New Sections, Combinations, and Varieties in Rosaceae, Potentilleae

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Abstract. Eight new sectional names are proposed in Rosaceae, tribe Potentilleae: *Horkelia* Chamisso & Schlechtendal sect. *Capitatae* (Rydberg) Ertter & Reveal, section *Hispidulae* Ertter & Reveal, and section *Parryae* Ertter & Reveal; *Ivesia* Torrey & A. Gray sect. *Comarella* (Rydberg) Ertter & Reveal, section *Saxosae* (Rydberg) Ertter & Reveal, section *Stellariopsis* (Baillon) Ertter & Reveal, and section *Unguiculatae* (Rydberg) Ertter & Reveal; and *Potentilla* L. sect. *Hippianae* (Rydberg) Ertter & Reveal. Thirteen varietial combinations are proposed: *Horkelia californica* Chamisso & Schlechtendal var. *elata* (Greene) Ertter & Reveal and variety *frondosa* (Greene) Ertter & Reveal; *H. clevelandii* (Greene) Rydberg var. *brevibracteata* (Wiggins) Ertter & Reveal; *H. cuneata* Lindley var. *puberula* (Rydberg) Ertter & Reveal and variety *sericea* (A. Gray) Ertter & Reveal; *H. daucifolia* (Greene) Rydberg var. *caruifolia* (Rydberg ex Howell) Ertter & Reveal and variety *indicta* (Jepson) Ertter & Reveal; *H. fusca* Lindley var. *brownii* (Rydberg) Ertter & Reveal (linked to significantly changed circumscriptions of variety *pseudocapitata* (Rydberg ex Howell) M. Peck and variety *capitata* (Lindley) M. Peck); *H. tridentata* Torrey var. *flavescens* (Rydberg) Ertter & Reveal; and *Ivesia gordonii* (Hooker) Torrey & A. Gray var. *alpicola* (Rydberg ex Howell) Ertter & Reveal and *ursinorum* (Jepson) Ertter & Reveal; and *I. lycopodioides* A. Gray var. *megalopetala* (Rydberg) Ertter & Reveal and variety *scandularis* (Rydberg) Ertter & Reveal. Two new varieties are proposed in *Ivesia*: *I. argyrocoma* (Rydberg) Rydberg var. *moranii* Ertter & Reveal, a taxon confined to the Sierra San Pedro Mártir of northern Baja California, Mexico, and *I. gordonii* var. *wasatchensis* N. H. Holmgren ex Ertter & Reveal of Idaho, Utah, Montana, and Wyoming. A key to the four varieties of *I. gordonii* is presented, and a lectotype is designated for *Horkelia gordonii* var. *alpicola* Rydberg ex Howell.

Key words: *Comarella*, *Horkelia*, *Ivesia*, *Potentilla*, Potentilleae, Rosaceae, *Stellariopsis*.

New sections, combinations, and varieties, presented below, are necessary for a treatment of various genera of Rosaceae Jussieu tribe Potentilleae Sweet in a forthcoming volume of *Flora of North America North of Mexico* (FNA). In our treatment, both *Horkelia* Chamisso & Schlechtendal and *Ivesia* Torrey & A. Gray are considered to be distinct from *Potentilla* L. following Keck (1938) with some modifications recently adopted by Ertter (1993) and Holmgren (1997), even though this results in a paraphyletic *Potentilla* in a strict sense. In the previous comprehensive treatments of Potentilleae in North America, Rydberg (1898) initially maintained *Ivesia* in *Horkelia* only to later accept both genera as distinct (Rydberg, 1908). He also recognized some entities (*Comarella* Rydberg and *Stellariopsis* Rydberg) at the generic level that Keck subsequently submerged into *Ivesia*. Some of the numerous unranked names proposed by Rydberg above the rank of species have been formally established at the rank of section by subsequent authors (e.g., Johnston, 1985); several more are likewise established herein.

Keys and full descriptions will be available in the *Flora* and are not repeated here (except for a key to the varieties of *Ivesia gordonii* (Hooker) Torrey & A. Gray). The distribution statements given here in some detail are based on our review of taxa for the FNA treatment and, in some cases, as noted, are novel.

New Sectional Names in *Horkelia*

Horkelia Chamisso & Schlechtendal sect. **Capitatae** (Rydberg) Ertter & Reveal, stat. nov. Basionym: *Horkelia* [unranked] *Capitatae* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 120, 122. 1898. TYPE: *Horkelia capitata* Lindley [= *H. fusca* Lindley var. *capitata* (Lindley) M. Peck].

Horkelia sect. *Capitatae* is monospecific, being circumscribed to include only *H. fusca* Lindley and its seven varieties, which occur in the far western United States. The section may be characterized as green or grayish, tufted plants with ascending to erect, glandular stems that are sparsely hairy. The basal leaves are planar with only slightly overlapping leaflets that are three to 15 per side and individually 5- to 15-toothed or -lobed. As the sectional name indicates, inflorescences are commonly capitate, at least in the more widespread varieties. Pedicels are straight and flowers are relatively small. The epicalyx bractlets are linear, and the sepals are often reflexed and streaked with purple. The hypanthium varies from turbinate to campanulate in shape and is glabrous within. The more or less triangular petals are white to pink and sometimes distinctly veined with pink to rose. The carpels are 10 to 25 in number, the style is distinctly glandular-thickened basally, and the mature achene is smooth.

Horkelia Chamisso & Schlechtendal sect. **Hispidulae** Ertter & Reveal, sect. nov. TYPE: *Horkelia hispidula* Rydberg.

Sectionis distinguibilis a plantis tegetes formantes cum caules 10–25 cm longis et achenis 1.5–2.5 mm longis.

Horkelia sect. *Hispidulae* is composed of three species confined to southern Oregon and California: *H. hendersonii* Howell, *H. hispidula*, and *H. tularensis* (J. T. Howell) Munz. When describing the last species, Howell (1966) noted its apparent connection to the other two species as possible relicts of a complex bordering interior basins. The section may be characterized as grayish or silvery green, densely matted plants with mostly ascending to erect, glandular stems that are silky hairy. The basal leaves are crowded and typically composed of overlapping leaflets that are four to 14 per side and divided individually into three to eight teeth or lobes. Inflorescences are congested but seldom capitate. Pedicels are straight. The epicalyx bractlets are linear to lanceolate with a cupulate hypanthium that is glabrous within. The petals are white. The carpels are five to 18 or rarely 20 in number, and the style is smooth. The resulting achene is also smooth.

