

BLUE ELDERBERRY

Sambucus nigra L. ssp.
canadensis (L.) R. Bolli
plant symbol = SANIC4

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Alfred Brousseau
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Alternate Names

Elder, blue elderberry, American elder, sweet elder, wild elder, flor sauco, tree of music, Danewort, Walewort. Taxonomically, there have been recent changes in this elderberry species; it was previously divided into *Sambucus coriacea*, *Sambucus orbiculata*, *Sambucus velutina*, and *Sambucus caerulea* (Munz 1968). Detailed study on this plant is warranted, and taxonomic revisions are likely in the future (Hickman 1993). This species is known in some floras as *Sambucus mexicana*.

Uses

Ethnobotanic: Only the blue or purple berries of elderberry are edible. Edible berries and flower are used for medicine, dyes for basketry, arrow shafts, flute, whistles, clapper sticks, and folk medicine. The active alkaloids in elderberry plants are hydrocyanic acid and sambucine. Both alkaloids will cause nausea so care should be observed with this plant. Elderberries are high in Vitamin C. The red berries of other species are toxic and should not be gathered.

Elderberries are quite edible. The blue or purple berries are gathered and made into elderberry wine, jam, syrup, and pies. The entire flower cluster can be dipped in batter and fried while petals can be eaten raw or made into a fragrant and tasty tea. The flowers add an aromatic flavor and lightness to pancakes or fritters.

The elderberry is of well-known value to the Indians of North America and the many purposes it serves (Barrow 1967). Elderberry is highly prized by both Spaniards and Cahuillas. Throughout the months of July and August the small clusters of berries are gathered in large quantities. These clusters are dried carefully on the drying floor and preserved in considerable amounts. When wanted, they are cooked into a rich sauce that needs no sweetening. A Cahuilla family during this season of the year will subsist largely on these messes of "sauco." Frequently, the elderberry was so greatly enjoyed that families would live for weeks on little else. Many were dried for use in the winter, and were either re-cooked or eaten raw. Elderberries are still highly prized for food by modern Indian people.

Elderberry twigs and fruit are employed in creating dyes for basketry. These stems are dyed a very deep black by soaking them for a week or so in a wash made from the berry stems of the elderberry (Barrows 1967). The Cahuilla split basketry materials from the aromatic sumac (*Rhus trilobata*).

Elderberry branches were used to make the shaft of arrows. Flutes and whistles were constructed by boring holes into stems hollowed out with hot sticks. Clapper sticks were made by splitting the stem and clapping the two halves against each other. Clapper sticks were used ceremonially in the round-house to accompany singing and dancing. The pith of the stems was used as tinder, and the stem itself was employed as a twirling stick for starting the fire. Hollowed-out elderberry stems can be made into squirt guns.

In the middle ages elderberry was considered a Holy Tree, capable of restoring good health, keeping good health, and as an aid to longevity.

All parts of the elderberry plant are considered to be a valuable healing plant in many folk medicine traditions (Hutchens 1991, Walker et al. 1993; Barrett et al. 1933; Clarke 1977). Elderberry flowers contain flavonoids and rutin, which are known to improve immune function, particularly in combination with vitamin "C." The flowers also contain tannins, which account for its traditional use to reduce bleeding, diarrhea, and congestion.

The flowers are the mildest part of the plant and prepared as a tea, are used to break dry fevers and stimulate perspiration, aid headache, indigestion, twitching eyes, dropsy, rheumatism, appendix

inflammation, bladder or kidney infections, colds, influenza, consumption (bleeding in lungs), and is helpful to newborn babies (Hutchens 1991). Used as a wash, the flowers or leaves are good for wounds, sprains, and bruises, as well as for sores on domestic animals. The leaves, which are stronger, have a slightly laxative property. Applied externally, leaves, flowers, bark and twigs are excellent as a poultice, mixed equally with chamomile, for soreness, inflammations, joint stiffness, and to reduce the swelling of bee stings. The flowers and berries, employed as a diuretic, can aid arthritis and rheumatism. Steeped in water, the flowers are used externally to aid in complexion beauty, tone and soften the skin, and lighten freckles or spots. The berry juice made into salve aids burns and scalds. The juice taken internally will act as a purgative.

Livestock: Blue elderberry is a useful range plant for domestic livestock, but is not equally palatable during all seasons. It is usually receives limited browsing in the spring and to a much greater extent in the late summer and fall. The leaves are eagerly devoured after the first heavy frost in the fall. Because many branches are beyond the reach of the animals, utilization is less destructive. Browse rating: Good for goats; good to fair for sheep; good to poor for deer; fair for cattle; and fair to poor for horses (Sampson and Jespersen 1981).

