

California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

BARREN

Monica D. Parisi

Vegetation

Structure and Composition-- Barren habitat is defined by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or shrub species is defined this way. Structure and composition of the substrate is largely determined by the region of the state and surrounding environment. In the marine and estuarine environment, barren habitat includes rocky outcroppings in the intertidal and subtidal zones, open sandy beaches and mudflats. Along rivers, it includes vertical river banks and canyon walls. Desert habitats may be defined as barren when vegetation is widely spaced. Alpine barren habitat includes exposed parent rock, glacial moraines, talus slopes and any surface permanently covered with snow or ice. Urban settings covered in pavement and buildings may be classified as barren as long as vegetation, including non-native landscaping, does not reach the % cover thresholds for vegetated habitats.

Other Classifications-- Most vegetation classification systems do not include a barren category. Sparsely vegetated substrate is assumed to be a component of the surrounding vegetation type. CALVEG (1981) defines a Barren and a Snow/Ice type. UNESCO (1996) includes a Barren type.

Habitat Stages

No stages are defined for this type. Many barren types will remain so during the time frame of consideration for management actions. An example is exposed rock in alpine settings, where the combined actions of freezing and thawing, wind and water erosion, and chemical breakdown caused by colonizing lichens eventually creates enough organic material to support higher plants. However, the time period for primary succession to a vegetated habitat type may be thousands of years.

Seasonal changes and management regimes may render some habitats barren for short periods of time. Alpine meadows may be seasonally covered with snow or ice. Disked or plowed agricultural fields will be barren for a few months until resowed. In an urban setting, newly-graded suburban sites converted from other habitat types may be barren for up to two years -- usually until trees, shrubs, lawns or other ground covers have been planted.

Biological Setting

Habitat-- Barren habitat may be found in juxtaposition with many different habitats, depending on the region of the state. Along the coast, barren mudflats are found with marine and estuarine habitats and fresh and saline emergent wetlands. Sandy beaches and sand dunes with less than 2% vegetative cover are themselves classified as barren. In the Central Valley, bluffs above river corridors covered with valley oak woodland, valley foothill-riparian or annual grassland habitat may drop sharply into steep barren riverbanks of loose soils. In an alpine setting, exposed parent rock is associated with subalpine conifer, red fir, lodgepole pine, pinyon-juniper, aspen, montane riparian, and montane chaparral habitats and, above timberline, with alpine dwarf shrub and wet meadow habitats. In the desert regions, palm oasis, Joshua tree, desert wash, desert succulent shrub, desert scrub and alkali desert scrub may all give way to a barren classification if conditions become extreme enough.

Wildlife Considerations-- Where there is little or no vegetation, structure of the non-vegetated substrate becomes a critical component of the habitat. Cormorants and many hawks and falcons nest on rock ledges. Plovers, stilts, avocets, several gulls and terns, nighthawks and poorwills rely on open ground covered with sand or gravel for constructing small scrape nests. Bank swallows use barren vertical cliffs of friable soils along river corridors to dig holes for nesting and cover. Rocky river canyon walls above open water are preferred foraging habitat for many bats. In the desert, open sandy soil is critical as burrowing and egg-laying substrate for horned lizards and fringe-toed lizards. Among alpine habitats, ground-dwelling mammals such as pika and marmots rely on talus slopes for cover.

Physical Setting

The physical settings for permanently barren habitat represent extreme environments for vegetation. An extremely hot or cold climate, a near-vertical slope, an impermeable substrate, constant disturbance by either human or natural forces, or a soil either lacking in organic matter or excessively saline can each contribute to a habitat being inhospitable to plants.

Distribution

Barren habitat occurs throughout the state at every elevation.

Literature Cited

- Parker, I. and W.J. Maytas. 1981. CALVEG: A classification of California vegetation. USDA For. Serv. Reg. Ecol. Group. San Francisco, CA.
- UNESCO: United Nations Educational and Scientific Organization 1996. International classification and mapping of vegetation.