

Key revised to incorporate *Synthyris* within *Veronica*. Revised March 23, 2021.

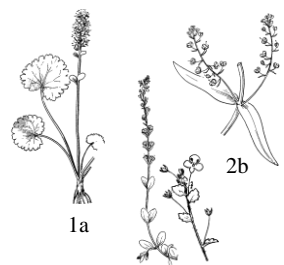
Albach, D.C., and M.W. Chase. 2001. Paraphyly of *Veronica* (Veroniceae; Scrophulariaceae): evidence from the internal transcribed spacer (ITS) sequences of nuclear ribosomal DNA. *Journal of Plant Research* 114: 9–18.

Albach, D.C., and H.M. Meudt. 2010. Phylogeny of *Veronica* in the Southern and Northern Hemispheres based on plastid, nuclear ribosomal and nuclear low-copy DNA. *Molecular Phylogenetics and Evolution* 54: 457–471.

Veronica L. Speedwell; Kittenails

Fls in terminal or axillary racemes or spikes, or solitary in upper lf axils; sepals 2–4(5) connate below or distinct; corolla present or absent, blue or violet to pink or white, subrotate to camp, ± unequally 4-lobed, upper lobe largest and internal to others in bud, lower lobe smallest, lobes entire to erose or lacinate; stamens 2; stigma capitate; caps ± obcompressed, often notched or lobed at tip, loculicidal; seeds 2–∞ per locule; ann or per herbs; lvs basal or cauline, alt or opp, entire, toothed, lobed, or dissected. (Derivation uncertain, perhaps for *St. Veronica*). (*Besseya*, *Synthyris*).

Molecular evidence places *Besseya* and *Synthyris* within a monophyletic *Veronica* (Albach and Chase 2001; Albach and Meudt 2010). *Veronica paysonii* (Pennell & L.O. Williams) M.M. Mart. Ort. & Albach (*S. pinnatifida* var. *pinnatifida*), differing from no 2 in its glab caps and obovate, broadly rounded infl bracts, app our area in se ID. *Veronica agrestis* L. and *V. undulata* Wall. are known only from old ballast colls near Portland, OR. European *V. beccabunga* L. is established in e N Am and reported for our area; it closely resembles *V. americana* but has elliptic-obovate lvs widest at or above middle and styles 1.8–2.2 mm.



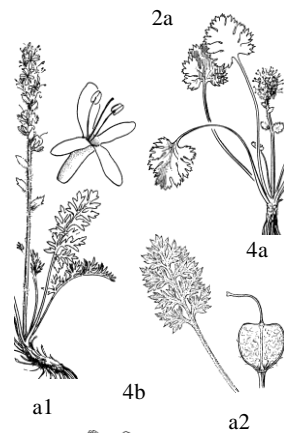
1a Lvs chiefly or wholly basal, the cauline ones (if present) much reduced or bractlike, gen alt below the infl; fls in a terminal spike or raceme; pls per **Group 1**

1b Lvs all cauline, opp throughout or opp below and alt above; fls in terminal or axillary racemes or spikes, or solitary in lf axils; pls ann or per

2a Main st terminating in an infl or the fls solitary in axils of ± unmodified lvs, the upper bract-lvs gen alt; pls ann or rhizomatous to stoloniferous per **Group 2**, lead 10a

2b Main st never terminating in an infl, the lvs opp throughout and the fls all in axillary racemes; pls per (occ bien), gen rhizomatous **Group 3**, lead 22a

Group 1



3a Basal lvs pinnately dissected to deeply cleft at least halfway to midvein, bls 1–4 cm; scapes 3–15 cm

4a Lvs pinnipalmately cleft, the segms all broadly confluent with midvein; caps glab to sparsely pubescent; alp ridges and talus; endemic to Jocko, Mission, and Swan mt ranges, wc MT; Canby's k.; occ intergrades with no 2 (*S. canbyi*)

1 *V. canbyi* (Pennell) M.M. Mart. Ort. & Albach

4b Lvs pinnately dissected to the midvein (at least the lower pinnae), with narrow rachis and gen slender segms; caps puberulent to tomentulose; more s or w; sw MT to c ID, also in ne OM; cut-lf k. 2 *V. dissecta* (Rydb.) M.M. Mart. Ort. & Albach

a1 Herbage subglab to ± villous or tomentulose, gen glabrate in age; caps crisp-puberulent; stony, subalp to alp slopes; sw MT to c ID (*S. d.*, *S. pinnatifida* var. *canescens*)

a2 Herbage permanently and densely white-tomentulose; caps tomentulose; alp ridges and talus; endemic to ne OM; woolly k. (*S. l.*, *S. pinnatifida* var. *l.*)

subsp. *lanuginosa* (Piper) M.M. Mart. Ort. & Albach

3b Basal lvs merely toothed or shallowly lobulate much < halfway to midvein, bls 1.5–12 cm; scapes or fl sts 3–60 cm

