wood of peeled 3–5 yr old brs lacking points or conical projections; brs ± erect, purple-black, occ wine-red in life; anthers 0.4–0.6 mm; catkins 1.9–4 cm; midmont to subalp (see lead 27a)

23 *S. drummondiana* Barratt ex Hook.

110b Wood of peeled 3–5 yr old brs with points or conical projections; brs spreading to ascending, yellow-brown to red-brown in life; anthers 0.5–0.9 mm; catkins 1.6–2.8 cm; foothills to near timberl. OR Cas e to sw MT, and s (see lead 37b) 32 *S. lemmonii* Bebb

108b Brlets and younger brs not or slightly glaucous

111a Anthers 0.7–1.2 mm, cylindric; shrub or tree to 12(–20) m, larger sts to 5(–10) dm diam; brs flexible at base; typically in mesic, often for habitats, less commonly shores of streams, ditches; widespread on both sides Cas (see lead 29a) 25 *S. scouleriana* Barratt ex Hook.

111b Anthers 0.4–0.8 mm, ± orbicular or short-cylindric; shrub (rarely tree) to 6(–8) m, larger sts to 3(–4) dm diam; brs brittle or flexible at base; wet or seasonally wet habitats, rarely mesic upland sites

112a Shrubs < 1 m; pls of high elev; Cas e to RM (see lead 51a)

39 *S. planifolia* Pursh

112b Shrubs or small trees to 12 m, seldom < 2 m; lowl to near timberl

113a Hairs of fl bracts exceeding the bracts by more than the bract length; lowl to subalp; RM, and Cas s to Mt Jefferson, OR

114a Peeled 3–5 yr old brs lacking diamond-shaped depressions; petioles tomentose, flat to convex adaxially in cross-section; juvenile lvs pilose, tomentose, or short-silky; local in s BC and w MT, occ planted elsewhere (see lead 42b) 35 *S. discolor* Muhl.

114b Peeled 3–5 year old brs with diamond-shaped depressions; petioles glab, pilose, or short-silky, shallowly grooved adaxially in cross-section; juvenile lvs glab, puberulent, pubescent, or long-silky; in our area RM, also Cas s to Mt Jefferson, OR (see lead 51b)

39 *S. planifolia* Pursh

113b Hairs of fl bracts exceeding the bracts by less than the bract length; lowl to midmont; widespread

115a Fl bracts widest distally, rounded, black to dark brown, hairs straight to wavy; lowl to midmont; mostly e Cas, also w Cas in OR (see lead 41a) 34 *S. lasiolepis* Benth.

115b Fl bracts widest ± at middle, acute, light brown to bicolored; hairs wavy to curly; midmont; c OR Cas and s (see lead 35a)

29 *S. ligulifolia* (C.R. Ball) C.R. Ball ex C.K. Schneid.

102b Catkins emerging with the lvs on lfy brlets

116a Catkins 1–1.5(–2) cm

117a Shrubs gen > 2 m; brs usually strongly glaucous, occ only behind the buds, glab to sparsely pubescent; lower surface of lvs glaucous, not obscured by hairs; lowl to subalp; widespread (see lead 37a) 31 *S. geyeriana* Andersson

117b Shrubs low, spreading, gen < 1.5 m; brs not or weakly glaucous, hairy to glab; lower surface of lvs glaucous or not, occ obscured by hairs; mont to alp

118a Petioles mostly < 3 mm; fl bracts gen tawny or greenish; scattered e Cas (see lead 48a) 38 *S. brachycarpa* Nutt.

118b Petioles mostly > 3 mm; fl bracts tawny, greenish, brown, black, or bicolored

119a Lvs not glaucous below; catkins 0.6–1.5 cm; fl bracts rounded to acute; ne OR to NV, e to RM (see lead 26b) 22 *S. wolfii* Bebb

119b Lvs glaucous below; catkins 1–5 cm; fl bracts rounded to convex

120a Pls alp; catkins 1.4–5 cm; fl bracts 1–3.4 mm; in our area from BC to n WA and w MT (see lead 38a) 33 *S. glauca* L.

