

**POTENTILLA JEPSONII VAR. KLUANENSIS (ROSACEAE):  
A NEW VARIETY FROM YUKON AND ALASKA TO WASHINGTON**

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**ABSTRACT**

**Potentilla jepsonii** var. **kluanensis** Ertter, var. **nov.**, is described for populations referred to as “the montane phase of *P. litoralis*” in *Flora of North America North of Mexico*. The variety is centered in the St. Elias Mountains in southwestern Yukon and adjacent Alaska, with scattered populations in British Columbia, southwestern Alberta, and north-central Washington. The new variety differs from typical *P. jepsonii* in having appressed to ascending (vs. spreading to loosely appressed) petiole hairs and leaflets with more revolute margins; it differs from *P. litoralis* in smaller overall size and alpine habitats; and it differs from both in somewhat shorter pedicels and leaves that are more subpalmate than subpinnate (leaflets on less than distal ¼ of leaf axis) with fewer teeth and whiter abaxial surfaces.

*Potentilla* sect. *Pensylvanicae* Poev. is one of the sections that was significantly revised for *Flora of North America North of Mexico* (Ertter 2008; Ertter et al. 2015). Six separate species were recognized, most of which had been encompassed in an inclusive *P. pensylvanica* L. in previous floristic treatments at one time or another (e.g., Cody 1996; Hitchcock et al. 1961; McGregor 1986). One of these, *Potentilla jepsonii* Ertter, is a *nomen novum* for *P. pensylvanica* var. *ovium* Jepson, with the epithet changed at the species rank in order to avoid nomenclatural confusion with the unrelated species *P. ovina* J.M. Macoun, which has an overlapping range.

Although *Potentilla jepsonii* has been included within *P. pensylvanica* (e.g., Ertter 1993; Holmgren 1997; Hitchcock et al. 2018), vestiture and leaf dissection (Fig. 1) actually indicate a closer relation to *P. litoralis* Rydb., leading Soják (2006) to provide the combination *P. litoralis* var. *ovium* (Jepson) Soják. *Potentilla litoralis* is otherwise a larger plant that ranges from the north Atlantic coast across the northern Great Plains to Alaska; synonyms include *P. virgulata* A. Nels. and *P. pectinata* Raf. In contrast, *P. jepsonii* is generally a smaller plant restricted to mountain ranges from eastern Oregon to western Montana, south to eastern California and northern Arizona. As stated in Ertter et al. (2015, p. 217), “[*P. jepsonii*] is for the most part well separated geographically and elevationally [from *P. litoralis*]. The exception is the montane phase of *P. litoralis*, which, at the current stage of knowledge, is somewhat arbitrarily delimited from *P. jepsonii* in the northern Rocky Mountains; collections from Waterton Lakes National Park in Alberta and the Okanogan Mountains in Washington are tentatively placed here in *P. jepsonii*.”

The aforementioned collections from Alberta and Washington resembled, but apparently were widely disjunct from, the “montane phase of *P. litoralis*.” The latter was primarily represented by a cluster of problematic collections from the St. Elias Mountains of southwestern Yukon that might simply be depauperate *P. litoralis* growing in suboptimal habitats. Fieldwork in June 2017, however,

confirmed that the problematic Yukon plants on montane slopes and ridges are in fact morphologically and ecologically distinct from typical *P. litoralis* that is common on adjacent flatlands, including the receding shoreline of Kluane Lake, roadsides, and other disturbed habitats. Furthermore, several comparable herbarium specimens from mountains in central British Columbia came to light, reducing the disjunction between the Yukon populations and those from Alberta and Washington.



Figure 1. Comparison of basal leaves of *Potentilla pensylvanica* (Ertter & Töpel 19225, White Mountains of California), *P. litoralis* (Ertter 22885, Kluane Lake Research Station, Yukon), *P. jepsonii* var. *jepsonii* (Ertter & Töpel 19226, White Mountains of California), and *P. jepsonii* var. *kluanensis* (Ertter et al. 22866, Kluane National Park, Yukon), left to right. Significant variation in leaf size and dissection occurs within each species, but the relative average size and dissection is representative.

