

SEARLS' PRAIRIE CLOVER

Dalea searlsiae (A. Gray) Barneby

Plant Symbol = DASE3

Common Names: Searls' Prairie Clover

Scientific Names: *Dalea searlsiae* (A. Gray) Barneby

Petalostemon searlsiae A. Gray

Description

General: Legume family (Fabaceae). Searls' prairie clover is a native, herbaceous perennial legume with decumbent to erect stems. It was named after Fanny Searls who first collected it near the Pahrnagat Mines in southeastern Nevada in 1871 (Tiehm 1985). Plants range from 10-24 inches tall and arise from a shallow, woody base. The leaves are odd-pinnate with 3 or more glabrous leaflets with glands on the underside. Flower stalks bear a spike-like cluster of small pink- to purple-colored flowers that bloom from the base to the tip of the cluster. Although two ovules are present in each flower, only one seed matures per flower (Barneby 1977). The fruit is a small hairy pod with one seed, and there are approximately 148,000 seeds per pound based on seed counts from 17 wildland collections.



Distribution: Searls' prairie clover occurs in portions of the Great Basin, Colorado Plateau, and northern Mojave Desert in the states of Arizona, California, Nevada and Utah at elevations ranging from 3,000-7,500 feet above sea level (Barneby 1977, Cronquist et al. 1989, Welsh et al. 2008). Searls' prairie clover may have been more widely spread than its current distribution in the Great Basin, Colorado Plateau and the northern Mojave Desert prior to the arrival of European settlers. The decline may be due to overgrazing. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Searls' prairie clover is commonly found in sagebrush, pinyon-juniper, warm-desert and cool-desert shrub plant communities.

Adaptation

Because of its potential to rehabilitate native plant communities of the intermountain west, specific adaptation of ecotypes is still being tested. Searls' prairie clover is found on sandy or gravelly soils on flat areas, slopes and knolls in areas that receive 6 to 14 inches of annual precipitation.

Uses

Range/Pasture: Plants of purple prairie clover, in the same genus as Searls' prairie clover have been observed being grazed by sheep, but because of the scarcity of these plants on the landscape they are not considered to be an important forage source (Hermann 1966). This legume forms a symbiotic association with soil bacteria (*Rhizobium spp.*) that allows fixation of atmospheric nitrogen, which can enhance forage nitrogen content for wildlife and livestock. The USDA-ARS Poisonous Plant Research Laboratory and the Utah Veterinary Diagnostic Laboratory have analyzed collections of Searls' prairie clover for toxicity. All samples had non-detectable levels of swainsonine and nitrotoxins and selenium contents that are well below levels of concern for grazing animals.

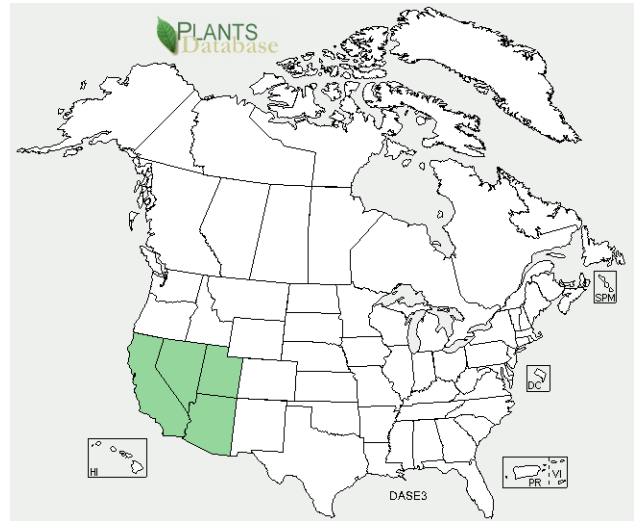
Pollinators/Diversity: Searls' prairie clover can be used to diversify seeding mixtures for rangeland revegetation as well as for pollinator habitat enhancement, home landscaping and roadside planting. Flowers are visited by pollinators, primarily bees, during bloom from June-July. Limited surveys of this and the other Intermountain prairie-clover, *D. ornata*, growing mostly in ruderal or cheatgrass-infested habitats, revealed its flowers to be sparsely visited solely by wild bees, primarily of the genera *Andrena*, *Anthidium*, *Colletes*, *Bombus*, *Eucera*, and *Melissodes* (Cane et al. 2011).