Horkelia Chamisso & Schlechtendal sect. **Parryae** Ertter & Reveal, sect. nov. TYPE: *Horkelia parryi* Greene.

Sectionis distinguibilis a recurvatis pedicellis.

Horkelia sect. *Parryae* is composed of two species, *H. parryi* and *H. wilderae* Parish, both confined to California. The new section may be characterized as green, rosette-forming to openly matted plants with decumbent to slightly ascending, glandular and sparsely hairy stems. The basal leaves are planar and the three to seven leaflets do not overlap significantly, although each is divided into five to 15 lobes. Inflorescences are relatively open. Pedicels are distinctly recurved in fruit, which is the distinguishing feature of the section and unique within the genus. The epicalyx bractlets are linear-lanceolate to elliptic or rarely ovate with a cupulate to campanulate hypanthium that is glabrous or glandular within. The petals are white. The carpels are either three to four or vary typically from 20 to 50 in number, the style is smooth, and the mature achenes are finely reticulate or even rugose.

New Sectional Names in *Ivesia*

Ivesia Torrey & A. Gray sect. **Comarella** (Rydberg) Ertter & Reveal, comb. et stat. nov. Basionym: *Comarella* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 156. 1898. TYPE: *Comarella multifoliolata* (Torrey) Rydberg (lectotype, designated by Rydberg, N. Amer. Fl. 22: 291. 1908 [= *Ivesia multifoliolata* (Torrey) D. D. Keck]).

Ivesia sect. *Comarella* is composed of two species, *I. multifoliolata* and *I. sabulosa* (M. E. Jones) D. D. Keck. They are found in northern Arizona, southern Nevada, and southwestern Utah in the western United States. These are tufted, non-aromatic plants that have several ascending to erect stems and branches that are minutely glandular, often with microscopic, yellow, pellucid glands, and are more obviously villous proximally but hairless distally. The leaves are somewhat cylindrical with 12 to 40 overlapping leaflets per side. Pedicels may be straight or somewhat curved. The epicalyx bractlets are present on a shallowly campanulate to disciform hypanthium that is pentagonal in fruit. The five petals are often medially reflexed, a feature unique to the section. The stamens are always five with the filaments typically filiform, although some may be flattened. The carpels are one to five in number and horizontal rather than erect as elsewhere in the genus.

Ivesia Torrey & A. Gray sect. **Saxosae** (Rydberg) Ertter & Reveal, comb. nov. Basionym: *Horkelia* [unranked] *Saxosae* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 121, 125. 1898 [= *Potentilla* L. sect. *Saxosae* (Rydberg) B. C. Johnston, Phytologia 57: 299. 1985]. TYPE: *Horkelia saxosa* (Lemmon ex Greene) Rydberg [= *Ivesia saxosa* (Lemmon ex Greene) Ertter; basionym: *Potentilla saxosa* Lemmon ex Greene].

Ivesia sect. *Saxosae* is defined to encompass 11 species scattered throughout western North America, including those sometimes placed in *Purpusia* Brandegee or *Potentilla* sect. *Saxosae* (Rydberg) B. C. Johnston. These mostly aromatic plants are most often found confined to rock crevices, though sometimes cryptically so. The stems vary from prostrate or decumbent to spreading (rarely erect), and typically are glandular with scattered hairs. The microscopic pellucid glands are white to golden or reddish in color. The leaves are planar to cylindrical with one to 15 (rarely 18) separate to overlapping leaflets per side. Pedicels are usually recurved or even sigmoid especially when in fruit. The epicalyx bractlets are usually present on a shallowly campanulate to disciform hypanthium that is not pentagonal in fruit; bractlets are absent in *I. arizonica* (Eastwood ex J. T. Howell) Ertter and *I. patellifera* (J. T. Howell) Ertter. The petals are not medially reflexed. The stamens may be five or 15 to 35 (rarely 40) in number with more or less filiform filaments. Typically there are one to 20 (rarely up to 40) erect carpels.

Ivesia Torrey & A. Gray sect. **Stellariopsis** (Baillon) Ertter & Reveal, comb. nov. Basionym: *Potentilla* sect. *Stellariopsis* Baillon, Hist. Pl. 1: 370. 1869. TYPE: *Potentilla santolinoides* (A. Gray) Greene [= *Ivesia santolinoides* A. Gray, including *Stellariopsis santolinoides* (A. Gray) Rydberg].

Ivesia sect. *Stellariopsis* is a monospecific taxon that sometimes is treated at the generic rank (Rydberg, 1898). Its only species, *I. santolinoides*, is confined to the Sierra Nevada, Transverse Ranges, and San Jacinto Mountains of California. This is a tufted plant with several erect stems that are glandular and hairy proximally but often glabrous both distally and on the inflorescence branches. The infrequently seen microscopic pellucid glands are orangish or red to reddish purple in color. The leaves are cylindrical with 60 to 80 tightly congested leaflets per side. Pedicels are somewhat curved. The epicalyx bractlets are present on a disciform to funnelform hypanthium that is not pentagonal in fruit. The five petals are not medially reflexed. The stamens are 15 with mostly filiform filaments. There is only a single erect carpel. The anthers are as wide or wider than long with thecae that initially open by small, subterminal pores. This feature has been used to justify generic status, but fully opened thecae display a lateral suture typical of other members of *Ivesia*. A single carpel, consistent in *I. santolinoides*, may be found elsewhere but not consistently so (e.g., *I. rhypara* Ertter & Reveal). Finally, the branches, pedicels, and hypanthium have large, maroon-tipped capitate glands, a feature not otherwise known in *Ivesia*.

Ivesia Torrey & A. Gray sect. **Unguiculatae** (Rydberg) Ertter & Reveal, stat. nov. Basionym: *Horkelia* [unranked] *Unguiculatae* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 120. 1898. TYPE: *Horkelia unguiculata* (A. Gray) Rydberg [= *Ivesia unguiculata* A. Gray].

Ivesia sect. *Unguiculatae* is composed of eight species in the western United States with a single variety (*I. argyrocoma* var. *moranii* Ertter & Reveal) in northern Baja California, Mexico. These are tufted, scarcely aromatic plants with prostrate to erect stems that are mostly glandular and somewhat hairy. The pellucid glands are red to reddish purple in color. The leaves are cylindrical and congested at least apically with 15 to 60 leaflets per side. Pedicels are straight. The epicalyx bractlets are present on a cupulate, turbinate, or campanulate hypanthium that is not pentagonal in fruit. The five (rarely four) petals are not medially reflexed. The stamens are 10 to 20 in number with the filaments filiform to strongly flattened (e.g., *I. argyrocoma* (Rydberg) Rydberg). There are mostly two to 20 (rarely only one) erect carpels.

