

Appendix 12: The Channel Islands

of the *Wetlands on the Edge: The Future of Southern California's Wetlands*

Regional Strategy 2018



Written by Shawn Kelly, Earth Island Institute

The Channel Islands are a chain of eight islands located off the coast of Southern California along the Santa Barbara Channel. The Islands are a unique feature of Southern California and are home to many endemic, rare and endangered species. Several of the Channel Islands have wetlands, and this section provides a sense of those resources. A future initiative for the WRP is to map and quantify the wetlands across the Islands, and create quantitative objectives to help guide their restoration and management (see Goal 4, page 109).

Five of the Islands (San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara) are part of Channel Islands National Park, and the waters surrounding these islands make up Channel Islands National Marine Sanctuary. Two islands (San Nicolas and San Clemente) are owned by the U.S. Navy. Eighty-eight percent of Santa Catalina Island is owned by the Catalina Island Conservancy. The Channel Islands (Islands) and the surrounding waters house a diverse ecosystem with many endemic species and subspecies. The Islands have a combined land area that is approximately half the size of Orange County.

Wetland resources on the Islands are unique in that they are protected from many of the threats facing wetland resources on the mainland, namely urbanization and its associated impacts, as well as new non-native species invasions. Moreover, the Islands are the only offshore locations for migratory shore and seabirds in the region. Protection of wetlands on the Channel Islands should be a high priority to support the diversity of wetland types, functions and habitats in the region.



Figure 1. Map of the Channel Islands.

Santa Catalina Island

There is a strong indication that wetlands on Santa Catalina Island (Catalina Island or Catalina) provide high value habitat and serve as refuges for insular ecosystems. These remaining wetland refuges are especially important in the context of loss and impacts to wetlands due to the island's intensive ranching history and exotic species invasion, which introduced bison and deer to the island. Catalina Island's wetlands, however, have not been thoroughly studied or explicitly documented.

The most accurate indicator of the extent and type of wetland resources that occur on Catalina Island may be a 2005 vegetation map (Knapp 2005). Wetland vegetation types recorded include coastal marsh, vernal ponds and reservoirs, southern riparian woodland, riparian herbaceous and bare streambed communities. These features total approximately 283 acres, although it is likely that many smaller wetland features were not detected during this vegetation mapping. There are at least 35 documented vernal ponds and reservoirs ranging in size from 0.05 to 43 acres, which total approximately 80 acres. Most of the vernal pools are man-made features that were created as stock ponds or stormwater catchments. One particularly notable *natural* freshwater wetland exists on Catalina, known as Echo Lake, which dates to the late Pleistocene; research at Echo Lake is helping to elucidate paleolithic environments of the California Islands (Ejarque and Anderson 2017).

Wetland resources are scarce on Catalina's semi-arid interior, and many species obligatorily utilize these resources. Among the highest concentrations of rare or scarce plant species are associated with vernal ponds and reservoirs or riparian communities. These riparian and wetland communities, while scarce, are often the most highly invaded by plants species such as fennel (*Foeniculum vulgare*), harding grass (*Phalaris aquatica*), flax leaved broom (*Genista linifolia*) and invasive vertebrates such as Bullfrog (*Rana catesbeiana*).

Anecdotal and qualitative analysis of vegetation change on Catalina Island has shown that wetland or riparian vegetation features are among the most rapidly recolonizing vegetation types following cessation of agriculture and the removal of feral pigs and goats, which occurred between 1990 - 2003.

Santa Cruz Island

Wetlands have been delineated within the lower Scorpion Canyon, Smugglers Cove and Prisoners Harbor drainages on Santa Cruz Island (Noon 2003). The wetland characteristics are well defined with several types of wetland conditions in the cove areas that are all contiguous to one another in each cove area. One wetland type is vegetated and referred to as estuarine or palustrine (emergent, forested, or scrub/shrub wetland); the other wetland type is non-vegetated stream channel referred to as riverine, or non-vegetated intertidal beaches and gravel bars. The top of the bank along the stream channel is the edge of the non-vegetated riverine wetland type. The stream channel may have some small areas of hydrophytic plants.