5a Corolla in our spp. wanting or vestigial; basal lvs elliptic-ovate (subrotund), base cuneate to subcordate, margins crenate-dentate; st lvs gen 7–∞ below the infl

6a Calyx (3)4-lobed, the base surrounding the ovary and stamens; filaments dark red; lf bls 4–12 cm, gen deltoid or subcordate at base; fl sts 2–6 dm; open slopes and dry meadows in foothills and lowl; e Cas, ne WA to ne OR, e to w MT; red k. (*B. r.*, *S. r.*) 3 *V. rubra* (Douglas ex Hook.) M.M. Mart. Ort. & Albach

6b Calyx 2(3)-lobed, abaxial (external) to the ovary and stamens, and not surrounding them at base; filaments purple; lf bls 1.5–7 cm, seldom at all cordate; fl sts 1–3 dm; open slopes, from high plains to drier mts; RM, se BC and sw Alta s to e ID, UT, CO, and NE; WY k. (*B. w.*, *S. w.*)

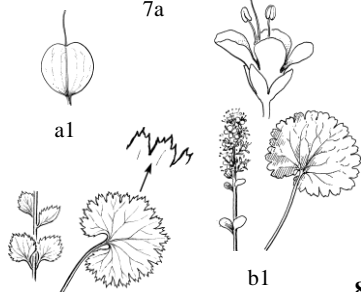
4 *V. wyomingensis* (A. Nelson) M.M. Mart. Ort. & Albach

5b Corolla present, ≥ calyx, unequally 4-lobed; basal lvs reniform to suborbicular or broadly ovate, mostly cordate, margins shallowly lobulate and again dentate or toothed; scape lvs none or few, bractlike

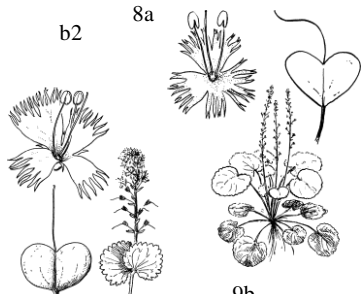




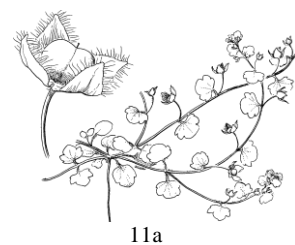
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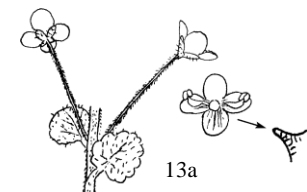
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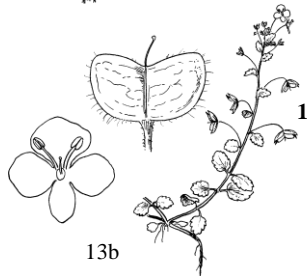
9a



11a



13a



13b

7a Scapes weak and lax, ± reclining in fr, ebracteate below the 5–15(–20) fls, < 15 cm; corolla camp, the lobes = or a little < tube, throat puberulent; seeds with thick, strongly incurved margins; gen at low elev in conif for; in and w Cas, w OP and s PT to n CA; snow-queen, round-lyd k. (*S. reniformis*)

5 V. regina-nivalis M.M. Mart. Ort. & Albach

7b Scapes stiffly erect, gen with 2–3(–7) bracts below the 10–∞ fls, 5–35 cm; corolla subrotate to camp, the lobes much > tube, throat glab or puberulent; seeds flat, thin-margined

8a Corolla lobes entire or slightly erose; caps wider than high, scarcely notched; moist for, thickets, and open slopes, foothills to mont; ne WA to ne OR, c ID, w MT (Ravalli Co), CRG, and n CA; mt k.; (*S. m.*) 3 subsp.

