

A.32 HAIRY ORCUTT GRASS (*ORCUTTIA PILOSA*)

A.32.1 Legal and Other Status

Hairy Orcutt grass (*Orcuttia pilosa*) is listed as endangered under the federal Endangered Species Act (ESA) throughout its range and is listed as endangered under the California ESA (DFG 2011). The California Native Plant Society (CNPS) includes Hairy Orcutt grass on California Rare Plant Rank 1B (formerly List 1B): Plants Rare, Threatened, or Endangered in California and Elsewhere (CNPS 2010).

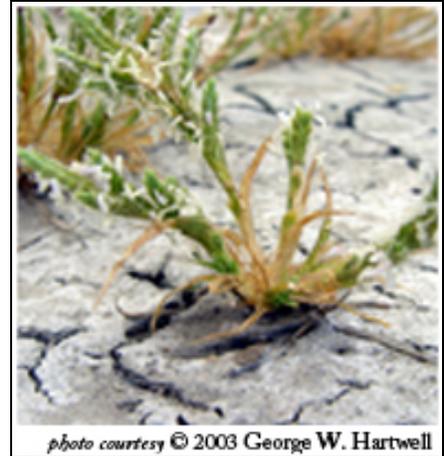
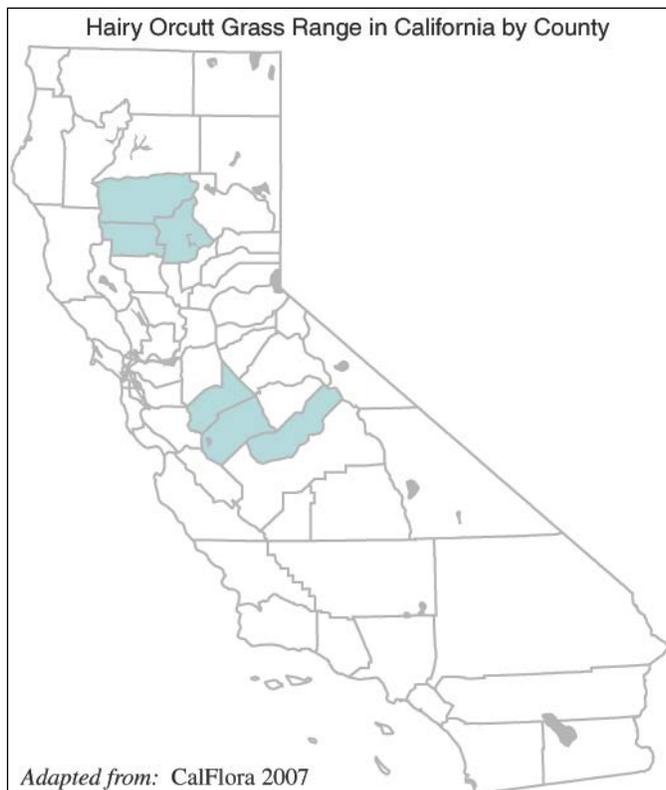


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Critical habitat has been designated for Hairy Orcutt grass, including one location in Butte County. In Butte County, 8 acres (3 hectares) of critical habitat have been designated for hairy Orcutt grass (Unit 2) (71 FR 7118). This location is on private property south of Chico along Highway 99 and 0.4 mile (0.64 kilometers [km]) south of the junction with Pentz Road. This location includes the only reported location for hairy Orcutt grass in Butte County.

A.32.2 Species Distribution and Status



A.32.2.1 Range and Status

Hairy Orcutt grass inhabits vernal pools in rolling topography on remnant alluvial fans and stream terraces in the Central Valley of California. It is known to occur over a distance of 223 miles (490 km) along the eastern margin of the San Joaquin and Sacramento valleys from Tehama County south to Stanislaus County and through Merced and Madera counties (62 FR 14338). Prior to surveys conducted in the 1980s, this species had been reported from 25 sites, primarily in the Northeastern Sacramento Valley and Southern Sierra Foothills Vernal Pool Regions in Tehama, Stanislaus, Madera, and Merced counties, California. There is also a historical report of a specimen collected in the Solano-Colusa Vernal Pool

Region in Glenn County in 1937. During the late 1980s, surveys determined that 12 historical occurrences had been extirpated, and three additional populations were reported in Madera, Stanislaus, and Tehama counties. Recently (within the past decade), 10 new natural occurrences of hairy Orcutt grass have been discovered in Madera, Tehama, and Stanislaus counties, and this species has been introduced into a recreated pool in Madera County (USFWS 2005, CNDDDB 2006).