120b Pls mont to subalp; catkins 1–2.5 cm; fl bracts 0.7–2 mm; Yukon s to n WA, ne OR, ID, and WY (see lead 51b) 40 *S. farriar*e C.R. Ball

116b Catkins (0.7–)1.5–4.5 cm



- 121a** Lower surface of lvs not glaucous, glab to densely hairy, the surface visible through the hairs
- 122a** Shrubs to 2(–3) m; widespread (see lead 26a) 21 *S. commutata* Bebb
- 122b** Shrubs to 6 m, rarely < 2 m
- 123a** Lvs sparsely to moderately hairy below; OR Cas e to sw MT, and s (see lead 58b) 43 *S. eastwoodiae* Cockerell ex A. Heller
- 123b** Lvs sparsely hairy to glabrate below
- 124a** Brs dark red, very shiny, glab; brlet hairs usually curved or wavy; mts of s BC and n WA (see lead 60a) 45 *S. maccalliana* Rowlee
- 124b** Brs yellow green, yellow-brown, or red-brown but drying darker, glab or variously hairy; brlet hairs straight or absent; widespread
- 125a** Juvenile lvs often reddish (green); anthers purple turning yellow; fl bracts glab at least on the distal 2/3; midmont; e of Cas in s WA and OR, e to c ID (see lead 59a) 44 *S. monochroma* C.R. Ball
- 125b** Juvenile lvs green; anthers yellow or purple turning yellow; fl bracts usually hairy throughout (or glab on distal 1/3); mont to alp; widespread in and e of Cas (see lead 62a) 47 *S. boothii* Dorn
- 121b** Lower surface of lvs glaucous or obscured by hairs
- 126a** Pls lowl to midmont; brs not glaucous; lvs thin, not densely hairy
- 127a** Brs ashy-gray to yellow-gray; brlets yellow-brown; hot canyons in the Blue Mts and s (see lead 34a) 28 *S. lutea* Nutt.
- 127b** Brs and brlets reddish to reddish-brown; widespread
- 128a** Fl bract 1.2–3.2 mm, hairs wavy; catkin brlets 0.5–11 mm; lf bl margin entire to crenate; e Cas (see lead 53a) 41 *S. bebbiana* Sarg.
- 128b** Fl bract 0.8–1.6 mm, hairs curly; catkin brlets 0–3 mm; lf bl margin usually serrate
- 129a** Pls of Cas from McKenzie Pass, OR, s (young ♂ pls not morphologically distinguishable from *S. prolixa*) (see lead 35a) 29 *S. ligulifolia* (C.R. Ball) C.R. Ball ex C.K. Schneid.
- 129b** Pls widespread (see lead 35b) 30 *S. prolixa* Andersson
- 126b** Pls mont to alp; brs sometimes strongly glaucous, at least behind buds; lvs often thick, sometimes densely hairy
- 130a** Abaxial nectary present, 0.1–1 mm; second-year brs with translucent, often peeling, waxy layer; upper surface of lf bls hairy; in our area from BC to n WA and w MT (see lead 38a) 33 *S. glauca* L.
- 130b** Abaxial nectary absent; second year brs without translucent, often peeling, waxy layer; upper surface of lf bls nearly to completely glab
- 131a** Brs and brlets white tomentose in patches, not glaucous; fl bracts tawny to black; RM (see lead 23a) 19 *S. candida* Flügge ex Willd.
- 131b** Brs and brlets glab or with ± straight hairs, glaucous or not; fl bracts brown to black or bicolor; widespread in mts, including RM
- 132a** Lf hairs white; anthers 0.6–1 mm; catkin brlets 0–17 mm; fl bracts brown or black; catkins 1.3–6 cm × 10–25 mm; BC, Cas and OM of WA, and RM (see lead 45b) 37 *S. barclayi* Andersson
- 132b** Lf hairs white or white and rusty-red; anthers 0.3–0.9 mm; catkin brlets 1–5 mm; fl bracts brown, black, or bicolored; catkins 1.1–3.8 cm × 6–17 mm; widespread
- 133a** Lf hairs (best seen on juvenile lvs, not confined to midrib) silky, ± appressed, straight, parallel, longer; foothills to near timberl; OR Cas e to sw MT, and s (see lead 37b) 32 *S. lemmonii* Bebb
- 133b** Lf hairs (best seen on juvenile lvs, often confined to midrib) usually not appressed, curly or crinkled, not parallel, short; n WA to ne OR, and RM (see lead 51b) 40 *S. farriae* C.R. Ball