Wildlife: Structurally complex riparian vegetation communities provide many different habitats and support a diverse array of animal species. Different groups of animals occupy or use the different layers of vegetation, and this multi-story arrangement is often present nowhere else in the arid landscapes. Canopies of plants growing on stream banks provide shade, cooling stream water, while roots stabilize and create overhanging banks, providing habitat for fish and other aquatic organisms.

Game birds, squirrels and other rodents, and several kinds of browsers also feed on the fruit or foliage of elderberry. Bears love to eat the elderberry fruits while deer, elk, and moose browse on the stems and foliage. The elderberries are important sources of summer food for many kinds of songbirds. For example, the western bluebird, indigo bunting, common house finch, red-shafted flicker, ash-throated flycatcher, black-headed grosbeak, scrub jay, Stellar jay, ruby-crowned kinglet, mockingbird, red-breasted nuthatch, Bullock's oriole, hooded oriole, song sparrow, white-crowned sparrow, western tanager, California thrasher, russet-backed thrush, brown towhee, Audubon warbler, cedar waxwing, Lewis and Nuttall's woodpecker, wren-tit,

grouse, pheasant, and pigeons all eat elderberries (Martin et al. 1951).

The valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) was listed as threatened under The Endangered Species Act on August 8, 1980. The elderberry beetle is endemic to moist valley oak riparian woodlands along the margins of rivers and streams in the lower Sacramento and upper San Joaquin Valley of California where elderberry grows. The primary threat to the VELB is loss of habitat, insecticide and herbicide use, and lack of elderberry shrubs/trees as a food plant for the beetle. The mitigation for VELB habitat loss, considered a taking under The Endangered Species Act, is quite stringent (U.S. Fish and Wildlife Service Mitigation Guidelines).

In general, longhorn beetles are characterized by somewhat elongate and cylindrical bodies with long antennae, often in excess of 2/3 of the body length. Male VELB have a metallic-green pattern of 4 oblong maculations, surrounded by a bright red-orange border. The body length is about 13-21 mm, and antennae are about as long as the body. Females are more robust, with body length about 18-25 mm, and the dark pattern is not reduced.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status, such as, state noxious status and wetland indicator values. Western riparian ecosystems have been greatly altered by human activity. Riparian forests have been reduced to fragmented, discontinuous patches because of human intervention. For example, estimates are that 70 - 90 percent of the natural riparian ecosystems in the U.S. have been lost to human activities. Regional losses in these ecosystems have been estimated to exceed 98% in the Sacramento Valley in California. Many factors have contributed to these resource losses, including the following: natural resource use; urbanization; alteration of stream flows through dam construction and ground-water withdrawal; modification of biotic conditions through grazing, agriculture, introduction of non-native species; and alteration within watersheds.

Description

General: Elder Family (Caprifoliaceae). Elderberries can be shrubs or trees with height ranging from 2-8 m. The pinnately compound leaves, having 2-4 paired leaflets with one terminal leaflet, arise opposite each other along the branch. Elderberry leaves, especially on seedlings or shrub-sized plants

(without fruits or flowers) resemble California walnut (*Juglans hindsii*) and Oregon ash (*Fraxinus latifolia*). The flowers are white or cream-colored and have a pleasant, yet slightly rancid odor. They occur in a panicle made up of cymes, which appear to be flat-topped clusters. The fruit is a frosted bluish-purple berry.

Distribution

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site. Blue elderberry is common along stream banks, river banks, and open places in riparian areas lower than < 3000 m. It occurs in the California Floristic Province and Great Basin Province north to British Columbia, east to Utah, and south to New Mexico (Hickman 1993).

Establishment

Adaptation: Elderberry plants grow in moist or wet areas such as along flowing water and in meadows. They can be found in open, moist forests as well. Blue elderberries are understory dominants in riparian woodlands.

In California, common riparian woodland associates are valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), California walnut (*Juglans hindsii*), and California sycamore (*Platanus racemosa*). Box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), alder (*Alnus rhombifolia*), and willow (*Salix gooddingii*, *Salix exigua*, *Salix lasiandra*, and *Salix laevigata*) are particularly prevalent in the subcanopy. Understory species are mostly shrubs, including elderberry (*Sambucus mexicana*), buttonbush (*Cephalanthus occidentalis*), blackberry (*Rubus* spp.), and California rose (*Rosa californica*). Lianas, such as poison oak (*Toxicodendron diversiloba*) and California grape (*Vitis californica*) are a dominant feature. Herbaceous vegetation is 1% cover except in openings where tall forbs may occur.