New Sectional Name in *Potentilla*

Potentilla L. sect. **Hippianae** (Rydberg) Ertter & Reveal, stat. nov. Basionym: *Potentilla* [unranked] *Hippianae* Rydberg, Bull. Torrey Bot. Club 24: 1. 1897. TYPE: *Potentilla hippiana* Lehmann.

Potentilla sect. *Hippianae* is a taxon of four species with both *P. hippiana* and *P. effusa* Douglas ex Lehmann widespread in the Rocky Mountains and on the Great Plains of western North America. More restricted in distribution are *P. ambigens* Greene and *P. crinita* A. Gray, as both are found mainly in the Rocky Mountains from Wyoming to New Mexico, with the latter extending westward into northern Arizona, portions of eastern Utah, and in the Spring Mountains

and Sheep Range of southern Nevada. The section may be characterized as those perennial members of *Potentilla* in the southwestern United States with tomentose, eglandular, ascending to erect stems, pinnately divided leaves with five to 15 leaflets that are strigose or sericeous on both surfaces or white-tomentose abaxially, and relatively straight (not recurved) pedicels. The leaflets are toothed no more than half the distance to the midrib. The stamens are mainly 20 (rarely 25) in number, and the carpels are 15 to many with a filiform style subterminally positioned on the ovary.

Shortly after publishing the unranked *Hippianae* in 1897, Rydberg (1898) abandoned this name for the equally unranked *Leucophyllae*. Because the type of that name, *Potentilla leucophylla* Torrey, is a later homonym, we have adopted Rydberg's original name. Johnston (1985) included the component species within his section *Subjugae* (Rydberg) B. C. Johnston, which we restrict to *P. subjuga* Rydberg s.l.

New Varietal Names in *Horkelia*

Horkelia californica Chamisso & Schlechtendal var. **elata** (Greene) Ertter & Reveal, comb. nov. Basionym: *Potentilla californica* (Chamisso & Schlechtendal) Greene var. *elata* Greene, Fl. Francisc. 1: 66. 1891, a replacement name for *Potentilla elata* Greene, Pittonia 1: 100. 1887, non *Potentilla elata* Salisbury, Prodr. Stirp. Chap. Allerton: 362. 1796. TYPE: U.S.A. California: Napa Co., shady banks of the upper Napa River above Calistoga, Aug. 1883, *E. L. Greene s.n.* (holotype, NDG).

This name displaces *Horkelia californica* subsp. *dissita* (Crum ex Jepson) Ertter as used by Ertter (1991, 1993). The rank of subspecies had been used to follow Keck (1938) and to avoid concerns about the identity of *Potentilla glandulosa* Lindley var. *incisa* Lindley (Ertter, 1991). We are using the varietal rank in FNA, and can now confirm that variety *incisa* is a member of *Drymocallis* Fourreau ex Rydberg (Ertter, 2007).

Horkelia californica Chamisso & Schlechtendal var. **frondosa** (Greene) Ertter & Reveal, comb. nov. Basionym: *Potentilla frondosa* Greene, Pittonia 1: 300. 1889. *Potentilla californica* Greene var. *frondosa* (Greene) Jepson, Man. Fl. Pl. Calif. 494. 1925. TYPE: U.S.A. California: Contra Costa Co., near Martinez, May 1889, *F. T. Swett s.n.* (lectotype, designated by D. D. Keck (1938: 81), NDG; duplicates, DS, K, NA, OSC, UC).

The rank is altered from subspecies (i.e., subsp. *frondosa* (Greene) Ertter) to variety to correspond with the infraspecific rank used in our treatment of *Horkelia* for *Flora of North America*.

Horkelia clevelandii (Greene) Rydberg var. **brevibracteata** (Wiggins) Ertter & Reveal, comb. et stat. nov. Basionym: *Horkelia brevibracteata* Wiggins, Contr. Dudley Herb. 1: 170, pl. 1. 1933. TYPE: Mexico. Baja California Norte: La Encantada, Sierra San Pedro Mártir, 20 Sep. 1930, *I. L. Wiggins & D. Demaree 4931* (holotype, DS; isotypes, MO, NA, NY, UC, US, UTC).

The variety *brevibracteata* differs from variety *clevelandii* in being a more compact, matted plant with shorter stems (1–2.5(–3) dm vs. 1–4.5 dm in variety *clevelandii*) and basal leaves with 11 to 16 pairs of lateral leaflets instead of merely six to 12 pairs as found in the typical phase. Fully mature lateral leaflets of variety *clevelandii* are generally 8–15 mm in length, whereas those of variety *brevibracteata* vary from 4–8 mm in length. As implied by the epithet *brevibracteata*, the epicalyx bractlets are shorter (1.5–2 mm long) on a deeper hypanthium (2–2.5 mm) compared to variety *clevelandii* (2–3.5 mm and 1–1.5 mm, respectively). In addition, the leaves of variety *brevibracteata* are densely glandular with sessile or even punctate glands, a feature not found in the typical phase. The newly established variety is known only from the Sierra San Pedro Mártir and Sierra Juarez of northern Baja California, Mexico. The variety *clevelandii* occurs in the Peninsular Ranges of southern California in Riverside and San Diego Counties, where it is the host plant of the federally endangered Laguna Mountains skipper (*Pyrgus ruralis lagunae* Scott).

Horkelia cuneata Lindley var. **puberula** (Rydberg) Ertter & Reveal, comb. nov. Basionym: *Horkelia puberula* Rydberg, Bull. Torrey Bot. Club 25: 55. 1898, a replacement name for *Potentilla puberula* Greene, Pittonia 1: 102. 1887, non *Potentilla puberula* Krašan, Oestr. Bot. Zeitschr. 17: 304. 1867. *Potentilla lindleyi* Greene var. *puberula* (Rydberg) Jepson, Man. Fl. Pl. Calif. 495. 1925. TYPE: U.S.A. California: San Bernardino Co., mesas 5 mi. W of San Bernardino, 25 Apr. 1885, *S. B. Parish 279* (holotype, NDG; isotypes, GH, UC, WS).

