

***Purshia tridentata* (Pursh) DC.**
ROSACEAE

antelope bitterbrush

Synonyms: *Kunzia tridentata* Spreng.
Tigarea tridentata Pursh

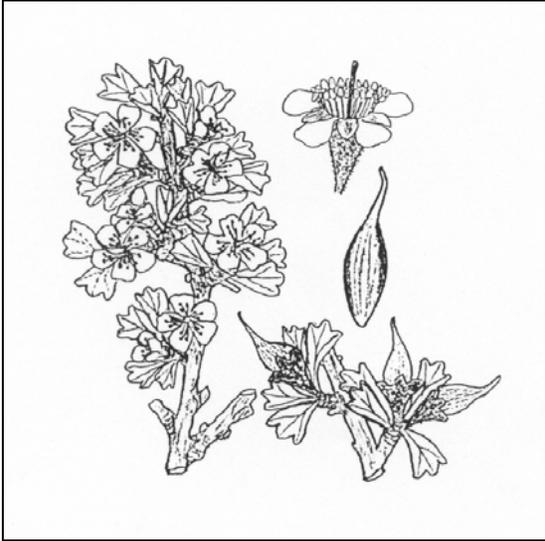


Illustration source: USDA Forest Service 1937

General Description.—Antelope bitterbrush, also known as antelope brush, antelope buckbrush, deerbrush, or quininebrush, is an intricately branched, deciduous shrub varying widely in growth habit from low, decumbent, spreading forms to upright arborescent plants over 4 m in height (Blauer and others 1975, Welsh and others 1987). Leaves are alternate, simple, pinnatifid or apically three-toothed and sometimes glandular. Flowers are insect-pollinated and borne on short spurs of previous year's growth. They are numerous and white to yellow with petals 5 to 9 mm long (Welsh and others 1987). The fruit is a cartilaginous achene with a persistent tapering style and a dark pinkish gray pyriform seed (Blauer and others 1975). *Purshia* DC. ex Poir. likely derived from *Cowania* (D. Don) (Jabbes 2000, McArthur and others 1983) and hybrids between *Cowania* and *Purshia* are common. *Purshia glandulosa* Curran is considered a stabilized hybrid between *Cowania* and *Purshia tridentata*.

Range.—Antelope bitterbrush is widely distributed from British Columbia southward on the east side of the Cascade and Sierra Nevada Mountains to California and northern Arizona and eastward into western Montana, the Black Hills of

South Dakota, and northwestern New Mexico (Cronquist and others 1997, Welsh and others 1987).

Ecology.—Antelope bitterbrush grows on well-drained, slightly basic to slightly acidic soils at elevations from 60 to 3,510 m (Nord 1965). It often grows as the dominant shrub with bluebunch wheatgrass and a variety of forbs. It is also a common associated species in many big sagebrush (*Artemisia tridentata* L.), mountain brush, pinyon-juniper (*Pinyon* L.-*Juniperus* L.), ponderosa pine (*Pinus ponderosa* P. & C. Lawson), and occasionally lodgepole pine (*Pinus contorta* Dougl. ex Loud.) communities (McArthur and others 1983, Nord 1965). It is a pioneering species on steep, rocky, unstable disturbances. Erect forms generally do not survive wildfires, but layering forms may resprout. Antelope bitterbrush is sometimes associated with the nitrogen-fixing actinomycete *Frankia*, but root nodulation varies with factors such as moisture availability and soil chemistry (Righetti and others 1983). Emerging seedlings are susceptible to a number of damping-off organisms, while seedlings and mature plants may be damaged by grasshoppers, Great Basin tent caterpillars (*Malacosoma fragile* Stetch), and other insects (Nord 1965, Shaw and Monsen 1983).

Reproduction.—Plants flower in April to June, and fruits ripen in late June to August depending upon elevation and latitude (Nord 1965). Seed production is related to precipitation and leader growth in the previous year, but yields are often drastically reduced by insect predators (Shaw and Monsen 1983). Seeds dehisce rapidly at maturity. High percentages of the achenes are cached by rodents, and most successfully establishing natural recruitment is from these caches (Evans and others 1983, Nord 1965, Van der Wall 1994). Large quantities of seed are hand harvested from wildland stands each year. Dry seed may be stored in a warehouse for up to 15 years (Stevens and others 1981). A 28-day moist prechill is required to release seed dormancy (AOSA 1993, Booth 1999, Meyer 1989). Site-adapted seed sources should be selected for plantings. Antelope bitterbrush should be drill seeded in late fall or

winter to provide overwinter prechilling. It may be seeded with other native species that are not highly competitive. Seeding failures resulting from rodent predation of seed can be avoided by seeding in late fall on fairly large disturbances that do not provide cover for the rodents (Evans and others 1983). Containerized or 1-0 bareroot seedlings are easily grown, but fungicide treatments may be required to reduce losses to damping-off organisms. Nursery stock can be planted on steep, rocky slopes that are inaccessible to seeding equipment. It establishes best if planted in early spring when antelope bitterbrush in the surrounding area is yet dormant. Herbaceous vegetation must be cleared around each seedling to reduce competition.

Growth and Management.—Antelope bitterbrush seedlings, plantations, and wild stands are vulnerable to heavy use by wild or domestic ungulates and predation by gophers, mice, birds, and insects. Seedlings are not competitive with weedy annuals or most introduced perennial grasses. Many mature stands are damaged by continuous and close browsing by deer and livestock.

Benefits.—Next to sagebrush, antelope bitterbrush is probably one of the most widespread shrubs in the Great Basin region, although its prevalence has been reduced by range fires and exotic plant introductions (Mozingo 1987). It is important for a host of wildlife and provides nutritious browse and essential cover on fall, winter, and summer mule deer ranges (Plummer and others 1968). Protein content varies among populations depending upon over-winter leaf retention. New growth may also be heavily used in spring and summer. Because of the varied growth forms, attractive foliage, and showy flowers, antelope bitterbrush has potential as an ornamental in low-maintenance landscapes. Populations of antelope bitterbrush with distinctive attributes have been recognized and are commercially harvested and sold. Native Americans reportedly used bitterbrush as a remedy for smallpox, measles, tuberculosis, and pneumonia, and as an antiseptic for rashes and insect bites (Mozingo 1987).

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