

# REDISCOVERY OF *RIBES NIVEUM* (GROSSULARIACEAE) IN COLORADO

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While conducting a floristic survey of central Colorado (Chumley 1998), two collections of a gooseberry from the Cañon City area, Fremont County, proved to be *Ribes niveum* Lindl. These collections represent the rediscovery of a taxon known in Colorado from a single, neglected gathering by T.S. Brandegee in 1873 (*Brandegee 697*, Sinnott 1985). These new collections come from the drainage of Cottonwood Creek, 13 to 15 miles northwest of Cañon City. Wilson Creek, the Brandegee locality, is 3–4 miles to the east or ca. 8 miles northwest of Cañon City. Field work in 1997 verified that *R. niveum* still occurs along Wilson Creek.

The Brandegee specimen was cited by Porter and Coulter (1874) as *R. irriguum* Douglas, a species of the Pacific Northwest. Rydberg (1906) excluded this taxon from his treatment of the Colorado flora. Presumably, he did not examine the material and ignored the taxon due to its great disjunction from its normal range (being one of several species "accredited to Colorado but not the intervening states," page xii). The occurrence of "*R. irriguum*" has been similarly ignored or overlooked in subsequent treatments of the flora (Harrington 1954; Weber 1953, 1967, 1990; Weber & Wittmann 1992, 1996). Sinnott (1985) examined the Brandegee collection in preparing his treatment of *Ribes* section *Grossularia* and determined it to be *R. niveum*, another species of the Pacific Northwest, rather than *R. irriguum* (*R. oxyacanthoides* L. ssp. *irriguum* (Douglas) Q.P. Sinnott). This is consistent with Porter and Coulter's description of the specimen, which matches *R. niveum* and not *R. irriguum*. Sinnott, however, failed to relocate the Colorado population. Examination of the specimen (*Brandegee 697*) at the Missouri Botanical Garden confirmed his determination, and the new collections document its persistence in Colorado for over 120 years.

The normal geographical range of *R. niveum* is in three separate areas: the northern group of populations are in southeastern Washington, eastern and northeastern Oregon, and adjacent western and central Idaho; the middle group, southeastern Oregon, southern Idaho, and adjacent northeastern Nevada; and the southern group, west-central Nevada (Churchill, Lander, Pershing, and possibly Nye counties; Holmgren 1997; Sinnott

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1985). The marked disjunction to the east or southeast is most curious. A possible clue to its occurrence in Colorado prior to settlement was found in an account of the Long expedition to the Rocky Mountains in 1820 (Goodman & Lawson 1995). Edwin James, the botanist of the expedition, collected a specimen of *Ribes* in the area that was determined by Torrey and Gray as *R. irriguum*. A description of the fragment provided by Torrey and Gray (1838–1843) indicates that it was not *R. niveum* but most likely *R. inerme* Rydb. Goodman and Lawson were unable to locate the specimen and thus could not confirm its identity. The presence of *R. niveum* in the region therefore is not documented before Brandegee's collection in 1873. Prior to that time, Cañon City was a major gateway and supplier to the gold and silver mines of South Park and Leadville, and it is possible that *R. niveum* was introduced into Colorado from the Pacific Northwest during the 1860s by gold or silver miners. It is also possible that Native Americans may have been responsible for dispersal since the localities are close to old Ute trails into South Park. Brandegee's collection may thus represent the parental population at or near its initial point of establishment.

The plants were in flower by mid-June, in fruit by late July. Fruits persisted through at least early October. They were found growing along creeks or dry washes in pinyon-juniper on sandy soils derived from gneiss. Interestingly, *R. niveum* in Colorado always grows in clumps with other woody taxa including *Ptelea trifoliata* L., *Ribes cereum* Douglas, *Ericameria* (*Chrysothmanus*) *nauseosus* (Pall. ex Pursh) G.L. Nesom & G.I. Baird, *Rhus trilobata* Nutt., and *Quercus gambellii* Nutt. This could indicate dispersal of seeds by birds.