Rydberg (1898) unknowingly proposed *Horkelia puberula* as a new name for the illegitimate *Potentilla puberula*, which was a later homonym. The rank of this

and the following name is changed from subspecies (e.g., *H. cuneata* subsp. *puberula* (Rydberg) D. D. Keck and subsp. *sericea* (A. Gray) D. D. Keck) to variety, although the circumscription of both remains as defined by Keck (1938) and by Ertter (1993).

Horkelia cuneata Lindley var. **sericea** (A. Gray) Ertter & Reveal, comb. nov. Basionym: *Horkelia californica* var. *sericea* A. Gray, Proc. Amer. Acad. Arts 6: 529. 1865. TYPE: U.S.A. California: Alameda Co., vicinity of Oakland, 1863, *W. Holder 2582* (holotype, GH; isotypes, UC, US, YU).

Horkelia daucifolia (Greene) Rydberg var. **caruifolia** (Rydberg ex Howell) Ertter & Reveal, comb. et stat. nov. Basionym: *Horkelia caruifolia* Rydberg ex Howell, Fl. N.W. Amer. 1: 181. 1898. TYPE: U.S.A. Oregon: Jackson Co., Ashland, 16 July 1887, *T. Howell 685* (holotype, ORE 96564 at OSC).

Horkelia daucifolia var. *caruifolia* is known only from the Rogue River drainage in Jackson County, Oregon. It occurs on non-serpentine soils in grassy openings in mixed oak and conifer woodlands at elevations ranging from 500 to 850 m. It differs from the more southern variety *daucifolia* of the Klamath River drainage in north-central California and adjacent Oregon in having leaflets of its basal leaves either entire or divided into four to 15 segments that are 0.4–1 mm wide. In variety *daucifolia*, similar leaflets are divided into two to six linear to oblanceolate segments that are 1–2(–3) mm wide. Petals are also wider in variety *caruifolia* (4–8 mm) than in variety *daucifolia* (2–4 mm). The typical variety occurs primarily in conifer woodlands on serpentine soils at elevations of 500–1650 m. Based on limited material, Keck (1938) considered *H. caruifolia* to be a synonym of *H. daucifolia*, although earlier, Crum (1934) maintained both species as distinct within *Potentilla*. We do not consider *P. daucifolia* var. *divergens* Crum, established because of its more open inflorescence, to be worthy of recognition based on our examination of more abundant material from the Ashland area (where Thomas Howell obtained the type in 1889) than was available to Crum.

The holotype of *Horkelia caruifolia* is the sheet at ORE annotated by Howell as "type specimen." His collection of the same species obtained the following day is more widely distributed: high hills near Ashland, Rogue River Valley, 17 July 1887, *T. Howell 1129* (DS, MIN, MO, NA, NY[2], PENN, PH, UC US, WTU, YU). Keck (1938) considered both of the Howell collections plus a third collection (Ashland, July 1893, *R. M. Austin 256*, CAS, US) to be cotypes. Rydberg annotated one of the NY sheets of *Howell 1129* as "type" but as he did not name the taxon, Howell's selection must be accepted.

Horkelia daucifolia (Greene) Rydberg var. **indicta** (Jepson) Ertter & Reveal, comb. nov. Basionym: *Potentilla daucifolia* Greene var. *indicta* Jepson, Man. Fl. Pl. Calif. 493. 1925. TYPE: U.S.A. California: Tehama Co., Stiver's Ranch, Crane Creek, 25 Apr. 1889, *W. L. Jepson 100p* (holotype, JEPS).

This phase of the species is similar to *Horkelia daucifolia* var. *caruifolia* in that both have basal leaves with numerous, narrow (0.3–0.8 mm wide) segments. It differs from both variety *caruifolia* and variety *daucifolia* in having longer pedicels on average (5–20 mm vs. 2–10 mm) that have abundant short glands and relatively sparse hairs, whereas pedicels of the other two varieties are more densely puberulent and only obscurely glandular. Jepson's horkelia, as we hereby term this extremely rare variety, is currently known from only two collections from the Sacramento River drainage on the edge of the Sacramento Valley in Tehama and Counties of California.

Horkelia fusca Lindley var. **brownii** (Rydberg) Ertter & Reveal, comb. et stat. nov. Basionym: *Horkelia brownii* Rydberg, N. Amer. Fl. 22: 276. 1908. TYPE: U.S.A. California: Siskiyou Co., south side of Mt. Shasta, 15–31 July 1897, *H. E. Brown 530* (holotype, NY; isotypes, BKL, F, MO, PH, UC, US).

The above name is adopted here to replace the misapplication of *Horkelia fusca* subsp. *pseudocapitata* (Rydberg ex Howell) D. D. Keck, an error originally promulgated by Rydberg (1898) when he took up the just-published *H. pseudocapitata* Rydberg ex Howell. Although Howell (1898) believed he was simply incorporating one of Rydberg's species in his *Flora of Northwest America*, the two authors designated different type specimens and used circumscriptions that excluded the other person's type. Howell's type, so indicated as such in his own hand on the only specimen in his herbarium from the cited locality, is *T. Howell 399* (ORE 96569, now at OSC), collected 12 June 1885 on Buck Mountain, Baker County, Oregon. In contrast, Rydberg considered the type of *H. pseudocapitata* to be a now-lost T. S. Brandegee specimen from Janesville (given by Rydberg as "Tanesville"), Lassen County, California, formerly at CAS (Heller, 1905) and presumably destroyed in the

1906 earthquake. The Brandegee sheet was not seen by Howell and therefore does not qualify as original material, and thus could not be designated a lectotype by Rydberg.

Howell's type specimen from Oregon belongs to a relatively large-petaled (4–6 mm) taxon with glandular leaflet blades that, in our interpretation, ranges throughout the northern Intermountain West from Grant and Klamath Counties, Oregon, eastward to south-central Idaho, with southern extensions into Modoc County, California, and Elko County, Nevada. These plants fall within Keck's (1938) circumscription of *Horkelia fusca* subsp. *capitata* (Lindley) D. D. Keck, but we are restricting variety *capitata* (Lindley) M. Peck to plants occurring farther north in northeastern Oregon, southwestern Washington, and northern Idaho that have narrower, more purple, and more glandular hypanthia. The northern Intermountain entity accordingly takes the name *H. fusca* var. *pseudocapitata* (Rydberg ex Howell) M. Peck, following Howell's original concept.