The populations referred to as “the montane phase of *Potentilla litoralis*” in Ertter et al. (2015), now including the collections from Alberta and Washington, are here described as a new variety of *P. jepsonii*. Varietal rank within *P. jepsonii* is used because of the intermediate nature of otherwise typical *P. jepsonii* from northeastern Oregon, Idaho, northwestern Montana, and northern Nevada, as discussed below. Alternatively, further study could support all three taxa as varieties of *P. litoralis*, as proposed by Soják (2006). All photographs are by the author. Terminology is as defined and used in Ertter et al. (2015). The terms “subpalmate” and “subpinnate” denote stages on a continuum between strictly palmate and unequivocally pinnate leaves, quantitatively expressed as leaflet-bearing distal fraction of the leaf axis.

**POTENTILLA JEPSONII** Ertter var. **KLUANENSIS** Ertter, var. nov. (Figs. 2–5) **TYPE: CANADA. Yukon.** Kluane National Park, abandoned section of original Alaskan Highway across colluvium at S base of Sheep Mountain (Tachäl Dhäl) ca 300 m N of Tachäl Dhäl Visitor Centre, with *Penstemon gormanii*, *Artemisia frigida*, *Erigeron caespitosus*, 61.0164°N 138.5241°W, 790 m, 23 Jun 2017, Ertter et al. 22866 (holotype: UC; isotypes: BABY, DAO, NY).