Of the 39 Element Occurrences currently included in the California Natural Diversity Database (CNDDDB 2006), 27 natural occurrences and the introduced population are presumed to be extant. Nine of the extant and one of the possibly extirpated populations are in the Vina Plains area in Tehama County, which is in the Northeastern Sacramento Valley Vernal Pool Region. An additional isolated occurrence in this same region is in central Butte County. Eleven extant occurrences are in the Southern Sierra Foothills Vernal Pool Region, including nine in Madera County and two in eastern Stanislaus County. Six extant occurrences are in the Solano-Colusa Vernal Pool Region on the Sacramento National Wildlife Refuge in Glenn County (USFWS 2005, CNDDDB 2006).

The overall trend for this species is declining due to loss of vernal pool habitat (DFG 2000, USFWS 2005, 2006).

A.32.2.2 Distribution and Status in the Plan Area

There is only one record of occurrence for this species in Butte County (see Figure A.32-1, *Hairy Orcutt Grass Modeled Habitat and Recorded Occurrences*), on private property south of Chico along Highway 99 and 0.4 mile (0.64 kilometer [km]) south of the junction of Pentz Road; however, the information is from a 1986 recorded observation for Hoover's spurge, and the presence of hairy Orcutt grass has not been confirmed. The number of plants and trend for this location are unknown, although it is presumed to be extant (CNDDDB 2006). This species does occur in vernal pools on the Vina Plains in Tehama County, just north of Butte County.

A.32.3 Habitat Requirements and Special Considerations

Hairy Orcutt grass is restricted to vernal pools and, in Butte County, occurs in valley and foothill grasslands on volcanic mudflow or clay substrate at 75 to 375 feet (25 to 125 meters) elevation (CNDDDB 2006). This species is typically found on high or low stream terraces and alluvial fans in Northern Basalt Flow, Northern Claypan, and Northern Hardpan vernal pools within annual grasslands (Sawyer-Keeler Wolf 1995, CNDDDB 2006). Previous studies indicated the median size of occupied pools measured was 4.2 acres (1.7 hectares), with a range of 0.8 to 617.5 acres (0.34 to 250 hectares). At the Vina Plains, this species was found growing only in pools that held water until May, June, or July in 1995, and not in those that had dried by April. Hairy Orcutt grass is found on both acidic and saline-alkaline soils, in pools with an iron-silica cemented hardpan or claypan (USFWS 2005).