In contrast, the description and distribution of *Horkelia pseudocapitata* as given by Rydberg and followed by subsequent authors represents a different entity occurring to the south and west of *H. fusca* var. *pseudocapitata* as now circumscribed. This entity, which includes most of the specimens cited by Rydberg, consists of small-petaled (2–4 mm) plants characterized by hirsute to villous stems and hoary, relatively narrow leaflets. Such plants are found primarily on pumice flats and low hills from Mt. Shasta, Siskiyou County, eastward into Lassen, Modoc, and northern Plumas Counties of northern California. The site of Brandegee's lost collection from Janesville is at the southeastern edge of the hoary-leaved entity's range, and a recent collection from the same general locality (*Ertter & Schoolcraft 7312*, UC) falls within the general concept. The type of *H. brownii* Rydberg is fully representative of this entity, so the combination *H. fusca* var. *brownii* is here established to accommodate this taxon to which the epithet *pseudocapitata* has been misapplied.

Horkelia tridentata Torrey var. **flavescens** (Rydberg) Ertter & Reveal, comb. nov. Basionym: *Horkelia flavescens* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 138, t. 75. 1898. *Potentilla tilingii* (Regel) Greene var. *flavescens* (Rydberg) J. T. Howell, Leafl. W. Bot. 4: 176. 1945. TYPE: U.S.A. California: s. loc., 1875, *J. G. Lemmon 90* (holotype, NY; isotypes, BKL, F, MO, NY, UC).

The combination established here maintains a taxon accepted by both Keck (1938) and by Howell (1945). We recognize the name at the rank of variety, not as a subspecies as proposed by Keck, and in *Horkelia* rather than *Potentilla* as suggested by Howell.

New Varieties and Combinations in *Ivesia*

Ivesia argyrocoma (Rydberg) Rydberg var. **moranii** Ertter & Reveal, var. nov. TYPE: Mexico. Baja California Norte: Sierra San Pedro Mártir, 2 mi. W of Vallecitos in granitic soil on gentle slopes associated with *Pinus jeffreyi* at 2250 m, 31°00′N, 115°29′W, 2 June 1968, *R. V. Moran 15078* (holotype, UC; isotypes, CAS, GH, K, MEXU, NY, RSA, SD, US). Figure 1.

A *Ivesia argyrocoma* var. *argyrocoma* plantis brevissimos cum caulibus ad 10 cm longis, stipulis 2–4 mm longis et dense villosis, caulis minute glandulosis et villosis differt.

Etymology. The variety is named for Reid Venable Moran (1916–), one of Baja California's premier botanical collectors. Moran's ivesia is a suitable vernacular name.

Distribution and ecology. *Ivesia argyrocoma* var. *moranii* grows in full sun on granitic soil in dry meadows and along stream banks near conifer forests dominated by *Abies concolor* (Gordon & Glendinning) Hildebrand and *Pinus jeffreyi* Greville & Balfour from 2225 to 2700 m elevation in the Sierra San Pedro Mártir of northern Baja California, Mexico. The variety *argyrocoma* is restricted to gravelly flats ("pebble plains") of Bear Valley in the eastern San Bernardino Mountains of southern California, some 400 km to the north. The typical variety is a rare plant of conservation concern in California. We have not attempted to determine the degree of rarity of variety *moranii* except to note that it has been collected from a relatively small area.

Diagnostic features. Compared to the typical variety, variety *moranii* is a more compact plant with shorter stems (to 10 cm long vs. 15 cm) that are more consistently stipitate-glandular under the loosely villose indumentum. Stipules of the basal leaves are notably larger (2–4 mm vs. 1–2 mm) and more densely villous (vs. glabrous or rarely sparsely villous marginally). The inflorescence in variety *moranii* is a single congested cyme (rather than the more organized one to several capitate clusters of variety *argyrocoma*), with somewhat shorter, oblanceolate to narrowly obovate petals and achenes (2.5–3.5 mm and 1.3–2 mm, respectively, vs. (2.5–)3–4.5 mm and 1.5–2.5 mm). Moran's ivesia is the only member of *Ivesia* sect. *Unguiculatae* in Baja California.

Paratypes. MEXICO. **Baja California Norte:** Sierra San Pedro Mártir, head of Cañada el Copal & S slope of Cerro Venado Blanco, 2500–2700 m, 3 June 1988, *S. Boyd et al. 2316* (RSA); Vallecitos, 2440 m, 24 June 1991, *Clemons &*