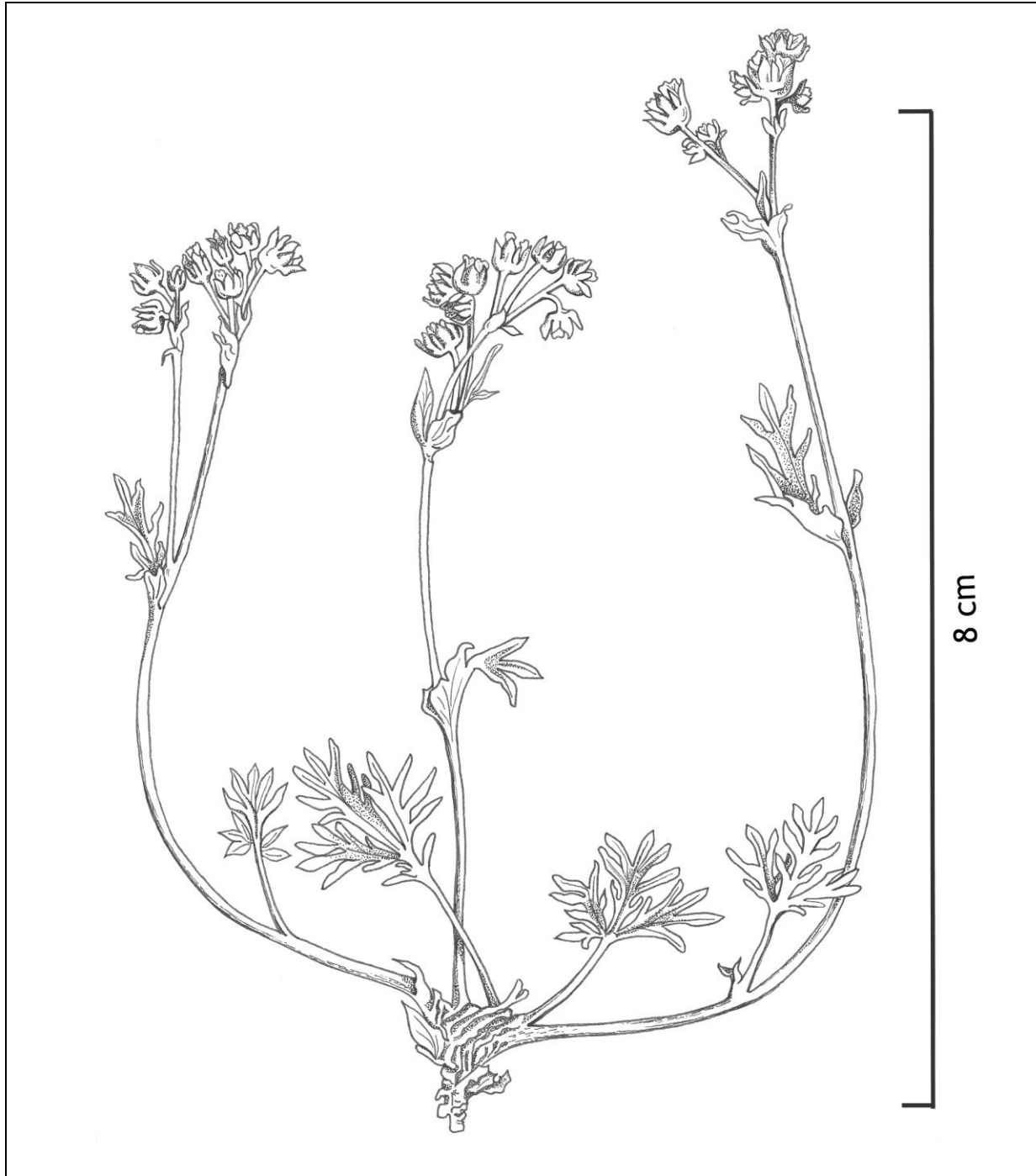


Figure 2. Habit of *Potentilla jepsonii* var. *kluanensis*. Drawing by K. Pappani, based on Erter et al. 22866.

Differs from *Potentilla jepsonii* var. *jepsonii* in having appressed to ascending (vs. spreading to loosely appressed) petiole hairs and leaflets with more revolute margins; differs from *P. litoralis* in smaller overall size, flatter epicalyx bractlets, and alpine habitats; differs from both in somewhat shorter pedicels and leaves that are more subpalmate than subpinnate (leaflets on less than distal  $\frac{1}{4}$  of leaf axis) with fewer teeth and whiter abaxial surfaces. Diagnostic differences are summarized in Table 1.

**Plants** tufted; caudex branched, sheathed with old leaf bases. **Stems** ascending, 0.5–1.3(–2.3) dm long, 1.5–3 times length of basal leaves. **Basal leaves** subpalmate to subpinnate with distal leaflets  $\pm$  distinct, 1.5–5(–7.5) cm long; petiole 0.5–2.5(–4.5) cm long, long hairs common to abundant (dense), appressed to ascending, 0.5–1.5 mm long, usually  $\pm$  stiff, short(/crisp) hairs sparse to common, cottony hairs absent, glands common to abundant; leaflets (1)2(3) per side, on distal 1/6–1/4 or less of leaf axis,  $\pm$  separate, proximal pair separated from others by 1–5 mm of leaf axis, terminal leaflet  $\pm$  obovate to oblanceolate, 0.8–2 cm  $\times$  0.5–1 cm, margins strongly revolute, incised nearly to midvein, undivided medial blade 1–3 mm wide, teeth 2–4 per side, linear (oblanceolate), not overlapping, 2–6(–7) mm  $\times$  1–1.5 mm, surfaces dissimilar, abaxial (green) grayish to nearly white, long hairs abundant especially on veins, 0.5–1 mm long, short to crisped hairs (sparse) abundant to dense, cottony hairs absent, glands common to abundant, though often obscured. **Cauline leaves** 1–3. **Inflorescences** 2–14-flowered, congested, scarcely opening in fruit. **Pedicels** 0.1–0.3 cm (proximal to 0.6 cm) long. **Flowers** cup-shaped; hypanthium (pressed) 2.5–4.5 mm diam.,  $\pm$  1–1.5 mm deep; epicalyx bractlets flat, linear to narrowly elliptic or lanceolate, 2–3.5  $\times$  0.4–1(–1.3) mm,  $\frac{2}{3}$ – $\frac{3}{4}$  times length of sepals; sepals 2.5–4 mm long, apex bluntly acute, abaxial surface sparsely to moderately straight-hairy, abundantly and visibly glandular; petals yellow, lacking darker basal patch, 3–4.5  $\times$  2.5–3.5(–4) mm,  $\pm$  as long as sepals; filaments  $\pm$  1–2 mm long (those opposite sepals longest), anthers 0.3–0.5 mm long; carpels ca 20–50, styles  $\pm$  1.2 mm long tapered, papillate-swollen in proximal  $\pm$   $\frac{3}{4}$ , especially so in proximal  $\frac{1}{3}$ , distal  $\frac{1}{3}$  often columnar. **Achenes** 1.1–1.3 mm long, smooth, not carunculate.

