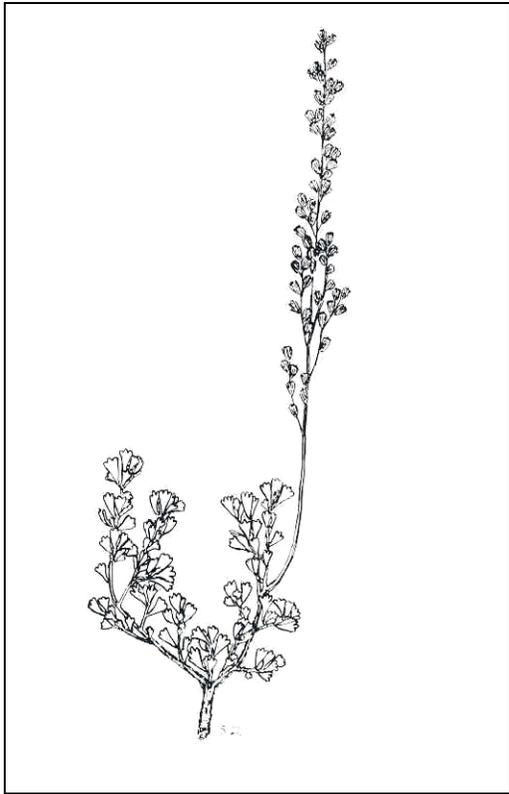


Artemisia nova A. Nels.
ASTERACEAE

black sagebrush

Synonyms: *Artemisia tridentata* ssp. *nova* (A. Nels.) H.&C.
Artemisia arbuscula ssp. *nova* (A. Nels.) McMinn
Artemisia arbuscula var. *nova* (A. Nels.) G. Ward
Serphidium novum (A. Nels.) W.A. Weber



General Description.—Black sagebrush is a small aromatic shrub generally 15 to 20 cm tall, although it may occasionally exceed 75 cm. A dull grayish-tomentose layer causes most populations of black sagebrush to appear darker than those of big sagebrush or low sagebrush. Branches are numerous and erect and arise from a spreading base. Leaf base is typically cuneate, and the leaf surface is covered with a viscid glandular pubescence. The leaf apex is three-toothed, although the uppermost leaves, particularly on flowering stems, may be entire. Leaf dimensions can vary between 0.5 to 2 cm long and 0.2 to 0.8 cm wide. Flowering heads are grouped in narrow spike-like panicles that commonly extend above the foliage. Heads contain three to five disc flowers subtended by eight to 12 greenish-yellow involucre bracts. Leaf hairs, visible at 10x

magnification, can be useful diagnostic clues to distinguish black sagebrush from other sagebrushes.

Taxonomy.—Black sagebrush taxonomy is relatively simple. It includes one species and two varieties, *A. nova* var. *duchesnicola* and *A. nova* var. *nova* (Welsh and Goodrich 1995). Beetle and Johnson (1982) have found forms of black sagebrush that are similar in appearance to Wyoming big sagebrush. This, in addition to other factors, has led some to suspect that black sagebrush may have been involved in the parentage of Wyoming big sagebrush (McArthur 1983, Winward 1976). Glandular trichomes are a taxonomic feature that helps separate black sagebrush from big sagebrush (*A. tridentata* Nutt.) and low sagebrush (*A. arbuscula* Nutt.) (Kelsey 1984). Black sagebrush has a base chromosome number of $x = 9$; both diploid ($2n = 18$) and tetraploid populations are known. About two-thirds of the cytologically known populations are tetraploid (McArthur and Sanderson 1999).

Range.—Black sagebrush is one of the most common shrubs in the Western United States. Populations can be found from California and Oregon in the west, to Colorado in the east, and from Montana in the north to northern Arizona and New Mexico in the south. Black sagebrush is most common at elevations ranging between 1,500 to 2,400 m (McArthur and others 1979)

Ecology.—Black sagebrush is well adapted to dry stony soils that are relatively shallow. Zamora and Tueller (1973) found root restricting layers 28 to 69 cm deep in half of their black sagebrush study sites. Gravelly or sandy loam strata are also common subsurface soil profile characteristics in areas with black sagebrush. In addition, most soils supporting black sagebrush are calcareous. Black sagebrush is not restricted to adverse environments, however. If seeded, it can grow well on sites normally occupied by big sagebrush. Mean annual precipitation throughout the natural

range of black sagebrush ordinarily is between 180 and 320 mm.

Most stands of black sagebrush do not burn because populations are relatively sparse (Tisdale and Hironaka 1981). Exceptions to this rule, however, have been observed in central Utah, where large stands of black sagebrush burned. In a comparative study, Nelson and Krebill (1981) found that black sagebrush is less susceptible to a wilt disease than other species of *Artemisia* grown under similar conditions.

Reproduction.—Mature shrubs flower in late summer (usually August), and seed matures in September and October. Black sagebrush seed tends to be larger than those of other sagebrushes. There are about 2,000 seeds/g (Deitschman 1974). Seeds are wind dispersed in late fall or early winter. Seedlings emerge in the spring and often grow rapidly. Once established, young plants can persist well even under adverse conditions. With favorable moisture conditions, mature plants produce abundant seed, and natural spreading occurs quickly.

Management.—Black sagebrush is usually considered a valuable browse species for wildlife and livestock, especially for deer, domestic sheep, and pronghorn (Clary 1986; McArthur and Plummer 1978, USDA Forest Service 1937). Black sagebrush has good winter nutritive value, but not as good as big sagebrush (Welch 1983). Palatability, however, can vary significantly between populations (Welch and others 1981). Deer and elk preference studies for black and big sagebrushes have yielded inconsistent results (Scholl and others 1977, Nagy and Regelin 1977, Smith 1950, Wambolt 1996). Welch and others have shown that some accessions are not eaten while others are highly preferred (Behan and Welch 1985, Welch and others 1981), which may partially explain differences in preference studies.

Black sagebrush can also be a valuable conservation species for dry, shallow, stony soils because it produces abundant seed and seedlings establish readily. Due to its habitat, it is not usually a candidate for plant control. Black sagebrush can successfully be seeded in fall or early winter. Seeds should be covered with soil, but remain within 6 mm of the surface. It grows well with seeded herbs, but understory production tends to decrease as the stand matures.

Benefits.—Black sagebrush is an important native shrub in many areas of the Western United States. It provides structural diversity within native plant

communities and provides an important browse source for native and introduced ungulates. It can also reduce soil erosion on steep shallow slopes. ‘Gordon Creek’ is a tested germplasm from Carbon County, Utah, that has been demonstrated to be high in nutritive quality and palatability to wildlife (Welch and others 1994).

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