6 V. missurica Raf.

a1 Caps glab when young, remaining glab at maturity; scapes to 33 cm at late anthesis, 20–100-flid; vic of Clearwater R, ID, w to se WA (*S. mi.* subsp. *ma.*) subsp. **major** (Hook.) M.M. Mart. Ort. & Albach

a2 Caps sparsely pubescent (at least on edges) when young, becoming glab at maturity; scapes to 25 cm at late anthesis, 12–45-flid

b1 Lf teeth rounded to acute; scape bracts 0.3–0.8 cm, weakly toothed; range of sp., except not in CRG (*S. m.* subsp. *m.*) subsp. **missurica**

b2 Lf teeth acute to acuminate; scape bracts (0.6–)1–2 cm, conspicuously toothed; CRG of WA and OR, and adj hills of sc Klickitat Co, WA (*S. m.* subsp. *st.*) subsp. **stellata** (Pennell) M.M. Mart. Ort. & Albach

8b Corolla lobes laciniately incised; caps nearly or fully 2 × as wide as high, strongly notched; w Cas, and in c ID

9a Scape bracts 1–3.5 cm, fan-shaped; corolla 4–6 mm; lvs withering at end of 1st season; moist rocky areas in mts; local and sporadic w Cas, in Grays Harbor and Lewis cos, WA, and Coast Range of nw OR; fringed k. (*S. schizantha*)

7 V. schizantha (Piper) M.M. Mart. Ort. & Albach

9b Scape bracts 0.1–0.6 cm, ovate-spatulate; corolla 2.5–4.5 mm; lvs tending to persist until fl time of 2nd season; openings in mont conif for; Clearwater and Idaho cos, ID; evergreen k. (*S. platycarpa*)

8 V. idahoensis M.M. Mart. Ort. & Albach

Group 2

10a Fls solitary in axils of ± unmodified lvs, the lvs gradually (if at all) reduced in size upwards, all petiolate, bl broadly ovate to reniform, toothed or shallowly lobed; peds (5–)10–35 mm in fr; sts gen decumbent

11a Calyx lobes cordate to truncate at base, margins ciliate their entire length with hairs 0.6–1.2 mm; lvs palmately 3–5(7)-lobulate, bl orbicular to reniform; caps slightly or scarcely notched, glab; corolla 3–5 mm wide, pale bluish; style 0.3–1.1 mm; pls ann; occ European intro; BC s, both sides Cas to CA, also in c and e N Am; ivy s. (*V. hederifolia*)

9 V. hederifolia L.

11b Calyx lobes truncate to cuneate at base, margins ciliate with hairs < 0.5 mm (or some hairs to ca 1 mm near base of lobes); lvs crenate or serrate with gen > 7 shallow teeth; caps evidently notched, glab or pubescent

12a Corolla 3–6 mm wide; style 1–1.5 mm; anthers 0.4–0.5 mm; caps uniformly crisp-puberulent; calyx lobes rounded to truncate at base; pls ann; uncommon Eurasian intro; se WA and sw ID, also in e N Am; gray s. **10 V. polita** Fr.

12b Corolla 8–15 mm wide; style 2–3 mm; anthers 0.7–1.2 mm; caps glabrate except near margins; calyx lobes ± cuneate at base

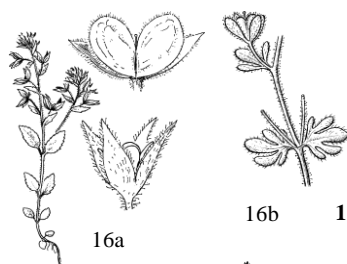
13a Calyx lobes elliptic to oblanceolate, obtuse, 3–5 mm; caps (rarely produced) ca 4 mm wide; lvs 5–10 mm, reniform; pls delicately rhizomatous per; lawn weed; occ Eurasian intro; mostly w Cas, sw BC to CA, rarely e to MT, also in ne N Am; thread-stalk s. **11 V. filiformis** Sm.

13b Calyx lobes ovate-lanceolate, ± acute, (4–)6–7 mm; caps gen present, 5–9 mm wide; lvs 5–25 mm, broadly ovate; pls ann; sw Asian intro; occ weed on both sides Cas; Persian s. **12 V. persica** Poir.

10b Fls in terminal racemes or spikes, with bracts distinctly < foliage lvs, the lvs gen not as above; peds 0.5–15 mm in fr; sts decumbent to erect

14a Pls ann from a slender taproot, not rooting at lower st nodes

15a Peds elongate, (4–)5–15 mm in fr; corolla 3–6 mm wide; caps 4–8 mm wide



16a



16b

16a Lvs and bracts merely toothed; calyx lobes ovate-lanceolate, acute, 5–10 mm in fr; caps notch 2–3.5 mm deep, style < notch; dry, disturbed areas; Eurasian intro; e Cas, sc BC to nw NV, UT, CO, and occ to e N Am; bilobed s. (*V. biloba* misapplied) 13 *V. argute-serrata* Regel & Schmalh.

16b Upper lvs and lower bracts deeply digitately lobed; calyx lobes elliptic-obovate, rounded, 4–5 mm in fr; caps notch < 1 mm deep, style > notch; roadsides and disturbed areas; uncommon European intro; se WA, ne OR, sw ID, CA, and e US; finger s. 14 *V. triphyllus* L.

