

Conservation Planning for Blasdale's Bentgrass (*Agrostis blasdalei*)

Barbara Rice¹, Diane Hichwa¹, and James Weigand²

¹The Sea Ranch CCNM Stewardship Task Force, c/o The Sea Ranch Association, P.O. Box 16, The Sea Ranch, CA 94597-0016,

²Bureau of Land Management California State Office, 2800 Cottage Way, Sacramento, CA 95825-1856



Above: Green and dried inflorescence of *A. blasdalei*



Coastal setting with the Shell Beach Island pedestal in the center background where Blasdale's bentgrass specimens were first found in 2008.

Offshore Bentgrass Discovered

Blasdale's bentgrass is a poorly known California Native Plant Society Rank 1B.2 native grass occurring on coastal bluffs, dunes, and gravel surfaces below 100 m elevation. It ranges locally from northern Santa Cruz County to central Mendocino County. Its taxonomy has perplexed botanists (Crampton 1967) and hybridization complicates taxonomy.

The most recent bentgrass herbarium record from the Sea Ranch, Sonoma County, is from 1988. In 2008, local botanists found several specimens on Shell Beach Island, part of the California Coastal National Monument adjacent to the Sea Ranch, constituting the first documented offshore occurrence.



Newly identified populations of Blasdale's bentgrass in northern Sonoma County, 2011. The orange dot is Shell Beach Island. Inset: Known range of Blasdale's bentgrass prior to 2011.

Conservation Challenge

Visitors to Shell Beach Island at low tides unwittingly trample vegetation and compact island soils. Several non-native species also threaten to extirpate the tiny bentgrass population on the island. The composition of plant species on islands close to the mainland undergo frequent turnover as rates of island colonization and extinction are high. Native shoreline species may be at a disadvantage compared to invasive non-native species (Cody 2006). Success in recolonization after extinction depends in part on robust mainland populations. Attempts to increase the bentgrass on Shell Beach Island alone without attention to mainland population size and distribution may be unsuccessful in the long run.

Restoration Strategy

Concerned about providing a continual seed supply to Shell Beach Island and other offshore islands, the Sea Ranch California Coastal NM Stewardship Task Force is assessing the status of the bentgrass on the adjacent mainland. The restoration prescription calls for establishing nursery infrastructure, seed collection of mainland plants, germination testing, and seed increase. In situ trials on the mainland will examine the survival of the bentgrass under differing densities of non-native grass competition on different soils.

The Sea Ranch Association and the Sonoma County Department of Parks and Recreation now limit public access to Shell Beach Island to allow natural recovery. The Task Force will remove exotic plants with minimal soil disturbance to avoid added erosion and install enrichment plantings of the bentgrass. The Bureau of Land Management provides technical assistance and funding for restoration of Shell Beach Island.



Left: Bentgrass habitat on bluff edges at The Sea Ranch. Above, top: Bentgrass in midsummer with dense seed heads and (bottom) in winter.

Findings To Date

- Bentgrass habitat on Shell Beach Island has well-developed soils rich in organic matter.
- In summer 2011, the Task Force and the Dorothy King Young Chapter of the California Native Plant Society found 66 new locations of the bentgrass along the 11 miles of the Sea Ranch bluffs, totaling more than 2,400 plants.
- Mainland bentgrass populations occur principally on eroding bluffs with NW exposure where iceplant is the only significant non-native.

NEXT STEPS at the Sea Ranch

- Track phenology of bentgrass at different locations to optimize seed collection.
- Experiment with germination techniques to develop best sowing practices.
- Increase seed supplies at the Sea Ranch for seeding and nursery stock.
- Select sites onshore near Shell Beach Island for non-native grass removal and seeding with bentgrass and other native plants.
- Inventory other California Coastal NM islands off of the Sea Ranch.
- Prepare a bentgrass conservation plan for the Sea Ranch Association.

NEXT STEPS for the National Monument

- Expand plant searches to California Coastal NM islands opposite mainland sites with known populations of the bentgrass across the species range.
- Develop a risk assessment and adaptation strategy for California Coastal NM insular populations in response to climate change and sea level rise.
- Undertake long-term monitoring with coastal stewardship groups such as the Task Force to track range-wide populations, habitat quality, and human impacts.
- Collaborate with the UC-Santa Cruz Herbarium to collect seed rangewide and develop restoration and introduction sites.
- Support research partners studying *A. blasdalei* populations hybridizing with *A. exarata* and *A. densiflora* (West 2011 ms.) and the implications for evolutionary fitness in dynamic coastal environments.

LITERATURE CITED

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Crampton, Beecher. 1967. New *Agrostis* from the California coast. *Brittonia* 19(2): 174-177.
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