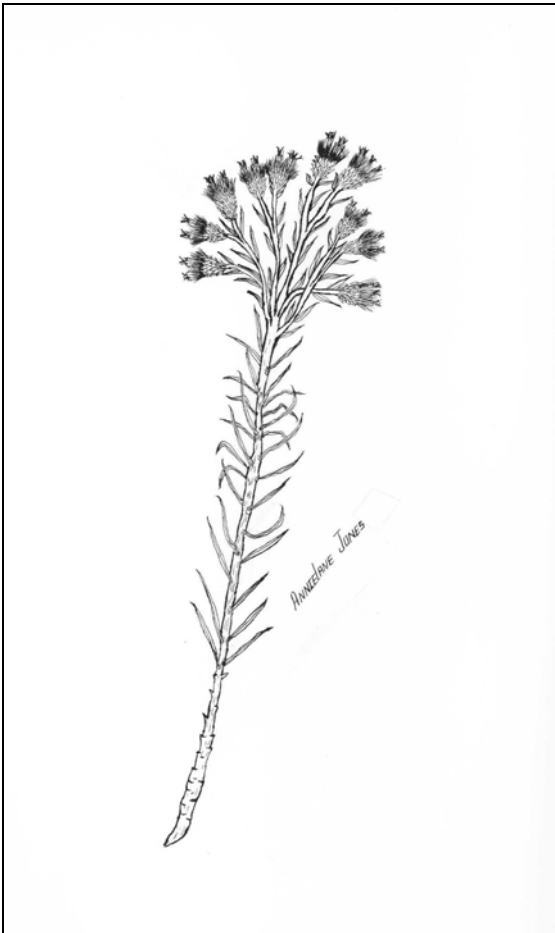


***Chrysothamnus viscidiflorus* Nutt.**  
ASTERACEAE

low rabbitbrush

Synonyms: *Bigelovia douglasi* Gray  
*Chrysothamnus douglasi* Clements & Clements  
*Crinitaria viscidiflora* Hook.  
*Ericameria viscidiflora* (Hook) L. C. Anderson



**General Description.**—Low rabbitbrush, also known as yellowbrush, green rabbitbrush, little rabbitbrush, or Douglas rabbitbrush, is an erect shrub, with many branches stemming from a simple base. It is typically 0.3 to 1.1 m tall. Brittle, erect branches can be glabrous or puberulent with pale green or white bark. Leaves are often twisted. Leaf shape can vary between narrowly linear to oblong or lanceolate, with leaf length ranging from 1 to 6 cm. Leaves may be glabrous or pubescent, the degree of which may vary by subspecies. Flowerheads include five perfect, fertile disc flowers, which are arranged in compact terminal cymes. Each head includes

approximately 15 involucre bracts that are arranged in poorly to well-defined vertical ranks. The bracts of some subspecies have a greenish to brownish thickened spot near their apex (McArthur and others 1979). Low rabbitbrush is the only species within the genus with frequent polyploidy; diploids, tetraploids, and hexaploids have been documented ( $x = 9$ ,  $2n = 18, 36$ , and  $54$ , respectively) (Anderson 1966). In addition, occasional triploids and pentaploids are known (Anderson 1971).

**Taxonomy.**—This species includes five subspecies and several ecotypes within subspecies (Anderson 1980, McArthur and Meyer 1987). The most common subspecies include two glabrous subspecies, *viscidiflorus* and *axillaris*, and two pubescent subspecies *lanceolatus* and *puberlus*. Abrams and Ferris (1960) describe low rabbitbrush as a highly polymorphic species with several freely integrating subspecies with overlapping distributions. Stickyleaf low rabbitbrush or green rabbitbrush (ssp. *viscidiflorus*) is the largest subspecies of low rabbitbrush. Mature shrubs are generally more than 50 cm tall whereas mature shrubs of other subspecies are generally less than 50 cm tall. In addition, the leaves, stems, and inflorescences of ssp. *viscidiflorus* are viscid (sticky). Both mountain low rabbitbrush or yellowbrush (ssp. *lanceolatus*) and hairy low rabbitbrush (ssp. *puberlus*) are shorter at maturity than ssp. *viscidiflorus*, and both have finely pubescent stems. Mountain low rabbitbrush has gray or straw-colored stems, whereas hairy low rabbitbrush has yellow to green stems. All four of these subspecies are fairly widespread throughout the Great Basin. Some previously recognized subspecies, such as ssp. *elegans* and *pumilis*, have been consolidated; chromatographic work substantiates the consolidations (Anderson 1980; McArthur and others 1978). There is a difference of opinion on the taxonomic affinity of *C. viscidiflorus* with *C. nauseosus* and *C. parryi* based on molecular genetic techniques (Nesom and Baird 1993; Anderson 1995)