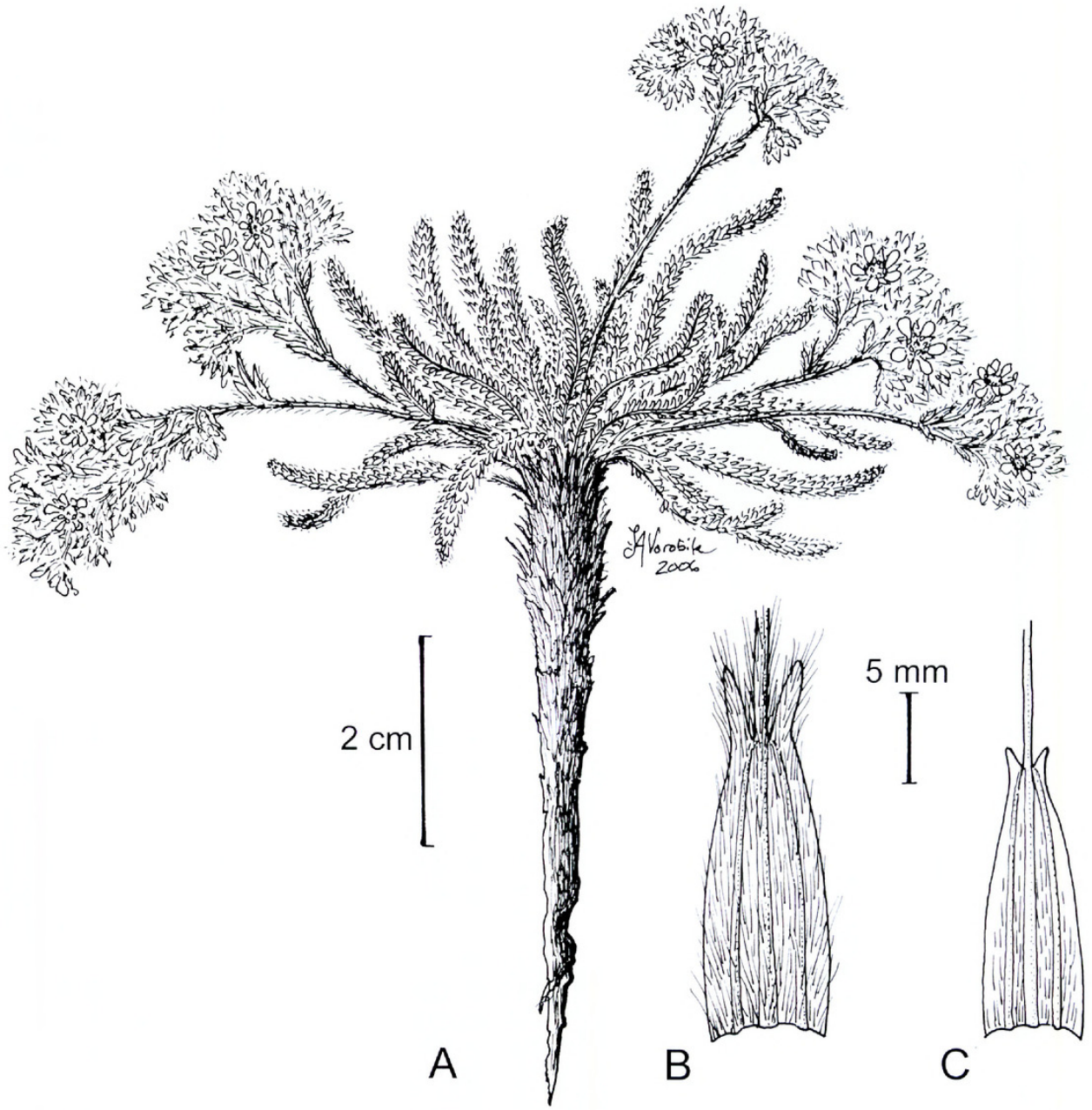

Figure 1. A–B. *Ivesia argyrocoma* var. *moranii* Ertter & Reveal (drawn from the UC holotype *Moran 15078*). —A. Habit. —B. Abaxial view of cauline leaf base, showing elongate stipules and vestiture. —C. *Ivesia argyrocoma* var. *argyrocoma* (Rydberg) Rydberg (drawn from *D. Wm. Taylor 10289*, California, San Bernardino Co., Bear Valley Region, 10 May 1989, *D. W. Taylor 10289*, UC). Abaxial view of cauline leaf base, at same scale as B.

Brey 2317 (SD); Yerba Buena, 2400 m, 4 July 1971, *R. V. Moran 18465* (SD); 5 mi. S of Vallecitos on trail to La Grulla, 2225 m, 3 July 1972, *R. V. Moran 19183* (MEXU, SD); meadow W of Los Llanitos, 2350 m, 2 July 1973, *R. V. Moran 21080* (SD); E end of Vallecitos Meadow, 2600 m, 30 May 1976, *R. V. Moran 23306* (RSA, SD, UC); upper San Juan Creek, 7200–7700 ft., 7 June 1962, *R. G. Olmstead 4587* (RSA); 2 mi. E of Prado del Corona, 8200 ft., 9 June 1962, *R. G. Olmstead 4721* (RSA); 1.7 mi. N of turn to La Tasajera & 2.2 mi. SE of Observatory Rd., Vallecitos area, 2380 m, 25 June 1996, *Rebman & Sosa 3251* (SD); S of Vallecitos near Cerro la Botella Azul, 2590 m, 28 June 1998, *Rebman & Russell 5405* (SD); 2.5 air km W of observatory, 2430 m, 17 June 1988, *A. C. Sanders et al. 7948* (RSA); Vallecitos, 2430 m, 18 June 1985, *R. F. Thorne et al. 60843* (RSA, UC); Vallecitos, 2430 m, 7 May 1986, *R. F. Thorne et al. 61954* (MEXU, RSA, UC); Vallecitos Meadow, 2500 m, 18 June 1971, *I. W. Wiggins 21460* (DS, OSC).

Ivesia gordonii (Hooker) Torrey & A. Gray in J. S. Newberry, Rep. Explor. Railroad Pacific 6(3): 72. 1858 (as *gordoni*).

Ivesia gordonii is the most widespread species of *Ivesia*, occurring from Washington to Montana, south to central California and Colorado and encompassing a great deal of variation that does not parse readily into cleanly circumscribed infraspecific units. Holm-

gren (1997) noted three phases as occurring in the Intermountain West, which he informally referred to and illustrated as gordonii, tenuicaulis, and wasatchensis. Holmgren and Ertter had discussed describing the latter two variants jointly, but the intended follow-up studies were not completed before Holmgren moved on to other volumes of *Intermountain Flora*. Our present survey of several hundred specimens from throughout the species' range indicates additional and more complex variation, occurring as a continuum that can be variously fragmented depending upon the features one prefers to stress (Ertter, 1997). For the present, we have chosen to divide this variation among four varieties that have a biogeographic underpinning, distinguished as in the following key. It is likely that additional entities can be recognized, pending additional work to account properly for the variation within *I. gordonii*.

KEY TO THE VARIETIES OF *IVESIA GORDONII*

1a. Lateral leaflet blades of basal leaves 7–17 mm long, usually glabrous or nearly so; flowering stems erect or nearly so, 1.3–4 dm long, minutely glandular, often glandular-pubescent, infrequently sparsely villous; inflorescence typically branched with multiple heads. . . . . *I. gordonii* var. *wasatchensis*

1b. Lateral leaflet blades of basal leaves 2–7 mm long, hairy or glabrous except for hairy margins; flowering stems prostrate, ascending to spreading or erect, 0.4–2 dm long, minutely glandular and glandular-puberulent or -pubescent, occasionally hirsute or villous, sometimes rather densely so; inflorescence typically unbranched with solitary heads, sometimes more loosely cymose.

2a. Flowering stems prostrate to spreading or ascending, rarely erect, often reddish, minutely glandular or variously glandular-puberulent to -pubescent; leaves usually glabrous except for scattered marginal hairs; northeastern Nevada, southern Idaho, eastern Oregon, and northeastern California. . . . . *I. gordonii* var. *ursinorum*

2b. Flowering stems ascending to erect, usually greenish, villous or hirsute to villous and variously glandular-puberulent to -pubescent; leaves usually hairy or at least somewhat densely so marginally; northern Oregon and southern Washington eastward through northern Idaho to Montana, south into western Colorado, Utah, and California.