15b Peds 0.5–2(–3) mm even in fr; corolla 2–3 mm wide; caps 3–4 mm wide

17a Style 0.1–0.3 mm; corolla white or whitish; seeds ∞ per locule, 0.4–0.8 mm; foliage lvs entire to weakly crenate, linear-oblong to oblong or lanceolate, 3–10 × as long as wide; fibrous-rooted pls; moist or wet places, low to mont; widespread on both sides of Cas, N Am; S Am; intro in Europe; purslane s.; 2 vars. 15 *V. peregrina* L.

a1 St (and gen also sepals and caps) ± pubescent with short, gland-tipped hairs; widespread native var. *xalapensis* (Kunth) Pennell

a2 Pls wholly glab; weedy, uncommon e US intro; w Cas var. *peregrina*

17b Style 0.4–1.0 mm; corolla blue-violet; seeds (5–)8–11 per locule, 0.8–1.2 mm; foliage lvs crenate-serrate to pinnatifid

18a At least some of the foliage lvs pinnatifid, with 1–several small lateral lobes and a large oblanceolate or elliptic terminal lobe, base cuneate; caps puberulent on surfaces; disturbed areas; European intro; sw BC and e WA to ne OR, n ID, w MT, WY, also in ne N Am; spring s. 16 *V. verna* L.

18b Foliage lvs all unlobed, shallowly crenate-serrate, ovate or broadly elliptic, 1–2 × as long as wide, base truncate to weakly cordate; caps glab except for marginal cilia; dry or disturbed areas; common Eurasian intro; AK s, both sides Cas, to CA, e to Atl; wall s., common s. 17 *V. arvensis* L.

14b Pls per, rhizomatous, stoloniferous, or from br caudex

19a Pls 3–12 dm, erect; lvs sharply serrate, the larger gen 4–13 cm, lanceolate; European intro, occ escaping cult; sw BC and Seattle, WA; long-lf s. 18 *V. longifolia* L.

19b Pls 1–3 dm, erect or decumbent at base; lvs entire or with a few small teeth or shallow lobes, to 4 cm; infl gen either shorter or looser or both

20a Style (5–)6–10 mm; filaments 4–8 mm; corolla 8–13 mm wide, gen deep blue-purple; lvs glab, entire; caps higher than wide; moist slopes and meadows, subalp to alp; s BC s, in OM and Cas, to CA, e to w MT; Cusick's s. 19 *V. cusickii* A. Gray

20b Style 1–3.5 mm; filaments 1–3(–4) mm; corolla 4–10 mm wide, white to pale or deep blue; lvs glab or hairy, entire or shallowly toothed

21a Caps higher than wide; st (and often also the lvs) sparsely to densely villous-hirsute with loosely spreading hairs; sts simple, erect or merely decumbent at base; filaments 1–1.5 mm; corolla deep blue; mid to high elev in mts; throughout our area, widespread in w N Am, occ to ne N Am; Am alpine s. 20 *V. wormskjoldii* Roem. & Schult.

21b Caps wider than high; sts finely and closely puberulent; lvs glab or nearly so; sts tending to creep at base, or to produce prostrate lower brs; filaments (1–)2–3(–4) mm; corolla white to bright blue; low to high elev; widespread; thyme-lvd s.; 2 vars. 21 *V. serpyllifolia* L.

a1 Peds with spreading, viscid-glandular hairs; fls gen bright blue with blue-purple lines; filaments 2–4 mm; moist meadows and shores, low to high elev; widespread var. *humifusa* (Dicks.) Vahl

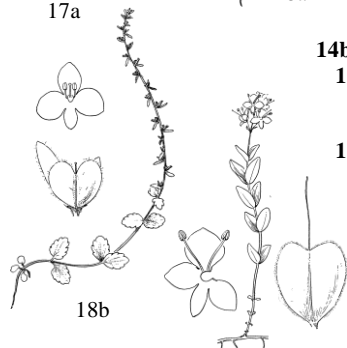
a2 Peds finely crisp-puberulent, hairs gen eglandular; fls white or pale bluish with darker blue lines; filaments 1–2.5 mm; ± weedy, low to mont; European intro; common w Cas, occ e to MT var. *serpyllifolia*



17a



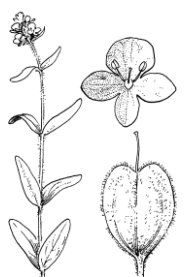
18a



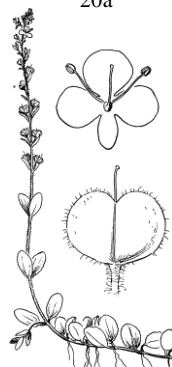
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20a



