



California oatgrass (*Danthonia californica*)

Range

Western coastal regions of North America and South America [\[1\]](#)

Elevation and Climate

California oatgrass can be found at elevations between 500ft-7000ft [\[2\]](#) growing in diverse climates, ranging from the cool, humid conditions near the coast to the hot, dry environments in inland valleys and foothill woodlands. Records from 48 climatic observation stations within or bordering its range indicate that

California oatgrass has endured temperature extremes of -34° to 47° C (-30° to 116° F). [\[3\]](#)

In coastal areas climate is also affected by heavy wind in combination with abundant salt-spray. Fog is common in the summer. Climate is generally mild and moist to wet, with mean annual precipitation ranging from about 70 to 120 inches. [\[4\]](#)

Local occurrences

California oatgrass occurs amongst native vegetation of the south Puget Sound prairie, and northern Puget lowland found on glacial outwash soils and represented by Idaho fescue-white-topped aster plant community type. [\[5\]](#) California oatgrass was likely a dominant bunchgrass of the original Canadian Garry oak ecosystem found on southeastern Vancouver Island and the Gulf Islands. [\[6\]](#)

Habitat preferences

This species is found growing in areas of grassland balds and prairie (shallow to excessively drained deep soils) ⁵ Serpentine bedrock is present in some areas. An important dominant grass in California coastal prairies [\[7\]](#) especially in drier areas [\[8\]](#) Also found in Coastal sagebrush, [\[9\]](#) California oakwoods, Fescue-oatgrass [\[10\]](#) and Garry Oak [6](#) plant communities.

Plant strategy

Colonizers of early successional habitats, California oatgrass is considered a species that can tolerate regularly disturbed ecosystems. It produces cleistogenes (self-pollinated seeds that are produced from flowers that do not open) and has hygroscopic awns that are known to be associated with disturbance-prone habitats⁶.

California oatgrass is considered a “stress-tolerator,” often found in sites with low moisture^[11]. Cleistogenes are often produced during stressful conditions, such as overgrazing or repeated mowing, and found in areas susceptible to fire^{11, 1}. California oatgrass also has a high fire tolerance and does not decrease in cover after burning^{7, [12]}

Associated species

Puget Sound prairies species associated with California oatgrass include houndstongue hawkweed (*Hieracium cynoglossoides*), cutleaf microseris (*Microseris laciniata*), spike goldenrod (*Solidago spathulata*), white-top aster (*Aster curtus*), and prairie lupine (*Lupinus lepidus*). Long-stolon sedge (*Carex pensylvanica*), field woodruch (*Luzula campestris*), Idaho fescue (*Festuca idahoensis*), and common camas (*Camassia quamash*)⁵

Collection

Collect seeds from the seed head or cleistogamous spikelets (or “bud-like, unopened flowers”) from the base of the leaf sheaths.^[13] California oatgrass produces up to eight cleistogamous seeds per node (25-36 per plant), often more seeds than are produced from cross fertilization (21-33).^{1, [14]} It can also be propagated by divisions.¹³

Collection guidelines

Collect seeds late summer, early fall, in July and August.^[15] Ripen seeds on cardboard sheets in a warm dry area for 24-48 hours¹⁵

This species is a relatively poor seed producer which has made commercial seed production prohibitive^[16]

Seed germination

Exhibits both embryo and seedcoat dormancy¹⁶ Does not regularly germinate in the fall and requires specific treatments to overcome dormancy.^{[17] [18]}

In a germination test conducted by Dobrenz (1966) potassium nitrate treatment was the only condition under which both types of seeds (fertilized and cleistogamous seeds) germinated. Therefore it is possible that certain elements in the soils can affect germination requirements¹

In germination studies by Keeley (2002) seeds were scarified by hand removal of the lemma and palea and stratified for 3 weeks at 3-4C¹⁵

Seed life

This species has innate dormancy patterns (requiring specific environmental cues to germinate) and plant adaptations (e.g. hygroscopic awns that lodge beneath the soil) that likely cause seeds to persistent in the seedbank⁶

Seed storage

Store seeds in large zip-lock plastic bag in a coldroom at 3-4C¹⁵

Propagation

Hoophouse propagation is recommended.¹⁵ Sow scarified seeds (removal of lemma and palea) in plastic flats, lined with newspaper. Keep flats at temperatures between 24-15C¹⁵

Medium requirements

Moist peat mix ¹⁵

Installation form

Propagated grass plugs

Planting density

Plant densely, using 1 foot centers in groups of 3 or more plants.

Care requirements

Weed planting area before installation, follow-up with additional weeding and watering as needed.

Rate of growth

California oatgrass grows slowly and has weak seedling vigor, but is unique in that it stays green all year long.¹⁶ It grows in dense tufts reaching 15 to 35 inches tall and may control the spatial distribution of other grassland species.⁷

Data compiled by: Amy Lambert, April 14, 2003

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- [3] William I. Stein, Oregon White Oak http://www.na.fs.fed.us/spfo/pubs/silvics_manual/volume_2/quercus/garryana.htm
- [4] <http://www.sfsu.edu/~geog/bholzman/ptreyes/tripcpr.htm>
- [5] Chappell, C. and Crawford, R. 1997. *Native Vegetation of the South Puget Sound Prairie Landscape*. As referenced in Dunn, P. Ewing K. eds. 1997. Ecology and Conservation of the South Puget Sound Prairie landscape, Nature Conservancy of Washington, Seattle.
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