Flowering from June to July, or to August in Waterton Lakes National Park. Dry colluvium and talus slopes, alpine summits, ridges, and tundra; elev. 790–2500 m (lowest in Yukon, highest in Waterton Lakes National Park).

**Other collections examined. CANADA. Alberta.** Alpine summit of Sofa Mt., Waterton Lakes National Park, 6 Aug 1953, *Breitung 17206* (UC). **British Columbia.** Mt. Moor [N end Shalups Range], middle Blue Cr. below pass, 8 Aug 1957, *Bird 3374* (UBC); Elizabeth Mine NW of Lillooet, 51°00'N 122°25'W, 19 Aug 1971, *Brink s.n.* (UBC); Mt. Sidney Williams, 54°53'37.7"N 125°24'57"W, 17 Aug 2012, *Marr, Wheeler, & Hebda 12-515* (UC, V). **Yukon.** Observation Mtn., 17 Aug 1773, *Douglas & Douglas 7192* (V); Bullion Creek–Sheep Creek plateau ca 10 km NW of the Slims River, 60°03'N 138°43'W, 2 Jul 1975, *Douglas & Douglas 8447* (ALA [mixed collection w/ *P. pennsylvanica*], BRY), 61°02'N 138°40'W, *Douglas & Douglas 8464* (V); e slopes Sheep Mt. near Kluane Lake, 18 Jul 1970, *Krajina & Hoefs s.n.* (UBC); Kaskawulsh nunatak, jct n & central arms Kaskawulsh Glacier, 1 Jul–1 Aug 1965, *Murray & Murray 121* (ALA, COLO); terminus of Kaskawulsh Glacier, 60°49'N 138°44'W, 31 Jul 1966, *Murray & Murray 663* (ALA); Steele Glacier and vic., St. Elias Mts, 5–10 Aug 1967, *Murray & Murray 1358* (ALA). **USA. Alaska.** Ridge at confluence of Baldwin & Logan glaciers, Wrangell-St. Elias NP, 60°52.57'N 141°15.20'W, 16 Jul 2003, *Cook & Eklund 4786* (ALA). **Washington.** Okanogan Co.: Hurley Peak, just N of Mt. Chopaka, 23 Jul 1978, *Kruckeberg 6544* (WTU).

*Potentilla jepsonii* var. *kluanensis* is known primarily from the St. Elias Mountains in southwestern Yukon and adjacent Alaska, with scattered populations documented in British Columbia south to extreme southwestern Alberta and north-central Washington. Existing collections had been previously determined as *P. pennsylvanica* and *P. virgulata*, or even *P. bipinnatifida* Douglas ex Hook., *P. drummondii* Lehm., and *P. saximontana* Rydb.

**Etymology.** Kluane is the Anglicized word derived from Lhù'ààn Män: fish, many – lake in the Dene/Athabaskan dialect of Southern Tutchone. Kluane National Park and Reserve in southwestern Yukon is the source of most collections of the new variety, including the type. The park and reserve share the rugged St. Elias Mountains with Wrangell-St. Elias National Park and Preserve and Glacier Bay National Park in Alaska. The name also honors the Lhù'ààn Män Ku Dän—the Kluane Lake People.

