***Ceanothus velutinus* Dougl. ex Hook.** snowbush ceanothus
RHAMNACEAE

Synonyms: none

Drawing source: Britton and Brown 1913

General Description.—Snowbush ceanothus is also known as shiny-leaf ceanothus, varnish-leaf ceanothus, sticky laurel, tobacco brush, mountain balm, buckbrush, deerbush, and snowbrush. It is an evergreen, upright to semiprostrate shrub 1 to 2 m (rarely to 4 m) in height. The shrub has one to many stems with reddish-brown bark. The twigs are rigid, slightly flattened, and olive green. The plant is supported by a taproot and a deep, spreading root system. Simple, alternate leaves are shiny dark green above, and pale beneath leathery, and covered with a sticky resin. The 2- to 8-cm blades are broadly elliptical to ovate with rounded tips and rounded or subcordate bases. They have a fine serrate margin and three prominent veins proceeding from the base. The foliage is strongly aromatic, especially when crushed. Some have described it as being similar to cinnamon or balsam. Inflorescences, which are borne on short lateral branches on the previous year's growth, contain many small white, five-maris, perfect flowers. Fruits are three-lobbed capsules 3 to 6 mm long. The seeds are shiny and tan to dark brown. There are 2n = 24 chromosomes (Anderson 2001, Banner 2002, Brayshaw 1996, Harrington 1964, Nobs 1963, Pollock 2003, Welsh and others 1987).

Range.—The native range of snowbush ceanothus includes British Columbia and Alberta south to California and east to South Dakota and Colorado (Abrams 1951, Anderson 2001, Natural Resources Conservation Service 2003). There are two varieties: *hookeri* and *velutinus*. The former, of the Coast and Cascade ranges, in glaberous beneath the leaves. The latter, occurring farther inland, is finely hairy on the underside of the leaves (Brayshaw 1996). The species is not known to have naturalized outside its native range.

Ecology.—Snowbush ceanothus is a member of a large number of plant associations (Anderson 2001). It favors well-drained soils and is susceptible to root rot in more poorly drained conditions (Hansen 2002). These are moderately acid to neutral, often rocky or gravely soils, poor in nutrients, and of granitic parent material. The taproot penetrates 1.8 to 2.4 m deep (Pollock 2003), and with the moisture-conserving leaf structure, impart the plant a great deal of drought resistance. Snowbush ceanothus grows in relatively low coastal habitat and in mountain sites up to 2,900 m in elevation (Welsh and others 1987). Although found on all aspects, it is more likely to occur on southerly exposures (Anderson 2001). Precipitation and length of growing season vary a great deal because of the wide elevational and latitudinal range of the species. Snowbush ceanothus is a pioneer species. Large numbers of seedlings often appear after logging and especially after fires. The species generally grows in small to large thickets, usually as the dominate species. It develops best in full sun but can persist in open forest stands. It grows more rapidly than conifer seedlings and will suppress them for a time. However, after 10 to 75 years, conifers overtop it, and its vigor and abundance declines (Pollock 2003).

Reproduction.—Snowbush ceanothus flowers from May through July and the fruits mature in August and September (Banner 2002). The flowers are pollinated by at least bees (Clark 1976). There is an average of 207,000 seeds/kg. When seeds

mature, beginning in August, they are ejected from the pod and dispersed a short distance (Anderson 2001). Good seed production begins when plants are about 8 years old. As many as 1,250,000 seeds/ha/year can be produced. However, as much as 99 percent of the annual seed crop can be consumed by ants, birds, and rodents. (Pollock 2003). Seeds still accumulate in large numbers in the soil seed bank and can apparently remain viable for 200 to 300 years until conditions become favorable. Germination is epigeal (Reed 1974). Heat, as from forest fires, appears to scarify the seeds. Burned or damaged plants sprout from the root crown. Layering also occurs when branches come in contact with the soil (Anderson 2001).

Growth and Management.—The natural life span of snowbush ceanothus is longer than 25 years, and plants sometimes reach 50 years old. However, stands sometimes begin to deteriorate after 15 years (Anderson 2001). A 17-year-old stand in the Cascade Mountains in Oregon contained over 4,000 stems/ha and averaged 34,000 kg/ha of above-ground biomass (Pollock 2003). Seeds may be sown in the late summer and will germinate in the spring. Pretreatments are necessary for good germination of spring-planted seeds. A hot water soak (90 °C until the water cools) followed by cold stratification at 1 to 5 °C for 30 to 90 days. Seeds should be sown in flats at depths of twice the diameter of the seed in amended mineral soil. Germination may be as high as 82 percent. Seedlings should be pricked into pots when they have gained several sets of true leaves (Reed 1974). Plants can be propagated with stem cuttings. Survival of transplanted seedlings is low (about 9 percent). Small seedlings survive better than large ones (Pollock 2003). Snowbush ceanothus stands are difficult to control. Broadleaf herbicides such as 2,4-D tend to top-kill rather than eliminate it. Opening the brush canopy also allows seeds to germinate and grow. Glyphosate and hand slashing result in greater densities of the species in the long run (Anderson 2001).