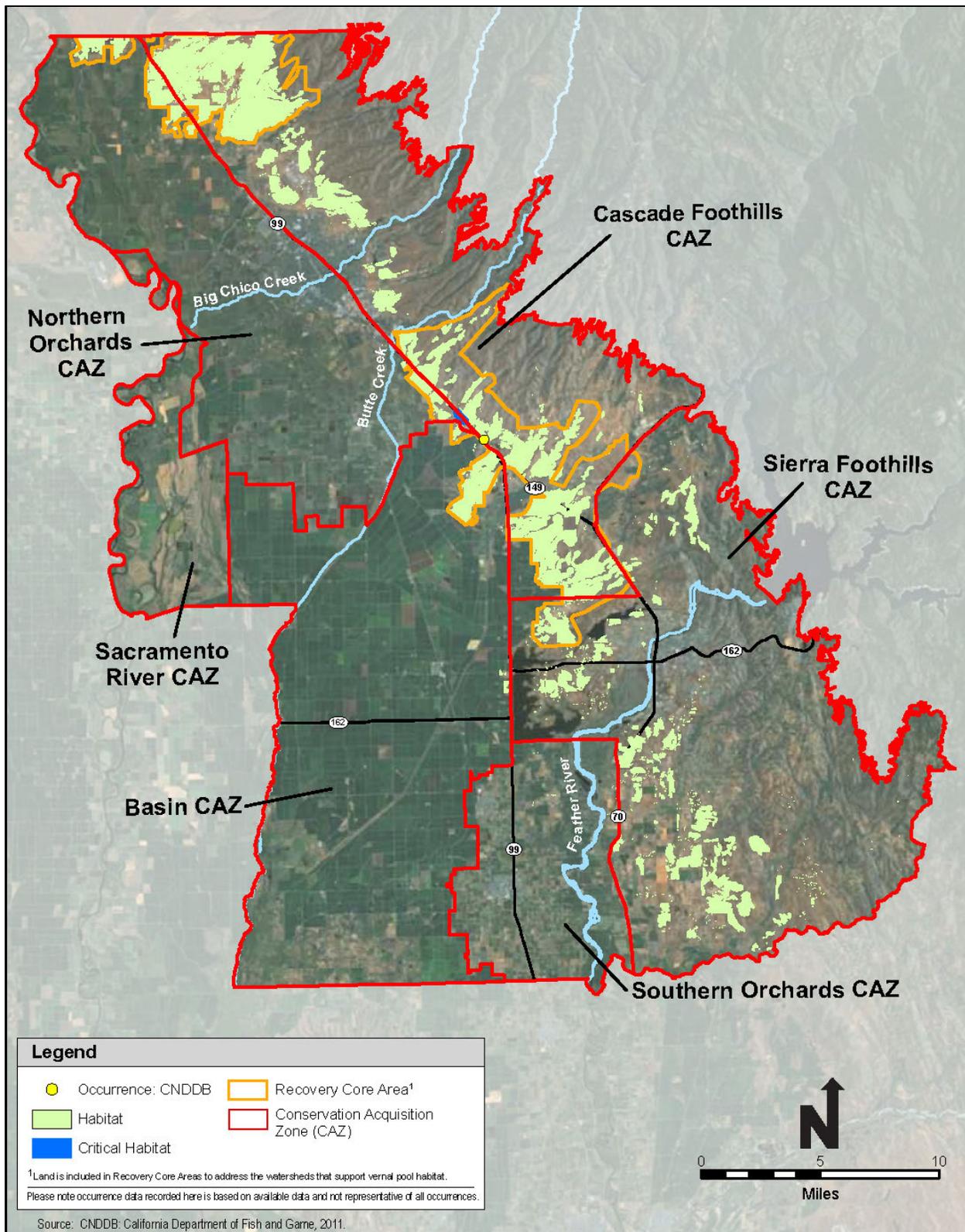


Figure A.32-1. Hairy Orcutt Grass Modeled Habitat and Recorded Occurrences

Common associates of hairy Orcutt grass throughout its range include coyote thistle (*Eryngium* species) and popcorn flower (*Plagiobothrys stipitatus*), and this species often occurs with other rare vernal pool plant species, including Hoover's spurge and Greene's tuctoria (*Tuctoria greenei*) in the Sacramento Valley (USFWS 2005). In the one location where hairy Orcutt grass was reported in Butte County, it occurred with Hoover's spurge and Greene's tuctoria.

Other native plant species found growing with hairy Orcutt grass at the Butte County location included annual hair grass (*Deschamsia danthonioides*), adobe allocarya (*Plagiobothrys acanthocarpus*), navarretia (*Navarretia leucocephala*), Tehama navarretia (*Navarretia heteranda*), dowingia (*Dowlingia* spp.), and clover (*Trifolium variegatum*). Nonnative plants included prickly grass (*Crypsis* spp.), common unicorn plant (*Proboscidea louisianica*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) (CNDDDB 2006).

A.32.4 Life History

Hairy Orcutt grass blooms from May to September. The life history characteristics of hairy Orcutt grass are common to all members of the species within this group (tribe Orcuttieae). They are all annuals and wind-pollinated, although the pollen probably is not carried long distances between populations. Local seed dispersal is by water, which breaks up the inflorescences. It is speculated that long distance dispersal is unlikely, but seed may have historically been carried by waterfowl or other animals that visit the vernal pools. The seeds can remain dormant for an undetermined length of time (at least 3 to 4 years) and germinate underwater after they have been immersed for prolonged periods (USFWS 2005).

A.32.5 Threats

The CNPS states this species is seriously threatened by agriculture, urbanization, overgrazing, nonnative species, and trampling (CNPS 2006). The 11 extirpated or presumed extirpated populations in Madera, Merced, Stanislaus, and Tehama counties were lost due to agricultural land conversion, urbanization, and intensive cattle grazing (62 FR 14338). Small population size has been identified as a specific problem for hairy Orcutt grass. Six of the extant populations of this species had fewer than 100 plants when reported (CNDDDB 2006). Small populations are threatened with extirpation from random events, such as extreme weather and lack of genetic diversity. Small, less genetically diverse populations are less likely to adapt and survive environmental changes, even relatively minor events (USFWS 2005). The size of the population in Butte County is unknown (CNDDDB 2006).

Threats to vernal pool habitat and species in general, including hairy Orcutt grass, are described in the Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon (Recovery Plan), approved by the USFWS in December 2005 (USFWS 2005). These threats are as follows:

- Habitat loss and fragmentation generally resulting from urbanization, agricultural conversion, mining, and also occurring as a result of habitat alteration and degradation

due to changes to natural hydrology, invasive species, incompatible grazing regimes (including insufficient grazing for prolonged periods), infrastructure projects (such as roads and utility projects), recreational activities (such as off-highway vehicles and hiking), erosion, climatic and environmental change, and contamination.