The park and reserve lie in the traditional territory of the Kluane Lake People, as well as the Champagne and Aishihik First Nations. Kluane Lake, currently the largest lake in the Yukon Territory on the east edge of the park, has an uncertain future due to the recently changed drainage of A'ay Chù (Slims River) resulting from the receding of Kaskawulsh Glacier; the main river that used to feed the lake now takes an alternate (and much shorter) route to the Pacific Ocean.

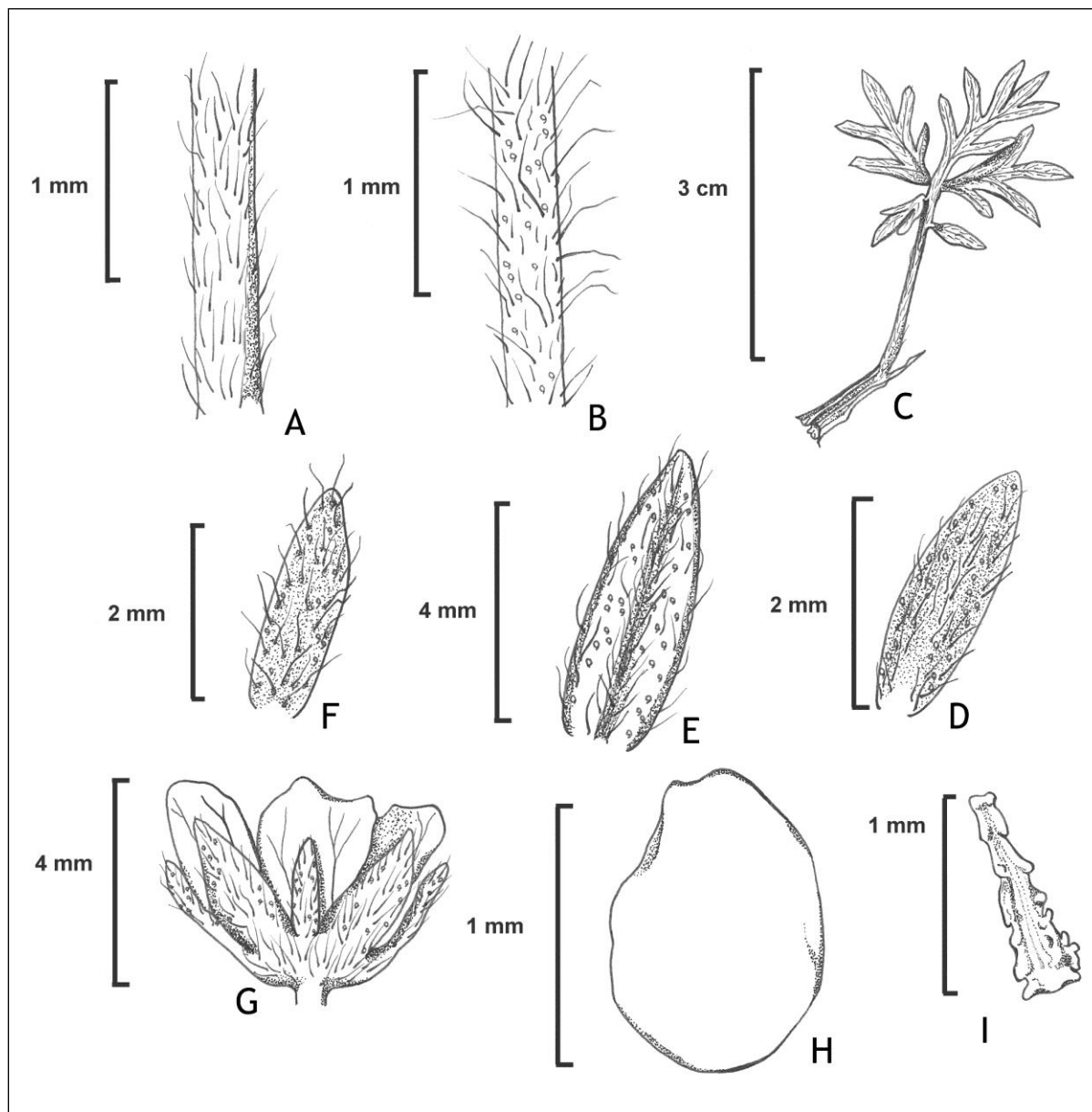


Figure 3. *Potentilla jepsonii* var. *kluanensis* and var. *jepsonii*. A. Hair orientation on petiole of var. *kluanensis*. B. Hair orientation on petiole of var. *jepsonii*. C. Basal leaf of var. *kluanensis*. D. Epicalyx bractlet of var. *kluanensis*. E. Epicalyx bractlet of *P. litoralis*. F. Epicalyx bractlet of var. *jepsonii*. G. Side view of flower of var. *kluanensis*. H. Achene of var. *kluanensis*. I. Style of var. *kluanensis*. Drawings by K. Pappani.



Figure 4. Habitat and habit of *Potentilla jepsonii* var. *kluanensis* at type locality (Erter et al. 22866).



Figure 5. Flower of *Potentilla jepsonii* var. *kluanensis* (left; Erter et al. 22866) compared to significantly larger flower of co-occurring *P. pensylvanica* (right; Erter et al. 22867).

Table 1. Summary of diagnostic differences among *Potentilla litoralis*, *P. jepsonii* var. *kluanensis*, and *P. jepsonii* var. *jepsonii*. The upper elevational range for *P. litoralis*, adjusted from *Flora of North America North of Mexico* because of the removal of *P. jepsonii* var. *kluanensis*, is based on the type collection of *P. virgulata* from Yellowstone National Park.

	<b>litoralis</b>	<b>kluanensis</b>	<b>jepsonii</b>
stem length	(0.4–)1–4.5(–6) dm	0.5–1.3(–2.3) dm	(0.2–)0.5–2.6 dm
petiole hair orientation	appressed (ascending)	appressed to ascending	spreading (to loosely appressed)
lflet-bearing distal fraction of leaf axis	1/6–1/3(–1/2)	1/6–1/4 or less	1/6–1/3(–1/2)
