

## CALIFORNIA BROME

### *Bromus carinatus* Hook. & Arn.

Plant Symbol = BRCA5

Contributed by: USDA NRCS National Plant Data Center  
& California Plant Materials Center



F. Ballerini 2008

#### Alternate Names

Big brome, California brome grass, California Bromegrass, California brome.

#### Uses

*Ethnobotanic:* The seeds of California brome were feared by the Native Americans to be poisonous if swallowed. However, they were often dried and ground into flour to make bread and other foods.

*Livestock:* California brome is an important forage species for livestock throughout its growing season. It is sometimes planted as pasture grass.

*Restoration:* California brome is considered a pioneer species as well as a late seral species under open canopy/full sun situations. The grass is noted for its rapid establishment of deep roots and good soil stabilizing capabilities which make it valuable for revegetation and erosion control in disturbed areas such as rangeland sites, spent oil shale, coalmine spoils, heavy metal mine

tailings, and roadsides. It is also well-suited for side-slopes and back-slopes because it can withstand periodic drought once established.

It is effective in improving water infiltration and has been used successfully on waterfront sites.

*Wildlife:* Elk, grizzly bear, geese, squirrels, pocket gophers, and other rodents consume California brome plants. Birds consume the seeds. California brome also provides good cover for small mammals, small non-game birds, and upland game birds.

#### Status

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

#### Weediness

The Western Society of Weed Science has listed California brome as having invasive characteristics. 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, or state natural resource or agriculture department regarding its status and use. Weed information is also available from the PLANTS Web site at [plants.usda.gov](http://plants.usda.gov).

#### Description

*General:* Grass Family (Poaceae). California brome is a native, cool-season perennial bunchgrass that lives 3 to 5 years and grows to be 60 to 120 cm tall. The roots of California brome are fibrous, grow very quickly, and become deep and widespread. Young plants are erect, but older stems grow along the ground with only the apical tips remaining erect (decumbent). Stems are robust with hairy sheaths. Leaf blades are 0.5 to 1 cm wide and 15 to 30 cm long. They can be pubescent or glabrous. The inflorescence is a stiff, open panicle, 10 to 20 cm long and droops at maturity. The spikelets are 5 to 7 flowered, 2 to 4 cm long, 5 to 7 mm wide and flattened. Lemmas are 1 to 1.5 cm long, flattened, keeled and usually pubescent. The awns are 2 to 5 mm long. Seeds mature in May and June at low elevations and by late August at high elevations.

*Distribution:* California brome occurs from Alaska east to Ontario and south to Illinois, Texas, California, Baja California and northern Mexico. It is native from the Pacific Coast to the Rocky Mountains and is casually introduced in the Great Plains. For current distribution,

please consult the Plant Profile page for this species on the PLANTS Web site (<http://plants.usda.gov>).

**Habitat:** California brome grows in open woods and forests, shrublands, grasslands, meadows, and waste places. It is closely associated with pine dropseed, bracken fern, corn lily, dwarf purple monkey flower, mountain muhly, and Rocky Mountain iris and shares dominance in many plant communities such as coastal prairie, both montane and coastal Chaparral scrub, sagebrush steppes, aspen, oak woodland, and variously mixed conifer forests-

### **Adaptation**

California brome grows well in a variety of soils including poorly drained types. It is most abundant in moderately moist, well-developed, deep, medium-textured soils. It tolerates soils in the pH range of 5.5 to 8.0. It occurs in bottomlands, mountain slopes, valleys, and ridge tops, up to elevations of 4,000 m. It requires nearly full to full sunlight.

### **Management**

Several herbicides are labeled for control of perennial grasses. Effective control of California brome requires careful attention to growth stage of the plant, proper timing of applications, using labeled rates which will consistently achieve desired results and responsible rotation of methods and materials used to manage the undesirable plant. Herbicides differ considerably in their non-target vegetation impact, volatility and residual carryover. Always read the label before applying any herbicide.

It is reduced by heavy grazing and favored in moderate to light grazing. Sheep are more likely to kill plants by trampling them rather than overgrazing. Cattle are more likely to overgraze than trample the plants.

California brome is top-killed by fire, but appears to recover within a few years. It can sprout from surviving root crowns as early as the next growing season. Coverage of California brome is slightly reduced from pre-fire levels for several years after fire, then returns to pre-fire levels. It is sometimes seeded in after fire to help stabilize soil.

