COYOTEBRUSH

Baccharis pilularis DC.

Plant Symbol = BAPI

Common Names:
coyote brush, coyotebush, coyote bush, chaparral-broom, dwarf baccharis, dwarf chaparral false willow

Scientific Subspecies Names: Baccharis pilularis DC. ssp. *consanguinea* (DC.) C.B. Wolf, *Baccharis pilularis* DC. ssp. *pilularis* (DC.)

Figure 1. Coyotebrush, Baccharis pilularis ssp consanguinea, mature shrub. Lockeford Plant Materials Center, August 2016.

Description
General: Coyotebrush is a native, perennial, evergreen shrub in the Asteraceae family with either an erect, rounded or procumbent habit. It ranges in height from 1 to 12 feet, depending upon the subspecies and location (Bogler, D. 2016, Robbins et al., 1970). The stems are dark brown, hairless and shiny; they may be scurfy and are usually resinous and sticky. Leaves are alternate and either lacking or with a short petiole, they are broadly ovate or wedge shaped from ½ to 1 inch long. The leaf blades have 1 or 3 nerves, are hairless, with glands and are resinous. Leaf margins are variable, wavy margined or coarsely toothed with 3 to 8 teeth on each side or entire. The plants are generally dioecious. Female flower heads are discoid and many flowered, without ray florets. They are 0.16 to 0.25 inch long, and clustered at branch tips or in leaf axils. Male flowers are slightly smaller. Seeds (cypselae, technically fruits) are 0.039 to 0.079 inch long and 10 nerved, with a white feathery pappus 0.24 to 0.39 inch- long. The bloom period is from August to December and seed is produced in late fall through early spring. Coyotebrush grows a strong taproot to 10 feet in depth with abundant lateral roots (Steinberg, 2002).

Subspecies
B. pilularis ssp. *consanguinea* has upright stems and the branchlets are evenly distributed around the branches, producing shrubs that are erect and rounded, growing to about 12 feet, although more commonly 4 to 6 feet in height. Leaves are 0.6 to 1.8 inches in length (Bogler, D. 2016).

B. pilularis. ssp. *pilularis* has a prostrate habit, stems are flexible and it forms a mat with branchlets mostly growing to one side. It grows about 4 to 10 inches high and 3 to 12 feet wide. Leaves are 0.2 to 0.6 inches in length (Bogler, D. 2016).

Distribution: Coyotebrush has a West Coast distribution and occurs in the Coast Ranges from northern Baja California, Mexico, and San Diego County, California, north to Tillamook County, Oregon. The species also occurs in the Channel Islands and the Sacramento Valley and northern San Joaquin Valley, the Cascade Range foothills and the Sierra Nevada foothills south to Tuolumne County. *B. pilularis* ssp. *consanguinea* is found distributed throughout this range, while *B. pilularis*. ssp. *pilularis* is found on sandy beaches and exposed coastal bluffs from Central California to southern Oregon. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Coyotebrush is found in several habitats including Coastal Strand, Northern Coastal Scrub, Coastal Sage Scrub, Chaparral, Foothill Woodland, Mixed Evergreen Forest, Closed-cone Pine Forest (Calflora, 1997; Steinberg, 2002).

Adaptation
Coyotebrush will grow on a variety of soil types including, alkaline, sand, clay, and occasionally serpentine soils. They are present at a variety of elevations from sea level up to 2,500 feet. The plants require full sun and seedling recruitment is poor in shaded situations. Recruitment of coyotebrush seedlings is reduced with high seed density of the annual grass, *Bromus hordeaceus*, especially under drought conditions (DaSilva and Bartolome, 1984). Coyotebrush is resistant to fire, sprouting from the base if the fire is not too intense. Due to prolific production of wind dispersed seeds by the coyotebrush and ease of germination of the seeds on a variety of soil types, coyotebrush can colonize burned areas following fires (Steinberg, 2002). Once established the plants are extremely drought tolerant.