distance separating proximal lflets	2–12(–17) mm	1–5 mm	1–7 mm
terminal lflet length	(1.5–)2–5(–7) cm	0.8–2 cm	(0.5–)1–2.5(–3.5) cm
undivided medial portion of lflet blade	2–10 mm wide	1–3 mm wide	1.5–3(–3.5) mm wide
lflet teeth per side	(2–)5–8	2–4	(2–)3–5(–6)
lflet tooth length/width	2–6	2–6	1.5–4
abaxial leaf color	green to grayish	(green) grayish to nearly white	± grayish, rarely white
pedicel length	0.2–1(–3) cm	0.1–0.3(–0.6) cm	0.2–0.5(–1.2) cm
bractlet curvature	± concave	flat	flat
bractlet/sepal ratio	± 2/3–1	2/3–3/4	1/2–3/4
carpel number	50–100	ca 20–50	20–60
elevation	0–2000 m	790–2500 m	(2200–)2500–3700 m

Although the new variety is reasonably distinct both morphologically and ecogeographically from var. *jepsonii* and *P. litoralis*, there are some intermediate and anomalous populations. Plants of *Bennett et al. 17-0574* (BABY, SRP), growing along a path through a spruce-aspen forest halfway between Kluane National Park and Whitehorse, approach var. *kluanensis* morphologically but are more likely to be depauperate *P. litoralis* based on the habitat. In the opposite direction, the single plant of *Caswell 473* (ALA) from along the Slims River is probably an exceptionally vigorous var. *kluanensis* rather than a narrow-toothed *P. litoralis*. Representatives of the intergrade zone between var. *kluanensis* and var. *jepsonii* that have leaflet teeth approaching *kluanense* (revolute, white beneath, linear) but spreading petiole hairs and leaves more subpinnate than subpalmate include *Moseley 512* (ID) from the Lemhi Range of Idaho and *Charlet 8* (UC) from the Jarbidge Mountains of northern Nevada. *Corbin 1767* (CIC) from the Wallowa Mountains of northeastern Oregon has ascending petiole hairs and relatively large flat leaflets approaching those of *P. pensylvanica*, while *Lesica 4052* (MONTU, NY) from the Front Range Mountains of Montana is also transitional to *P. modesta* Rydb.