- Conversion of land use, such as from grasslands or pastures, to more intensive agricultural uses, such as croplands or from one crop type to another, has contributed and continues to contribute to the decline of vernal pools in general and is identified as one of the major threats to the remaining populations of hairy Orcutt grass (USFWS 2005). The one occurrence of hairy Orcutt grass in Butte County is located on private property that is used for grazing (CNDDDB 2006). Hairy Orcutt grass can tolerate some grazing, but ecologically appropriate livestock numbers, timing, and intensity are unknown (DFG 2000).
- Competition from invasive species. In addition, native plant species that occupy the same microhabitat can also compete with vernal pool plants such as hairy Orcutt grass. Native competitors include coyote thistle (*Eryngium* species.), alkali mallow (*Malvella leprosa*), lippia (*Phylanodiflora* species), hard-stemmed tule (*Scirpus acutus* var. *occidentalis*), alkali bulrush (*Scirpus maritimus*), and cocklebur (*Xanthium strumarium*). Nonnative competitors include bindweed (*Convolvulus arvensis*) and swamp grass (*Crypsis schoenoides*). Competition from invasive plant species is identified as an increasing problem throughout the range of hairy Orcutt grass. Increasing dominance by competitors may also contribute to changes in hydrology and livestock grazing practices (USFWS 2005).
- Changes in hydrology that result in a change in the timing, frequency, and duration of inundation in vernal pools, creating conditions that render existing vernal pools unsuitable for vernal pool species. Several of the reported occurrences of this species were extirpated due to changes in hydrology from agricultural practices (CNDDDB 2006).
- Several other threats to vernal pools and their associate species in general were identified in the Recovery Plan. Water contamination can occur from use of herbicides, fertilizers, and other chemicals commonly used in urban and agricultural settings. Fertilizers may also contribute to the growth of invasive plants (USFWS 2005). Increased human presence may lead to overuse, trampling (by walking or off-road vehicles), vandalism, and dumping (62 FR 14338). Habitat alteration may also occur due to large-scale climate and environmental changes, such as global warming, that lead to changes in the precipitation pattern and atmospheric conditions (USFWS 2005).

A.32.6 Relevant Conservation Efforts

Five extant populations of hairy Orcutt grass are protected at The Nature Conservancy's Vina Plains Preserve in Tehama County and an additional six populations are in the Sacramento National Wildlife Refuge in Glenn County. The introduced population is within a Department of Transportation mitigation site in Madera County on U.S. Bureau of Reclamation property. The remaining extant populations are on private property, or the owner/manager is unknown, including the location in Butte County (CNDDDB 2006).

A.32.7 Species Habitat Suitability Model

A.32.7.1 Habitat

Hairy Orcutt grass habitat includes the following BRCP mapped land cover types:

- Vernal pool;
- Altered vernal pool; and
- Grassland with vernal swale complex.

Vernal pools that may support hairy Orcutt grass habitat may also occur as inclusions in mapped grassland, blue oak savanna, ranchettes–open, and disturbed ground land cover types. These inclusions were not mapped because they did not meet the mapping criteria for vernal pool, altered vernal pool, and grassland with vernal swale complex land cover types.

A.32.7.2 Assumptions

Hairy Orcutt grass is typically found on high or low stream terraces and alluvial fans in Northern Basalt Flow, Northern Claypan, and Northern Hardpan vernal pools within annual grasslands (Sawyer and Keeler Wolf 1995). It occurs in valley and foothill grassland on volcanic mudflow or clay substrate (CNDDDB 2006).

Given these habitat preferences, suitable habitat for the Hairy Orcutt grass is defined as any mapped vernal pool or altered vernal pool within the Plan Area. Additionally, the grassland with vernal swale complex land cover type is included in the model. This type may include areas that pool in a given year but that were not captured as individual vernal pools in the GIC/SAIC vernal pool mapping effort. Because vernal elements were identified based on photo interpretation of aerial photography from winter 2002 (an average rainfall year), an above average rainfall year may result in more areas of ponded water within the Plan Area.

A.32.8 Recovery Plan Goals

A general statement for recovery of hairy Orcutt grass is presented in the Recovery Plan: to ensure protection of the full geographic, genetic and ecological extent of this species and to improve the circumstances that caused it to be listed in the first place. Accomplishment of this goal would be achieved by protecting 90 percent of known occurrences throughout its range, including 95 percent of suitable habitat in the Oroville, Vina Plains, Sacramento National Wildlife Refuge, Madera, and Merced Core Areas and 85 percent of suitable habitat in the Turlock Core Area. In addition, seed would be banked from at least one population in each core area. Historical locations would be investigated and the species would be reintroduced where it has been extirpated.

A.32.9 References

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