The largest freshwater coastal wetland on the Channel Islands occurs at Prisoners Harbor. Once occupying 9 acres, then buried in the 1880s to make way for a ranching operation, Prisoners back barrier coastal wetland sits at the mouth of a 13 square mile watershed draining to the sea through the Central Valley through Cañada del Puerto. The National Park Service and The Nature Conservancy restored the ecological and hydrologic function of a 3-acre portion of the wetland in 2011 by removing 10,000 cubic yards of fill and reconnecting the stream channel with its floodplain (Power et al. 2014, Power et al. *in review*). Restoration of the associated 1.76-mile stream corridor is ongoing with the planned removal of 70 acres of invasive eucalyptus trees. Thirty acres of eucalyptus have been cleared as of 2016.

Santa Rosa Island

Santa Rosa Island was impacted by introduced ungulates, ranching, and hunting operations (cattle, sheep, feral pigs, deer, and elk) for over 100 years prior to the establishment of the Channel Islands National Park (Park) in 1980. A rapid assessment in 1994 revealed that riparian corridors and coastal wetlands were disproportionately grazed by cattle negatively affecting hydrologic function and native vegetation (Wagner et al. 2004). In 1995 the Park was issued a Cleanup and Abatement Order by California's Central Coast Regional Water Quality Control Board resulting in the removal of cattle in 1998. Recovery of native riparian and wetland vegetation following removal of cattle was immediate (Wagner et al. 2004). Vegetation recovery continued to accelerate with the elimination of deer and elk in 2011.

A comprehensive survey of water resources on Santa Rosa Island was conducted at the driest time of year during a historic drought in 2014. The mapping effort revealed 182 miles of stream channel in 19 major basins and 7 lesser basins and 45 miles of surface water. San Augustin, Trancion, Arlington, Verde, and Water canyons had the greatest stream density (Power and Rudolph 2014; Power and Rudolph, *in review*). Ten watersheds around the island have permanent water at the ocean interface of their respective canyons (<http://arcg.is/1luOLZM>). Under the Cowardin Wetland Classification used by the Department of the Interior, stream channels such as those found on Santa Rosa Island are a type of riverine wetland. Significant tidal exchange occurs at the mouth of Quemada and Old Ranch canyons.

San Miguel Island

Water resources are very limited on San Miguel Island. A barrier beach is located on the north side of Cardwell Point, the eastern tip of the island, behind which a temporary lagoon forms. The presence of wetland vegetation and hydric soils requires further investigation.

Anacapa Island, Santa Barbara Island

No wetlands or permanent surface water are present on Anacapa and Santa Barbara islands.

San Nicolas Island: San Nicolas Island has a dozen small freshwater perennial seeps or drips that are present on the western half of the island, with habitats ranging from bulrush (*Scirpus americanus* and *Typha sp.*) patches at higher elevations along Tule Creek (not a true creek but rather a series of swales and seeps), to hydric bryophytes (plants that don't have seeds or vascular systems) on sea cliff seeps, to green algae clinging to seeps that are inundated at high tide. An ephemeral stream is found in Twin Rivers canyon, whose mouth is on the south central coastline; over an acre of wetland habitat dominated by saltgrass (*Distichlis spicata*) and other wetland-associated species is at the stream's mouth. In wet years Northern elephant seal pups swim in the brackish water of Twin Rivers Canyon stream mouth. Lastly, on the Eastern side of the island there is a persistent small patch of *Salicornia*, *Frankenia*, and *Distichlis* salt marsh at the base of the cliff at Sand Spit beach, which is periodically inundated by high tides and storm swell.

San Clemente Island

On San Clemente, marshes occupy less than 0.1% of the island (approximately 19 acres), based on mapping from 1977 aerial imagery. A wetland survey completed in 2002 (Bitterroot Restoration 2002) delineated 0.64 acres of salt marsh on the island. Two small coastal salt marshes occur near the mouths of Horse Beach and Chenetti Canyons. Alkali marshes, which occupy less than 1% of the island area, occur behind rock berms along the western shore. No perennial streams exist on the island, but intermittent streams are present during the rainy season as water moves through the numerous steep canyons before reaching the ocean. The island has unfavorable conditions for permanent springs or aquifers because it is largely composed of uplifted impermeable volcanics.