In floral features, the Colorado material of *R. niveum* is a close match with material from the main geographical range. The most striking characters of *R. niveum* are those of the stamens. With the petals extended or erect, the stamens surpass them by 2 to 3 mm; filaments range from 7 to 9 mm in length. Furthermore, both the anthers and filaments are at least moderately pubescent with prominent silky hairs. All other Colorado species have glabrous filaments and anthers. Vegetatively, *R. niveum* has a distinctive rich reddish brown bark on new growth and is unarmed except for stout spines at the nodes. *Ribes lacustre* (Pers.) Poir. may have a similar hue, but the internodes are usually quite spiny. Another species, *R. inerme*, shares similarities in leaf shape, but the young twigs are pale yellow. With age the bark of most Colorado gooseberries becomes gray and exfoliates, exposing a dark reddish brown interior.

Leaf blades of specimens of *R. niveum* collected at the three known sites in Colorado are moderately to densely covered with minute, stalked glands mixed with erect to curved eglandular trichomes. Those in the main populations to the west and northwest vary from glabrous and ciliolate to densely clothed in minute, erect to curved eglandular trichomes only, although the petioles often have stalked glands. Due to the fickle nature of glandular trichomes in many groups of plants and the variability in pubescence in populations over the main geographical range of this taxon, this difference may not be significant.

In Weber and Wittmann (1996), *R. niveum* keys to lead 10b, where it matches fruits



and flowers glabrous externally, but differs in anthers purple, greenish with age vs. white. Ignoring anther color, it would key to *R. inerme* (11a), although not easily. For an excellent treatment of *Ribes* that is largely relevant to Colorado, the reader is referred to the *Intermountain Flora* (Holmgren 1997). All but two Colorado taxa are treated: *R. americanum* Mill., a species of the plains and northeastern North America, and the questionable introduction (W. Jennings, Louisville, CO, pers. comm.), *R. divaricatum* Douglas. *Ribes coloradoense* Coville is placed in synonymy with the major disjunct (to the northwest), *R. laxiflorum* Pursh.

It is always possible that additional populations of *Ribes niveum* remain to be discovered east of the Continental Divide in Colorado. Two recent floristic projects have contributed substantially to our understanding of the distribution of species of *Ribes*, and to vascular plants in general, in this area (see <http://www.rmh.uwyo.edu>). The first, the Central Colorado project, which led to the rediscovery of *R. niveum* (Chumley 1998), included the Mosquito and Rampart ranges and Pikes Peak. It extended from Morrison (near Denver) west to Webster and Hoosier passes, south on the west side along the crest of the Mosquito Range to near Salida and south on the east side to Pueblo. The second, the Sangre project, included the Sangre de Cristo and Wet mountains, Mesa de Maya, and the Spanish Peaks. It was to the south from the first area, with the Arkansas River, in part, forming the boundary in common. Cañon City is on the Arkansas River, north side, midway along this line of contiguity. The Sangre project extended from Pueblo west to Monarch Pass, south on the west side to North Pass, Saguache, San Luis, and the New Mexico line and south on the east side to Trinidad and Branson (collections mostly by B. Elliott and R. Hartman). Together, these two study areas cover nearly 10,000 mi<sup>2</sup> for which ca. 27,500 numbered collections were obtained. In the process, 322 populations of nine of the 13 species of *Ribes* reported for Colorado (Weber & Wittmann 1992 and this report) were sampled during four field seasons (1995–96, 1998–99). Despite the high level of intensity in collecting, no new sites for *R. niveum* were discovered south of the Arkansas River.

Specimens collected: **COLORADO. Fremont Co.:** Sand Gulch south along a drainage intersecting Sand Gulch Road, ca. 15 air mi NW of Cañon City, 16 Jun 1995, *Chumley 895* (RM); Cottonwood Creek, ca. 13.5 air mi WNW of Cañon City, 25 Jul 1995, *Chumley 2454* (RM); along Wilson Creek and surrounding hills to the east, ca. 7.8 air mi NW of Cañon City, 28 Jun 1997, *Chumley 6887* (RM).

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