**Range.**—Low rabbitbrush is one of the most widely distributed shrubs in Western North America (McArthur and others 1979). One reason for its broad distribution is the species' great ecological amplitude. It is found growing on dry, open areas from British Columbia and Montana, south to New Mexico, Arizona, and eastern California.

**Ecology.**—Due to its adaptability, low rabbitbrush grows in a variety of habitats. Plants generally, however, inhabit drier sites, such as foothills, mountains, dry plains, and valleys. Annual precipitation within its range varies between 250 and 535 mm, with notable exceptions at higher elevations. Anderson (1986) has shown that polyploid races, in subspecies where polyploidy occurs (ssp. *lanceolatus*, *puberulus*, and *viscidiflorus*), are adapted to lower and drier sites than their diploid counterparts. Interestingly, Anderson has also observed a correlation within certain subspecies between plant stature and leaf size with altitude and precipitation (personal communication). In addition to its ability to tolerate xeric conditions, some variants of low rabbitbrush can grow well in areas with poor or disturbed soils. Low rabbitbrush can be found at elevations ranging from 790 to 3,400 m. It is commonly associated with big sagebrush (*Artemisia tridentata*), broom snakeweed (*Gutierrezia sarothrae*), and other rabbitbrushes (*Chrysothamnus* sp.), although it can be associated with shadscale (*Atriplex confertifolia*), winterfat (*Ceratoides lanata*), fourwing saltbush (*Atriplex canescens*), greasewood (*Sarcobatus vermiculatus*), and occasionally pinyon (*Pinus* sp.) and juniper (*Juniperus* sp.). Goodrich and others (2001) note that *C. viscidiflorus* does not commonly overtop associated herbaceous vegetation. Elevation tends to partition the subspecies; mountain low rabbitbrush (ssp. *lanceolatus*) especially and stickyleaf low rabbitbrush (ssp. *viscidiflorus*) grow well at higher elevations, while hairy low rabbitbrush (ssp. *puberulus*) does best on lower desert foothills.

**Reproduction.**—Shrubs flower from August through October; seed matures from October until December. Like other members of the genus, low rabbitbrush seeds (or achenes) are wind disseminated. Meyer (1996) found that germination rates at 15 °C for ssp. *lanceolatus* and *viscidiflorus* were 37 and 58 percent, respectively. Seeds from plants adapted to higher elevations (where seeds ripen earlier in the year) are more dormant than those collected from lower

elevations and may be more chill responsive (Meyer 1996). There are about 1,720 cleaned seeds per gram (Deitschman and others 1974).

**Growth and Management.**—Seedlings emerge in spring and grow quickly. After a period of growth and establishment, shrubs often produce seed after their second growing season (Meyer 1996). Low rabbitbrush can dominate rangelands that are grazed heavily or cleared. This species has a strong tendency to sprout from the base (Wasser 1982), which may make it more difficult to remove and difficult to control with herbicides (Cook and others 1965). Fall is the preferred time to seed; seed can be drilled or broadcast and should remain within the top 3 mm of the soil surface. Seeds can be harvested by hand and by vacuum harvesting techniques.

**Benefits.**—Low rabbitbrush is an important native component of Western North American shrublands. It can provide important browse to both game and livestock, especially during late fall and winter months after more desirable forage has been consumed. As a forage shrub, the palatability of low rabbitbrush varies significantly among subspecies, varieties, locality, and season. Some subspecies, e.g., ssp. *lanceolatus*, may be used heavily by domestic livestock and wildlife, whereas others are consumed little, if at all (USDA 1937, Goodrich and others 2001). In addition to its value as a browse species, low rabbitbrush has successfully been used to revegetate depleted rangelands and other disturbed sites (Plummer 1977).