3a. Stem usually villous or hirsute to villous and glandular-pubescent; western Montana south through southeastern Idaho, Wyoming to Utah and Colorado . . . . . *I. gordonii* var. *gordonii*

3b. Stems variously glandular-puberulent or -pubescent, usually sparsely villous; western Oregon and Washington through Idaho to extreme western Montana, and in northern California. . . . . *I. gordonii* var. *alpicola*

Ivesia gordonii (Hooker) Torrey & A. Gray var. **gordonii.** Basionym: *Horkelia gordonii* Hooker (as *gordoni*), Hooker's J. Bot. Kew Gard. Misc. 6: 341, pl. 12. 1853. *Potentilla gordonii* (Hooker) Greene (as *gordoni*), Pittonia 1: 106. 1887. TYPE: U.S.A. [Wyoming:] Upper Platte, [1843], *A. Gordon s.n.* (holotype, K).

As defined by us, *Ivesia gordonii* var. *gordonii* is an erect herbaceous perennial with either villous stems, or stems that are both hirsute to villous and variously glandular-puberulent or -pubescent. Its leaves are usually densely hirsute with leaflets usually 2–7 mm in length. The inflorescence of variety *gordonii* is nearly always simply capitate. This phase of the species occurs from southwestern Montana south through western Wyoming to southern Colorado. It is also found in both the Uintah and Wasatch Mountains, where it can be difficult to distinguish consistently from variety *wasatchensis*.

Gordon gathered the type on the "Upper Platte" while traveling with Sir William Drummond Stewart in 1843. This suggests the type was found along the Sweetwater River near the South Pass area of Fremont County, Wyoming. The type in the Hooker Herbarium at the Royal Botanic Garden (K) is most similar to plants found today west of the Pass in Sweetwater County, Wyoming. Stewart and his party were in that area in late July and early August of 1843, and given the condition of the plant, it seems likely that this was when the specimen was gathered.

Ivesia gordonii (Hooker) Torrey & A. Gray var. **alpicola** (Rydberg ex Howell) Ertter & Reveal, comb. nov. Basionym: *Horkelia gordonii* var. *alpicola* Rydberg ex Howell, Fl. N.W. Amer. 1: 182. 1898. TYPE: U.S.A. Washington: dry rocky ridges, alpine heights, Mt. Adams, Washington, 9 Aug. 1882, *T. Howell & L. F. Henderson s.n.* (lectotype, designated here, ORE 46734, now at OSC).

As here circumscribed, *Ivesia gordonii* var. *alpicola* occurs in a great arc from the northern coastal ranges and Sierra Nevada of California sporadically northward into the Cascade Range of northwestern Oregon and southern Washington, then eastward to the Blue and Wallowa Mountains. From there, the variety reappears in the mountains of central Idaho and in the Bitterroot Mountains of western Montana. A disjunct population occurs in the Owyhee Mountains in southwestern Idaho.

The protologue of *Ivesia gordonii* var. *alpicola* placed the new variety on Mount Adams, Washington, without citing any specimens or collectors. Love

(2001) indicated that Howell and Louis F. Henderson were collecting together on Mount Adams in 1882 when they encountered Wilhelm N. Suksdorf. All three made collections of this *Ivesia*, dated either 9 or 10 August, though it is possible that all of the material was gathered once at a single location. Our selection of the lectotype is made on the basis that it conforms to Howell's original description, is from the Howell herbarium, and names both Howell and Henderson as collectors. The other syntypes of variety *alpicola* gathered on Mount Adams in 1882 are *L. F. Henderson 275*, 9 Aug. 1882 (MO, ORE); *L. F. Henderson s.n.*, 10 Aug. 1882 (WS); *T. Howell s.n.*, 10 Aug. 1882 (MO, US); *W. N. Suksdorf s.n.*, 9 Aug. 1882 (PH, WS).

Ivesia gordonii (Hooker) Torrey & A. Gray var. **ursinorum** (Jepson) Ertter & Reveal, comb. nov. Basionym: *Potentilla gordonii* (Hooker) Greene var. *ursinorum* Jepson, Man. Fl. Pl. Calif.: 492. 1925. TYPE: U.S.A. California: Bear Creek, Trinity Mtns., 12 Aug. 1911, *A. M. Alexander & L. Kellogg 313* (holotype, JEPS; isotype, UC).

See Holmgren (1997: 117) for figure.

Ivesia gordonii var. *ursinorum* encompasses Holmgren's (1997) "tenuicaulis phase," which he considered to occur only in the Jarbidge and Independence Mountains of Elko County, Nevada, the Steens Mountains in Harney County, and atop Baldy Mountain in Grant County, Oregon. Our expanded circumscription encompasses additional populations in the mountains of central Idaho, where the variety *ursinorum* is replaced abruptly by variety *alpicola* to the north, and in the Warner Mountains of Modoc County, California, and Lake County, Oregon. The variety is then encountered westward on Scott Mountain and Mount Eddy in Siskiyou and Trinity Counties, where the type of variety *ursinorum* was gathered. Populations also occur in the Sweetwater Mountains and adjacent Sierra Nevada near Sonora Pass in Alpine and Tuolumne Counties; these plants resemble those found in central Idaho, being less sprawling than those of Nevada or Oregon.

As now defined, variety *ursinorum* typically is a low-spreading plant with glandular-pubescent and minutely glandular, reddish, wiry stems. *Ivesia gordonii* var. *alpicola* usually is a larger, more robust and erect plant with its stems variously glandular and occasionally sparsely villous. The two varieties have overlapping ranges (in Idaho mainly), but for the most part the erect habit and compact leaves of variety *alpicola* distinguish it from the sprawling habit and more open leaves of variety *ursinorum*, with the latter also having more consistently reddish stems.

Adoption of the name variety *ursinorum* for Holmgren's tenuicaulis phase is done with reluctance, as the type of variety *ursinorum* is from the least distinctive portion of the taxon's range. We would have preferred to typify the taxon on the Nevada phase, which is clearly distinct. This distinctiveness was initially appreciated by Bassett Maguire and Arthur H. Holmgren, who used the provisional epithets "tenuicaulis" and "aranea" on their collection *22342* (NY, RSA, UC, UTC) from Elko County, Nevada.

Of the two fragmentary plants on *Alexander & Kellogg 313* in the Jepson Herbarium (JEPS 2809), one was clearly removed from the corresponding University Herbarium sheet (UC 195238), leaving behind most of the leaves and inflorescences of that removed fragment. According to herbarium lore, Jepson believed he had the right to help himself to portions of any UC collection, and this is evidently the case here. The UC sheet is the original (and by far the better) sheet, but the JEPS sheet must be accepted as holotype since it is in Jepson's personal collection.