21a



21b

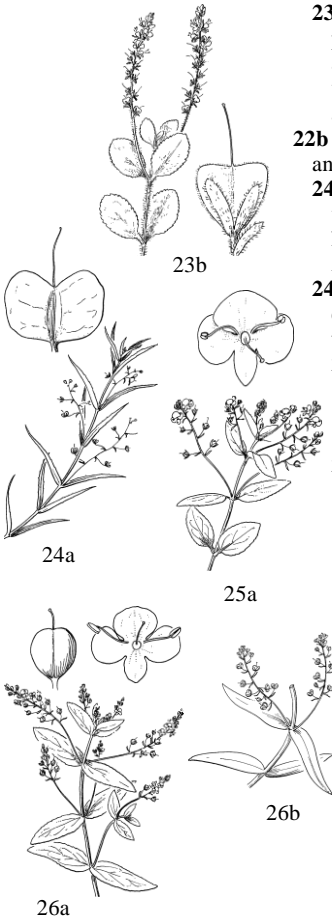


23a

Group 3

22a Pls spreading-pubescent, the longer hairs 0.5–1.5 mm; lvs 1–3 × as long as wide; seeds 6–12 to a locule, ca 1 mm; pls terrestrial, in mesic areas

23a Sts pubescent in 2 opposing longitudinal lines; lvs ovate, ± broad-based, sessile or nearly so, coarsely toothed, with gen 5–11 teeth on a side; mature peds 5–9 mm, > subtending bracts; caps (seldom produced) < sepals; corolla 9–12 mm wide; weedy, often in lawns; European intro; mostly w Cas, AK to CA, occ e to w MT, also in ne N Am; Germander s. 22 *V. chamaedrys* L.



23b Sts uniformly pubescent; lvs \pm elliptic or elliptic-obovate, narrowed to a short petiole or subpetiolar base, finely toothed, the larger ones gen with 12–20 teeth on a side; mature peds 1–2 mm, < subtending bracts; caps > sepals; corolla 4–8 mm; weedy, but gen not in lawns; European intro; both sides Cas, AK to OR, e to w MT, also in e N Am; common s., Paul’s betony

23 **V. officinalis** L.

22b Pls essentially glab, or occ finely glandular-puberulent with hairs 0.1–0.2 mm; lvs and seeds various; pls of water or wet places

24a Racemes mostly 1 per st node; lvs (3–)5–20 \times as long as wide, sessile, entire or with a few small, divergent teeth; caps flattened, deeply notched, clearly wider than high; seeds 5–9 to a locule, 1.2–1.8 mm; AK to CA, e to MT, CO, GL, and ne N Am; marsh s., grass-lyd s., skullcap s.

24 **V. scutellata** L.

24b Racemes mostly 2 per st node; lvs 1.5–5 \times as long as wide, sessile or petiolate, entire to sharply serrate; caps turgid, slightly or scarcely notched, slightly if at all wider than high; seeds ∞ , 0.5 mm or less

25a Lvs all short-petiolate (occ the upper-most lvs nearly sessile), gen serrate, ovate, widest near base; fls light blue to purple with purplish veins; styles 2.5–4 mm; widespread on both sides Cas, throughout much of N Am; Am brooklime (*V. beccabunga* var. *a*.)

25 **V. americana** Schwein. ex Benth.

25b Lvs mostly sessile (often short-petiolate on sterile late-season shoots or at very bases of fl sts); the following 2 spp. are difficult to separate, and pls with mixed characters are frequent; hybrids of nos 18 \times 19 (= *V. \times lackschewitzii* J.B. Keller) show elongate racemes with minute (< 1 mm), abortive caps

26a Caps orbicular or slightly longer than wide; fls light blue to purple (white), with purplish veins; mature peds ascending to gently upcurved; infl bracts gen much < peds in fr; sepals ovate-lanceolate; racemes often > 30-fld; Eurasian intro; widespread in much of N Am, mostly e Cas in our area; water s., water pimpernel

26 **V. anagallis-aquatica** L.

26b Caps slightly wider than long; fls pale pinkish to white with pink veins; mature peds divaricately spreading at nearly 90° angle to rachis, straight or upturned only near tip; infl bracts \pm = peds in fr; sepals elliptic-oblong; racemes 15–25-fld; possibly native; uncommon in our area, on both sides Cas, widespread in N Am; Eurasia; chain s.

27 **V. catenata** Pennell