### **Pests and Potential Problems**

California brome is sometimes prone to stem rust, head smut, leaf rust, and leaf spot.

### **Seeds and Plant Production**

Seeds are collected between May and September depending on rate of maturation. Mature inflorescences turn from green-purple to brown and mature seeds are light brown-gray. Cleaning is not required for germination. Seeds should be stored in a dry, evenly temperate environment. Dry refrigeration is best for long term storage.

Under optimum conditions, *Bromus carinatus* germinates quickly from 0 to 1 ½ inches below the soil surface, with emergence generally occurring within 14-28 days. Some disagreement exists as to the optimum germination conditions; in general, the species responds to a dark period of 16-18 hours with corresponding temperatures between 59-68F and a light period of 6-8 hours with temperatures ranging between 68-86F. The species will vary somewhat based on local adaptation, but in general prefers available water of approximately 18 inches and little to no flooding or inundation. Available information suggests that *Bromus carinatus* does not persist in the soil seed bank, but readily germinates as conditions allow, exhausting reserves. Successful site establishment is most associated with a moderate level of site disturbance and substantial reduction in competition, especially for light, in addition to a favorable germination environment.

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

California brome seed is readily available from commercial sources.

More information about USDA-NRCS plant releases may be found in the release notice available from your local NRCS office.

The following five germplasm releases were selected for phenotypic characteristics from an assembly of 28 accessions grown at three sites in California. Other locally-adapted germplasms may exist for your region; contact your local NRCS Field Office for details.

**'Southern Cal 1000' Germplasm** California brome (*Bromus carinatus*) was collected in 2006 in Orange County, California near Irvine Ranch at 1,000 feet elevation on silty clay soils in a purple needlegrass community. It is noted for its vigor, plant mass, and seed yield. It is recommended for use in southern California in MLRA 14d, 15d, 19 and 20.

**'Central Coast 2600' Germplasm** California brome (*Bromus carinatus*) was collected in 2006 in a location east of Los Olivos, California on Figueroa Mountain at 2,600 feet elevation on sandy clay soils in a blue oak grassland community. It is noted for its superior vigor, height, and seed yield. It is recommended for in California MLRAs 15d, 20, 22d, and 22e.

**'Coastal 500' Germplasm** California brome (*Bromus carinatus*) was collected in 2006 in San Luis Obispo County, California near Cal Poly Canyon at 500 feet elevation on sandy clay loam soils in a coast live oak grassland community. It is noted for its vigor, plant mass, and seed yield. It is recommended for use in California MLRAs 4c, 14c, 14d, 15c, and 15d.

'Northern Cal 40' Germplasm California brome (*Bromus carinatus*) was collected in 2006 near Point Pinole in Pinole, California at 40 feet elevation on silty clay loam soils within an annual grassland community. It is noted for its superior vigor, plant mass, early seed production, and seed yield amongst other coastal accessions. It is recommended for use in California MLRAs 14c, 14d, 15c, 15d, 15e, 16e, 17d, 17e, and 18d.

'Central Sierra 3200' Germplasm California brome (*Bromus carinatus*) was collected in 2006 in Yuba County, CA at Pike County Peak at 3,200 feet elevation on silty clay soils within a pine and fir community. It is noted for its superior vigor, plant mass, and seed yield amongst other higher elevation accessions within the trial. It is recommended for use in California MLRAs 18d, 22c, and 22d.

'Cucamonga' is recommended for erosion control and ground cover on droughty, low fertility grasslands. It can also be used for revegetation of disturbed areas, and wildfire land rehabilitation. It is susceptible to head smut, which can be controlled with a mercuric fungicide. This cultivar was collected from a native stand near Cucamonga, California in 1939.

#### **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.

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Published October, 2004

Edited: 4Aug2004 sbw; 21Oct2004 rln; 27sep05 jsp; 25may06jsp; 01July08capmc; 080916jsp; 081027 jsp

For more information about this and other plants, please contact your local NRCS field office or Conservation District at <http://www.nrcs.usda.gov/> and visit the PLANTS Web site at <http://plants.usda.gov/> or the Plant Materials Program Web site <http://plant-materials.nrcs.usda.gov>.

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