

Walking Tour of UCSB Campus Lagoon Restoration Projects



UCSB's Cheadle Center for Biodiversity and Ecological Restoration (CCBER) manages and restores campus natural areas. The center offers internships, hosts seminars, and houses the university's herbarium and vertebrate collections.



① **Shorebird Habitat.** These small islands and shallow-water zones were created along the northern edge of Campus Lagoon to mitigate the nearby UCen expansion project's infringement on the lagoon's 100-foot buffer. They are a successful example of how valuable shorebird habitat can be created adjacent to high-use areas of campus. The most common birds seen here include egrets, long-billed dowitchers, black-necked stilts, great blue herons, and black-crowned night herons.

② **Lagoon Park and Enhanced Wetland.** The slope from here south to the ocean is part of Lagoon Park. This area was restored beginning in 1999 to coastal sage scrub, oak woodland, and vernal wetlands in conjunction with the Manzanita Village Restoration Project. It provides a diversity of floral, fruit, and seed resources for a variety of insects and birds. It is one of the most productive sites for bird life and represents the successful conversion of a degraded area to a viable, self-sustaining habitat.



③ **Manzanita Village Restoration Project.** Funded by UCSB Housing and Residential Services, restoration of this site began in August 2002 and serves as mitigation for the adjacent dorms. The project comprises six acres of restored native grassland, vernal pools, and vernal marshes—all threatened habitat types—and 1,300 feet of created bioswales. More than 80,000 native plants grown from local genotypes at CCBER's nursery and greenhouse were planted here.

④ **Vernal Marsh.** This is the largest vernal marsh in the Manzanita Village Restoration Site. Compared to vernal pools, vernal marshes are deeper and have longer durations of flooding. They support large emergent vegetation such as California bulrush (*Schoenoplectus californicus*) and common three-square (*Schoenoplectus pungens*) and provide nesting habitat for red-winged blackbirds, common yellowthroats, song sparrows, mallards, and other birds.

⑤ **Bioswales.** Approximately 40% of the stormwater runoff from Manzanita Village flows through some section of bioswale. These bioswales convey stormwater and irrigation runoff in place of traditional underground pipe systems. In addition, the bioswales serve to reduce nutrient loading to the lagoon, create habitat for wetland plant and animal species, and aesthetically soften the boundary between urban and natural areas.

⑥ **Vernal Pools.** Look west. These three vernal pools were seeded and planted with locally collected plant material. Vernal pools are seasonal wetlands that occur in depressions where an underlying impermeable layer becomes saturated during winter rains. The pools pond through spring and are desiccated through summer and early fall. A unique suite of plant and animal species adapted to this cyclical process of wetting and drying is found in these pools. Water depth, vegetation cover, and invertebrate populations are monitored regularly.

⑦ **Terminal Bioswale (right) and Constructed Wetland (left).** This innovative biofiltration system combines cobble-lined drains, bioswales, and two shallow marshes strung together to drain and treat approximately 75% of the Manzanita Village project site. This system demonstrates how excess water and nutrients considered to be waste products of urbanization can be turned into a resource and used to enhance the environment. More than 27 species of native wetland plants are growing in the biofiltration system.

⑧ **West Depression.** This site was restored in 2006. Iceplant was successfully solarized (cooked under black plastic) and native plants were seeded and planted in the winter. The site received a large pulse of beach wrack during the December 21st, 2005 storm (“Big Wednesday”). Prior to this event, people had not seen waves wash into the lagoon in over 20 years.

Follow the road up to Lagoon Island and take the trail to the left.

⑨ **Lagoon Island.** Lagoon Island is now a matrix of native coastal sage scrub habitat replacing weedy annual grasses such as ripgut brome (*Bromus diandrus*) through the use of prescribed burns. After several years of experimentation, a strategy of burning with added fuel loads was adopted because of its ability to heat the soil to a temperature sufficient to eliminate weeds from the seed bank. These burns provide a weed-free window of opportunity for restoration. Here you will see seacliff buckwheat (*Eriogonum parvifolium*) and bush sunflower (*Encelia californica*) among other native shrubs.



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⑩ **Lagoon Island Trail.** Nearly 1,000 oaks were planted as acorns on the north-facing slopes in late 2005. Blue tubes, sunk 18 inches into the ground, protected newly sprouted oaks from gophers and squirrels. Oaks now range from 2 to 15 feet in height, depending on acorns and location. Historically, there were many oaks on campus as well as on other coastal bluffs and north-facing slopes such as More Mesa and the Douglas Family Preserve. Records indicate that many oaks on campus were cut down in the late 1800s to render whale blubber, support nearby asphaltum mines, and make way for grazing and dry farming.

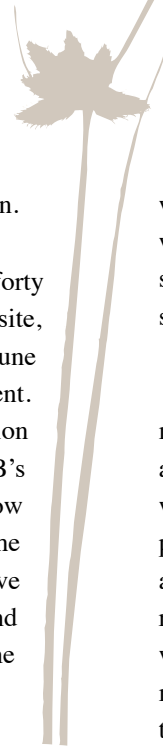
⑪ **Labyrinth.** This labyrinth trail was installed in 2011 and offers an alternative way to experience and appreciate UCSB’s natural coastal resources. Visitors are invited to restore body, mind, and spirit by walking this timeless, universal cultural pattern.

⑫ **East Depression.** For forty years South African iceplant dominated this site, effectively inhibiting natural sand transport, dune formation, and native species establishment. During 2000-2001, students in a restoration ecology class, under the direction of UCSB’s Museum of Systematics and Ecology (now CCBER), wrote a restoration plan for the site. They removed iceplant, restored native dune vegetation, and conducted research and monitoring. The springtime flush of dune flowers and pollinators is spectacular here.

⑬ **Campus Point.** This coastal access stairway and adjacent coastal scrub restoration were installed in 2012. Previously, there had been multiple informal trails leading up the bluff that were increasing the already high rate of erosion in this area. Further expansion of coastal sage scrub restoration is slated for the bluffs and mesa top where iceplant currently dominates. These efforts will help reduce further erosion of topsoil and greatly improve the habitat for wildlife.

⑭ **Lagoon Hydrology.** Seawater pumped from 150 feet offshore and through marine research laboratories enters the eastern end of the lagoon at a rate of about 800 gallons per minute. Eight storm drains contribute urban runoff water to the lagoon during rainy months, causing annual fluctuations in salinity. A weir, which is a small overflow drain, at the western end of the lagoon ensures a steady 9-foot maximum water depth and a lake-like appearance. However, this static water level, with no tidal flow, potentially limits shorebird feeding sites and habitat diversity.

⑮ **San Nicolas Wetland.** The freshwater marsh on the right and surrounding habitat were created and restored in 2010. Prior to restoration, this entire site was dominated by one invasive plant species that provided poor habitat value to wildlife. The site is now covered by a diverse array of native vegetation providing abundant resources for wildlife. The freshwater marsh, which holds water perennially, provides an opportunity for runoff from more than 50 acres of campus to be filtered before entering the lagoon. This freshwater-fed wetland is a unique and critical resource in an area that is dominated by saline-influenced hydrology.



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