Coyotebrush's successional status varies with habitat type (Williams and Hobbs, 1989). It invades and colonizes grassland replacing annual grasses (DaSilva and Bartolome, 1984; Steinberg, 2002). This is correlated with the absence of fire or grazing and the rate of invasion increases with precipitation, because wet springs maximize early root growth. The coyotebrush provides cover for rabbits and other small mammals, and these reduce the herbaceous understory to favor more shrub development (Westman, 1981). Coyotebrush is a common dominant in coastal sage scrub, but because seedling growth is poor in shade, coyotebrush does not regenerate under a closed shrub canopy. Coyotebrush dominated areas can be replaced by shade tolerant species such as oaks leading to development of the climax oak woodland communities, particularly when fire and grazing are excluded (Steinberg, 2002; Williams and Hobbs, 1989).

Uses

Erosion Control and Habitat Restoration: Coyotebrush has been successfully used for erosion control. For sloping areas, *B. pilularis*. ssp. *pilularis*, is a good choice due to its low growing and spreading habit (Steinberg, 2002). In areas adjacent to established coyotebrush stands recruitment can be spontaneous from wind dispersed seeds. Coyotebrush habitat can act as a nurse crop for tree species and is useful for restoration of oak woodlands.

Wildlife habitat: Coyotebrush has low palatability and nutritional value for grazers and browsers, cattle will graze it if nothing else is available but will more likely trample the plants. It is great wildlife habitat providing cover for rabbits and other small mammals, who frequently graze out vegetation under the coyotebrush (Steinberg, 2002). Coyotebrush is an extremely important plant for pollinators, due to its abundant production of pollen and nectar and the bloom period, which occurs during the fall and winter. The plants maintain their green foliage year round providing excellent habitat for beneficial insects (Wilson, 2013). In addition to European honey bees, Steffan (1997) identified 54 insect species visiting male and female flowers in late September and early October, including several species of ants, bees and parasitic wasps

Ornamental: Coyotebrush is used as an ornamental plant in the Southwestern states due to several attributes. It is drought tolerant and maintains bright green foliage throughout the year, is unpalatable for deer, and the leaves have fire resistant properties. *B. pilularis* ssp. *consanguinea*, the upright coyotebrush, is a reliable choice for hedgerows as it is easy to establish from transplants and to manage by pruning. For erosion control on slopes and where low growing vegetation is required, cultivars of *B. pilularis*. ssp. *pilularis*, the prostrate form are preferred. In the horticultural trade, these are all males and so will not form an expanding population (Wilson, 2013).

Ethnobotany

There is a report of an infusion of coyotebrush used as a general remedy by the Costanoan Indians (Bocek, 1984). A decoction prepared from the leaves was a remedy for poison oak rash used by the Chumash Indians on the Santa Ynez Reservation in the late 1950s (Timbrook, 2007). They also reported using branchlets of coyotebrush to brush away the small spines when harvesting prickly pear cactus fruit. Chestnut (1902) reported that the Indians of Mendocino County had formerly used the brittle stems of coyotebrush as arrows.

Status

Weedy or Invasive: Coyotebrush can be weedy due to the prevalence of wind dispersed seeds of this common shrub. It can be a particular problem in range or pastures (Robbins et al., 1970). This plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding its status and use.