Seeds:

- Blue elderberry grows best from seed.
- Elderberry fruits are collected when ripe and spread in thin layers to dry.
- To separate seeds from fruits either 1) run fruit through a macerator with water and the pulp and empty seeds float; 2) crush, dry and use without separating fruits and seeds; and 3) for small amounts of fruit they can be cleaned in a fruit blender.
- Elderberry seed can be stored dry at 41 °F for several years.

- Elderberry seeds can be sown in the fall soon after collection, or stratified and sown in the spring. In either case, germination is often not complete until the second spring.
- A seedling density of 35 plant per square foot is sought. Seeds are sown 1/4 inch deep in drills and covered with about 3/8 inch of sawdust mulch.
- In the greenhouse, seeds are warm stratified for two months in a mixture of peat, vermiculite, and sand at 21° to 30°C; (70 to 85°F). Seeds are then placed close to the soil surface in flats in the greenhouse. There are usually several hundred seeds in one seed flat.
- Seedlings are then potted from the flats in deep 3" pots.
- After one season of growth, the seedlings are field planted in the fall or spring when they are 6 to 8 months old. If planted in the fall irrigation may not be necessary in moist sites. In drier sites or with spring planting, irrigation will be required for seedling establishment.

Cuttings:

- Cuttings of elderberry tend to have lower survival success than establishment from seed.
- Use hardwood cuttings from previous seasons growth.
- Take "heel cuttings" from older wood, so inner pith is not exposed.
- Cuttings should be at least 10", and have at least two nodes. Cuttings are placed in 4" pots with perlite and peat. Plants are kept moist.
- Cuttings have a fragile root system, with high mortality occurring when transplanted. Care should be taken to be very gentle with delicate roots when transplanting.
- The cuttings, which do survive, seem to establish and grow faster. Plant biomass production, height, flowering and seed set is more rapid than with seedlings.

Transplanting Trees and Stems:

- All elderberry plants with evidence of valley elderberry longhorn beetle use (i.e. emergence holes or presence of adults) should be transplanted, as they provide habitat for a threatened species under The Endangered Species Act. For further technical information, call a representative of the U.S. Fish and Wildlife Service.
- Cut tree back to 3 to 6 feet from the ground or to 50 percent of its height (whichever is greater) by removing branches and stems above this height. The trunk and all stems greater than 1.5 inches in diameter can be replanted.

- If the presence of tunnels excavated by the beetle larvae inside the elderberry stem and trunk are detected, place pruned material next to transplanted elderberries.
- Move plant by the root ball. Keep the root ball wet.
- Place transplant in holes 3 to 4 feet deep.
- Construct circular water retention basin from the excavated earth about 8-10 feet in diameter and 12 to 14 inches high. Plant the main trunk of an elderberry in the center of each water basin. Plant other stems that have been rooted around the circumference of the basin.
- Saturate soil with water. Irrigate as necessary, especially through first growing season.

Management

In six riparian restoration projects carried out in California, competition from exotic weed species was a key factor in mortality and site failure (Baird 1989). On small sites, hand weeding around trees and shrubs is the most effective means of weed control. One way to avoid competition from weeds on larger sites is to remove the surface soil, although this has the disadvantage of removing nutrients, mycorrhizal fungi, bacteria, and insect and invertebrate populations critical to a healthy habitat. A cover crop of native wildflowers was also used to control weeds, with wildflower seeds hand-broadcast over the site. On wetter, heavier soils this does not seem to provide effective weed control.

There is considerable evidence that fertilization can favor exotic weeds over native plants. Inoculation with mycorrhizal fungi enables seedlings of some species to better utilize limited supplies of both water and nutrients. Inoculation of transplanted shrubs may be accomplished through inclusion of large (1.2 m deep by 2.8 m wide) root balls with plants. Smaller, more economical soil plugs scattered throughout the site serve the same purpose. The number of soil plugs needed to ensure the establishment of soil flora is directly related to the distance of the restoration site from a similar, mature community.

Given that elderberry provides habitat for the federally listed valley longhorn elderberry beetle, livestock grazing of elderberry is not recommended. Livestock grazing can alter vegetative structure and composition of riparian habitat. Overgrazing by livestock and big game frequently changes plant species composition and growth form, density of stands, vigor, seed production of plants, and insect production.

Cultivars, Improved and Selected Materials (and area of origin)

Please check the Vendor Database, expected to be on-line through the PLANTS Web site in 2001 by clicking on Plant Materials. Available from sources within its range handling native plants.

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