The preceding collections are all excluded from var. *kluanensis* in large part as a result of giving precedence to appressed to ascending (vs. spreading) petiole hairs as a diagnostic character, since this is the character with the strongest geographic correlation. As a result, *Marr et al. 12-515* (UC, V), from Mt. Sidney Williams in southern British Columbia, is included in the new variety even though the leaflet teeth are not as strongly revolute as most other populations. Intriguingly, collections from the isolated southernmost population of *P. jepsonii* in the San Francisco Peaks north of Flagstaff (e.g., *Erter et al. 11420* [UC]) are very comparable to *Marr et al. 12-515* in having appressed-ascending petiole hairs and subpalmate leaves; the optimum disposition of this isolated, anomalous population from Arizona will depend on a more in-depth study of the species complex.

By sheer coincidence, the types of *Potentilla jepsonii* and the new variety are both from Sheep mountains, which provided Jepson's original epithet *ovium* (Jepson 1936). For *P. jepsonii*, this is Sheep Mountain in the White Mountains on the California-Nevada border. The Sheep Mountain in Yukon that is the type locality of var. *kluanensis*, where the Alaska Highway skirts the base of the St. Elias Mountains at the south end of Kluane Lake, is now called Tachäl Dhäl (Southern Tutchone for "skin scraper mountain"). The varietal epithet *ovium* was replaced with *jepsonii* at the rank of species because of the strong potential for nomenclatural confusion with *P. ovina* J.M. Macoun, an unrelated species with an overlapping distribution (Erter 2008).

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#### LITERATURE CITED

- Cody, W.J. 1996. Flora of the Yukon Territory. NRC Research Press, Ottawa.
- Erter, B. 1993. *Potentilla*. Pp. 964–969, in J.C. Hickman (ed.). The Jepson Manual: Higher Plants of California. Univ. of California Press, Berkeley.
- Erter, B. 2008. Nomenclatural notes in North American *Potentilla* (Rosaceae). J. Bot. Res. Inst. Texas 2: 201–205.
- Erter, B, R. Elven, J.L. Reveal, and D.F. Murray. 2015 [2014]. *Potentilla* (Rosaceae). Pp. 121–218, in Flora of North America North of Mexico, Vol. 9. Oxford Univ. Press, New York and Oxford.
- Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1961. Vascular Plants of the Pacific Northwest. Part 3: Saxifragaceae to Ericaceae. Univ. Washington Publ. Biology 17: 1–614.
- Hitchcock, C.L. and A. Cronquist; D.E. Giblin, B.S. Legler, P.F. Zika, and R.G. Olmstead (eds.). 2018. Flora of the Pacific Northwest: An Illustrated Manual. Univ. of Washington Press, Seattle.
- Jepson, W.L. 1936. A Flora of California. Vol. II. Capparidaceae to Cornaceae. Associated Students Store, Univ. of California, Berkeley.
- Holmgren, N.H. 1997. Rosaceae. Pp. 64–158, in A. Cronquist, N.H. Holmgren, and P.K. Holmgren. Vascular Plants of the Intermountain West, Vol. 3, Part A. New York Botanical Garden, Bronx.
- McGregor, R.M. 1986. Rosaceae. Pp. 364–406, in Great Plains Flora Association (eds.). Flora of the Great Plains. Univ. Press of Kansas. Lawrence.
- Soják, J. 2006. New infraspecific nomenclatural combinations in twelve North American species of *Drymocallis* and *Potentilla* (Rosaceae). Thaiszia – J. Bot. Košice 16: 47–50.