Please consult the PLANTS Web site (http://plants.usda.gov/) and your state's Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines

Coyotebrush is tolerant of a wide range of soil types including alkaline soils, clay and sandy soils, and some plants tolerate serpentine soils. The seeds have no stratification or temperature requirement and will germinate on mineral soil (Olsen, 1974). Seeds mature in late fall through winter and are wind dispersed, so this is the best time to establish a planting. Seed may be broadcast or planted with a drop seeder to ensure good soil to seed contact. New plantings need adequate moisture either from precipitation or weekly irrigation until the plants germinate and become established, monthly watering is recommended over the first summer (Steinberg, 2002). Container stock should be transplanted in fall, winter or early spring, and receive water weekly until established and monthly for the first summer. When selecting transplants it is important to consider the sex ratio of the plants as this will differ depending on the purpose of the planting. For example, a planting of *B. pilularis* ssp. *consanguinea* for erosion control will require one male to 5 female plants for optimal habitat restoration and recruitment (Steinberg, 2002). For a pollinator hedgerow planting of *B. pilularis* ssp. *consanguinea* adjacent to an almond orchard, selection of all male plants to preclude weedy spread of coyotebrush is a good strategy. The named cultivars of *B. pilularis*. ssp. *pilularis* are all male cultivars and *B. pilularis* ssp. *consanguinea* vegetatively propagated male plants are also available in the nursery trade (Gomes and Smither-Kopperl, 2012; Wilson, 2013).

Figure 2 . Female coyotebrush in bloom, developing female flowers, showing the maturing pappus on the fruiting heads. Lockeford Plant Materials Center. November 2012.

Figure 3. Male coyotebrush in bloom, staminate male flowers, being pollinated by a honey bee. Lockeford Plant Materials Center. November 2012.

Management

Coyotebrush can be pruned to a desired shape, or it can be coppiced, cut back to 6 inches in height and will sprout from the base. As a native California plant it is fire adapted and will re-sprout after fires (Steinberg, 2002: Wilson, 2013).

Pests and Potential Problems

There are no known pest problems apart from the host- specific midge *Rhopalomyia californica*, which produces galls on coyotebrush (Miller and Weis, 1999),

Control

Please contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for each control method

Seeds and Plant Production

Seed can be collected with a cloth spread around and under the coyotebrush. The seed should be dried in a warm ventilated room or in the sun without wind. Sometimes the tufts of hair on the seed (known as the pappus) are removed before planting. Seeds are very small and light with approximately 236,250 cleaned seeds per ounce (Olsen, 1974). In nurseries, seeds are sown in fall or early spring using sandy soil or a vermiculite, perlite, and sphagnum moss mix. Most germination occurs within 15 to 30 days; germination rates within this time frame range from 40 to 92% in the greenhouse (Olsen, 1974). Coyotebrush may also be readily propagated from cuttings, 2 node cuttings are set into a germination flat filled with a 1:1 mixture of vermiculite to perlite, maintained in a humidity tent set to mist for 1 minute every 32 minutes with bottom heat to 80 degrees. After 30 days, rooted cuttings are transplanted to produce container grown plants. (Gomes and Smither-Kopperl, 2012).

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

The wide distribution, ease of vegetative propagation and successful production from seed results in locally adapted plant materials being available from local nurseries. There are also several named cultivars including *B. pilularis*. ssp. *pilularis*, 'Pigeon Point', which is a vigorous, long lasting cultivar with dark green foliage that grows 1 foot tall by 12 feet wide. It tolerates a range of soil types including seaside conditions, alkaline soils, sand and clay. It originates from Pigeon Point on the California Coat between San Francisco and Santa Cruz (Calflora, 1997; Theodore Paine, 2014; Wilson, 2013). *B. pilularis*. ssp. *pilularis* 'Twin Peaks' was collected along the coast from Sonoma to Monterey County. In these locations, it is green in color and grows with the prostrate form I foot high by 10 feet wide, when grown further inland the color of the foliage becomes grayish and the growth form assumes a more rounded shape (Calflora, 1997; Wilson, 2013). *B. pilularis*. ssp. *pilularis* 'Santa Anna', has silvery foliage and grows in soft mounds, I foot high by 6 feet wide, will tolerate a variety of soil types including seaside conditions, alkaline soils, sand and clay (Wilson, 2013).Cultivars should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension or local USDA NRCS office for recommendations on adapted cultivars for use in your area**.**

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