Ivesia gordonii (Hooker) Torrey & A. Gray var. **wasatchensis** N. H. Holmgren ex Ertter & Reveal, var. nov. TYPE: U.S.A. Utah: Salt Lake Co., Wasatch Range, btw. Secret Lake & Albion Basin Campground, SE of Alta, T3S, R3E, sect. 9, 2900 m, 14 Aug. 1983, *B. Ertter 5101* (holotype, UC; isotypes, BRY, MO, NY, RSA, TEX, US, UTC).

Caules erectis, viridis; lateralis foliolorum 7–17 mm longis; antheras flavis; inflorescentiis plerumque leniter ramosis.

See Holmgren (1997: 117) for figure.

Etymology. The name alludes to the Wasatch Mountains of southeastern Idaho and Utah.

Distribution and ecology. Ivesia gordonii var. *wasatchensis* is widely scattered in disjunct, montane populations from 2100 to 2750 m in eastern Idaho, southwestern Montana, and western Wyoming south into central Utah.

Relationships. Ivesia gordonii var. *wasatchensis* is broadly defined by us compared to how it was outlined by Holmgren (1997). The leaves are generally glabrous with only sparsely hirsute or villous margins along the narrow leaflet segments that are themselves 7–17 mm long. The stems of variety *wasatchensis* are minutely glandular (sometimes glandular-puberulent) with some villous hairs, and the inflorescences are usually branched rather than simply capitate. Plants that are densely villous with short, hairy leaflet segments (2–7 mm long) and simple heads are

assigned to variety *gordonii*. Some plants of variety *gordonii* can be as tall (0.7–2(2.5) dm) as typical variety *wasatchensis* (1–4 dm), but on the average, those of the former are shorter. The existence of no clear distinction in the continuum of these features means that some collections will be frustrating to place. Only the most clearly representative specimens of variety *wasatchensis* are cited below.

Independently, Holmgren and the senior author arrived at the conclusion that this taxon was worthy of recognition. Inasmuch as Holmgren coined the name, it is retained here with his name in association, although we had alternatively considered naming it in his honor.

Representative specimens. U.S.A. **Idaho:** Bannock Co., top of Scout Mtn., *Cronquist 309-36* (UTC); Bear Lake Co., Whiskey Flat, along Little Beaver Creek, *A. H. Holmgren & Albee 16523* (RM, UTC); Caribou Co., S of Diamond Flat, *Shultz & Shultz 2717* (RM, UTC); Franklin Co., Bear River Range, upper Franklin Basin, *Ertter & Grimes 2486* (MIN, NY, UTC); Fremont Co., E of Mt. Jefferson, SW of Henry Lake, *Cronquist 1923* (UTC). **Montana:** Beaverhead Co., Odell Creek, *D. Nelson SR-6* (USFS); Custer Co., near Ekalaka, 1941, *Seidensticker s.n.* (UTC); Granite Co., Flint Creek, near Drummond, *Burdick & Mueller 8* (GH, MIN, RM); Madison Co., Lazyman Hill, Gravelly Range, *C. L. Hitchcock 16862* (GH, RSA, UTC, WTU); Park Co., btw. Suksdorf Gulch & Jackrabbit Gulch, 9 mi. NW of Wilsall, *Suksdorf 309* (WSC, WTU). **Utah:** Cache Co., Tony Grove Lake, *Thorne & Thorne 2139* (BRY, RM); Davis Co., Bountiful Peak, *Cottam et al. 15005* (RSA, UT); Duchesne Co., Uinta Mtns., head of Blind Creek, *Harrison & Nisson 8813* (BRY, UTC); Millard Co., Canyon Mtns., 7 mi. NW of Scipio, *Goodrich 17236* (BRY, RM, UTC); Salt Lake Co., Wasatch Mtns., Alta, Aug. 1883, *M. E. Jones s.n.* (BKL, ORE, POM, RM); Sanpete Co., Wasatch Plateau, head of White Ledge Fork, *M. E. Lewis 5624* (UTC); Summit Co., Uinta Mtns., Bald Mtn. Pass, *S. L. Welsh & G. Moore 6662* (BRY, ISC); Utah Co., Provo Peak, *Larsen 6789* (BRY, MIN); Wasatch Co., near Cold Spring, 11 Aug. 1972, *Goodrich s.n.* (UTC). **Wyoming:** Fremont Co., Owl Creek Range, Bird's Eye Pass, *Porter & Porter 8634* (RM); Lincoln Co., Red Mtn., N of Smoot, *Payson & Armstrong 3640* (GH, ISC, NY, POM, RM, US); Park Co., Yellowstone N.P., Yellowstone Lake, *A. Nelson & E. Nelson 6338* (GH, ISC, MIN, MO, NY, RM, US); Teton Co., Grand Teton N.P., Poverty Flat, *R. J. Shaw 1328* (RSA).

Ivesia lycopodioides A. Gray var. **megalopetala** (Rydberg) Ertter & Reveal, comb. nov. Basionym: *Horkelia gordonii* Hooker var. *megalopetala* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 152. 1898. TYPE: U.S.A. California: Mt. Dana, [1866], *H. N. Bolander s.n.* (holotype, CAS).

This and the following are recognized at the rank of variety so as to render consistency of rank in our treatment for *Flora of North America*.

Ivesia lycopodioides A. Gray var. **scandularis** (Rydberg) Ertter & Reveal, comb. nov. Basionym: *Horkelia scandularis* Rydberg, Mem. Dept. Bot. Columbia Coll. 2: 150. 1898. *Potentilla gordonii* (Hooker) Greene var. *scandularis* (Rydberg) Jepson, Man. Fl. Pl. Calif. 492. 1925. *Potentilla lycopodioides* (A. Gray) Baillon ex J. T. Howell var. *scandularis* (Rydberg) J. T. Howell, Leafl. W. Bot. 4: 176. 1945. TYPE: U.S.A. California: Mono Co., White Mtns., 18 Aug. 1888, *W. H. Shockley 572* (holotype, CAS; isotypes, GH, JEPS, UC).

Rydberg annotated the CAS sheet "type," whereas on the GH sheet he wrote "Not *I. pygmaea*, an undescribed species." Accordingly, we accept the CAS specimen as the holotype rather than the GH sheet as stated by Keck (1938).

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