## References

- Abrams, R. and R.S. Ferris. 1960. Illustrated flora of the Pacific States, Vol. 4, Bignoniaceae to Compositae. Stanford University Press, Stanford, CA. 732 p.
- Anderson, L.C. 1966. Cytotaxonomic studies in *Chrysothamnus* (Asteraceae, Compositae). American Journal of Botany 53: 204-212.
- Anderson, L.C. 1971. Additional chromosome numbers in *Chrysothamnus* (Asteraceae). Bulletin of the Torrey Botanical Club 98: 222-225.
- Anderson, L.C. 1980. Identity of narrow-leaved *Chrysothamnus viscidiflorus* (Asteraceae). Great Basin Naturalist 40: 117-120.

- Anderson, L.C. 1986. Cytogeography of *Chrysothamnus viscidiflorus*. In: E.D. McArthur and B.L. Welch, comps. Proceedings—symposium on the biology of *Artemisia* and *Chrysothamnus*; 1984 July 9-13, Provo, UT. General Technical Report INT-200. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. p. 93-97.
- Anderson, L.C. 1995. The *Chrysothamnus-Ericameria* connection (Asteraceae). Great Basin Naturalist 55: 84-88.
- Cook, C.W., P.D. Leonard, and C.D. Bonham. 1965. Rabbitbrush competition and control on Utah rangelands. Bulletin 454. Utah Agricultural Experiment Station., Logan, UT. 28 p.
- Deitschman, G.H., K.R. Jorgensen, and A.P. Plummer. 1974. *Chrysothamnus*. In: C.S. Schopmeyer, Tech. Coord., Seeds of Woody Plants of the United States. Agriculture Handbook 450. U.S. Department of Agriculture, Forest Service. p. 326-328.
- Goodrich, S., R.M. Thompson, and A. Huber. 2001. A yellowbrush/grass community type from the Uinta Mountains and Utah plateaus. In: E.D. McArthur and D.J. Fairbanks, comps. Shrubland ecosystem genetics and biodiversity: proceedings; 2000 June 13-15, Provo, UT. Proceedings RMRS-P-21. U. S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, UT. p. 344-346.
- McArthur, E.D., A.C. Blauer, A. P. Plummer, and R. Stevens. 1979. Characteristics and hybridization of important intermountain shrubs. III. Sunflower family. Research Paper INT-220. U. S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT. 82 p.
- McArthur, E.D., D.L. Hanks, A.P. Plummer, and A.C. Blauer. 1978. Contributions to the taxonomy of *Chrysothamnus viscidiflorus* (Astereae, Compositae) and other *Chrysothamnus* species using paper chromatography. Journal of Range Management 31: 216-223.
- McArthur, E.D. and S.E. Meyer. 1987. A review of the taxonomy and distribution of *Chrysothamnus*. In: K.L. Johnson, ed. Proceedings of the Fourth Utah Ecology Workshop; 1986 September 17-18, Cedar City, UT. College of Natural Resources, Utah State University, Logan, UT. p. 9-18.
- Meyer, S.E. 1996. *Chrysothamnus* Nutt. In: Woody Plant Seed Manual, <http://www.wpsm.net/Chrysothamnus.pdf>. 11 p.
- Nesom, G.L., and G.I. Baird. 1993. Completion of *Ericameria* (Asteraceae: Asterae), diminution of *Chrysothamnus*. Phytologia 75: 74-93.
- Plummer, A.P. 1977. Revegetation of disturbed intermountain area sites. In: J. L. Thames, editor, Reclamation and use of disturbed land in the Southwest. University of Arizona Press, Tucson, AZ: 302-339.
- U.S. Department of Agriculture, Forest Service. 1937. Range plant handbook. United States Government Printing Office, Washington, DC. 816 p.
- Wasser, C.H. 1982. Ecology and culture of selected species useful in revegetating disturbed lands in the West. U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. 347 p.
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