Status

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

Transplants can be grown under greenhouse conditions, but seed must be scarified prior to planting to improve germination. As with many native legumes, Searls' prairie clover has a high percentage of hard seed (as high as 90% or greater in one year old seed) (St. John et al. 2012). Studies at the USDA-ARS Forage and Range Research Laboratory indicated that germination may be increased to more than 90% when seed is scarified using a five-minute treatment in 98% concentrated sulfuric acid. Germination was also improved when seeds were scarified with sand paper. Additional studies are underway to examine seed treatments and seeding methods to improve germination and seedling establishment in Searls' prairie clover. Rhizobial strains that inoculate other perennial *Dalea* species (*D. purpurea* and *D. candida*) may be effective at nodulating Searls' prairie clover, but this has not been evaluated. For details regarding inoculation of legumes refer to Miller et al. 2010.



The recommended full seeding drill rate is 7 pounds Pure Live Seed (PLS) per acre for a seeding rate of approximately 25 PLS/ft. When used as a component of a seed mix, adjust the rate to the percentage of the seed mix desired. If broadcast seeding, double the recommended seeding rate. Seedbed should be weed free and firm. Place seed to a depth of 1/4-1/2 inch with press wheels to ensure good seed-to-soil contact. Dormant seeding would likely help overcome at least some seed hardness. Because plantings of Searls' prairie clover requires bee visitation and has been shown to produce seed at a higher rate if cross pollinated, range plantings in dense clumps would allow for higher seed production and persistence in the planting. This could be best achieved by seeding patches where suitably sandy soil patches are found on-site.

Management

Searls' prairie clover should be used as a small component in rangeland seeding mixes. Management strategies should be based on key species in the mix. Seedlings of Searls' prairie clover should be protected from grazing until plants are well established. Follow standard grazing practices that maintain the productivity and longevity of the stand.

Pests and Potential Problems

Similar to western prairie clover, it would be expected that seed beetles *Acanthoscelides oregonensis* and *Apion (Pseudapion) amaurum* might infest seed and need to be excluded or controlled to effectively produce seed of Searls' prairie clover (Cane et al. 2011).

Environmental Concerns

There are no known environmental concerns with Searls' prairie clover.

Seeds and Plant Production

Productive farming of the seed of Searls' prairie clover will require supplementation of bees for pollination and exclusion of seed beetles. The indeterminate flowering habit and resulting extended seed maturation period in Searls' prairie clover present a challenge to growers for seed production because flowers bloom upward along the spike for 2 to 3 weeks during July. This results in flowers at the top of the spike being delayed in blooming relative to flowers at the bottom. Consequently, flowers at the top of the spike may still be blooming while seeds at the bottom are mature and beginning to drop. Several passes through seed production fields with a vacuum or soft-brush harvester during seed maturation may be required to maximize seed production. In this way, seeds could be gently manipulated to minimize plant damage and harvested multiple times as they mature (Johnson et al. 2015).



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

Three natural-track selected germplasms of Searls' prairie clover have been released by the USDA Agricultural Research Service (ARS) for use in revegetation and restoration of semiarid rangelands in the western US. This species is new to the commercial seed trade, and these are the first releases of this species for rangeland improvement (Johnson et. al. 2015). Fanny germplasm was released for use in the Great Basin, and Carmel Germplasm is based on collections made in the Colorado Plateau. Additionally, several collections originating from near the Great Salt Lake in northwestern Utah were genetically distinct from Fanny and Carmel germplasms. Thus, Bonneville Germplasm was identified to represent this distinct genetic group.

Seed source 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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Citation

St. John, L, D. Tilley, D. Ogle, D. Johnson, S. Bushman. 2011. Plant guide for Searls' prairie clover (*Dalea searlsiae*). USDA-Natural Resources Conservation Service, Plant Materials Center, Aberdeen, Idaho and USDA-Agricultural Research Service, Forage and Range Research Laboratory, Logan, Utah.

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