Benefits.—Snowbush ceanothus adds to the beauty of the forest, helps protect the soil, furnishes food and cover for wildlife, and is a useful ornamental and medicinal plant. The species is little used by cattle and horses. Sheep browse it only when other forage is unavailable. Deer and elk browse snowbush ceanothus year-round, although it makes up only a small portion of their diet. It is important fall and winter moose browse in some areas. It has an *in vitro* dry matter digestibility of about 57 percent and a crude protein content of 7 to 18 percent (Anderson 2001). Snowbush ceanothus is important resting and escape cover for many types of wildlife (Pollock 2003). Nitrogen is fixed by actinomycetes of the genus *Frankia* in root nodules (Dalton 1997). Snowbush ceanothus makes a beautiful and hardy ornamental that can be pruned and shaped (Hansen 2002). Native Americans used the leaves as a deodorant, smoke of the plant to kill bedbugs, and decoctions to treat flu, pain, and gonorrhea (Moerman 1986). They also used the leaves as a tobacco substitute (Pollock 2003).

References

Abrams, L. 1951. Illustrated flora of the Pacific States. Vol. 3. Stanford University Press, Stanford, CA. 866 p.

Anderson, M.D. 2001. *Ceanothus velutinus*. In: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Fire Effects Information System. http://www.fs.fed.us/database/feis/plants/shrub/ceavel/all.html. 73 p.

Banner, R. 2002. Deerbush. Utah State University, Logan, UT. http://extension.usu.edu/coop/natres/range/Woody/deerbush.htm. 4 p.

Brayshaw, T.C. 1996. Trees and shrubs of British Columbia. UBC Press, Vancouver, British Colunbia, Canada. 373 p.

Britton, N.L. and A. Brown. 1913. Illustrated flora of the northern states, Canada, and the British possessions. Vol. 2, 2nd ed. Scribner, New York. 735 p.

Clark, L.J. 1976. Wild flowers of the Pacific Northwest. Gray's Publishing Limited, Sidney, British Columbia, Canada. 604 p.

Dalton, D. 1997. Nitrogen fixation: range of organisms that can fix nitrogen. Reed College, Portland, OR. http://academic.reed.edu/biology/Nitrogen/Nfix1.html. 7 p.

Hansen, W. 2002. *Ceanothus*. http://www.nwplants.com/plants/shrubs/ceanothus/. 6 p.

Harrington, H.D. 1964. Manual of the plants of Colorado. Sage Books, Denver, CO. 666 p.

Moerman, D.E. 1986. Medicinal plants of Native America. Technical Reports 19. University of Michigan, Museum of Anthropology, Ann Arbor, MI. 524 p.

Natural Resources Conservation Service. 2003. Plants profile: *Ceanothus velutinus* Dougl. ex Hook. http://plants.usda.gov/cgi_bin/plant_profile.cgi?symbol=CEVE. 4 p.

Nobs, M.A. 1963. Experimental studies on species relationships in *Ceanothus*. Publication 623. Carnegie Institution of Washington, Washington, DC. 94 p.

Pollock, T. 2003. *Ceanothus velutinus*. University of University of Saskatchewan, Saskatoon, Saskatchewan, Canada. http: //www.usask.ca/agriculture/plantsci/classes/range/ceanothus/ html. 5 p.

Reed, M.J. 1974. *Ceanothus* L., ceanothus. In: C.S. Schopmeyer, tech. coord. Seeds of woody plants in the United States. Agriculture Handbook 450. U.S. Department of Agriculture, Forest Service, Washington, DC. p. 284-290.

Welsh, S.L., N.D. Atwood, S. Gooddrich, and L.C. Higgins. 1987. A Utah flora. Great Basin Naturalist Memoirs 9. Brigham Young University, Provo UT. 894 p.

John K. Francis, Research Forester, U.S. department of Agriculture, Forest Service, International Institute of Tropical Forestry, Jardín Botánico Sur, 1201 Calle Ceiba, San Juan, PR 00926-1119, in cooperation with the University of Puerto Rico, Río Piedras, PR 00936-4984