Environment of the Salton Sea

Salton Sea Wetlands

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Abstract

Wetlands constitute vital ecosystems supporting diverse flora and fauna. The Salton Sea's wetlands, a major stop for North American migratory birds, have faced ecological challenges due to increasing salinity and nutrient levels, resulting in significant wildlife mortality events. Wetland ecosystems play pivotal roles in the Salton Sea region, influencing hydrology, nutrient cycling, land stability, and wildlife conservation. Understanding the ecological and conservation significance of Salton Sea wetlands is imperative for informing management strategies aligned with policy goals and ensuring the preservation of these critical habitats.

Introduction

How does one define a wetland? Wetlands are areas where water covers soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year. Wetlands are generally divided into two categories: coastal/tidal wetlands or inland/non-tidal wetlands.

Wetlands are important features in the landscape that are among the most productive ecosystems in the world. An immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish, and mammals can all be a part of a wetland ecosystem. Climate, landscape shape, geology, movement and abundance of water help determine the plants and animals that inhabit each wetland.

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The Salton Sea's wetlands were critical for migratory and resident birds of North America. However, increasing salinity and nutrient overloads have caused ecological disasters, including major fish die-offs and bird diseases. Today, wetlands surrounding the northern and southern shorelines where the Whitewater, New, and Alamo rivers drain into the Sea are potential habitats supporting remnant populations still able to take advantage of the area. Heavy metal poisoning of wildlife is a concern for existing and planned wetland habitats, however. Water in agricultural drains regularly test at toxic levels.

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If this water is used to supplement water destined for wetland habitats, the accumulation of toxic metals along the food chain (bioaccumulation) could adversely impact the health of fish and birds, especially those higher up the food chain. Investigation of groundwater and geothermal water in the southern portion of the Salton Sea have been also found to contain high levels of arsenic and other heavy metals that may impact wildlife.

Wetland ecosystems, at the interface between the Salton Sea and upland desert or agricultural lands, are key ecosystem components that interact strongly with the Sea. Riparian (that is, land along a river or stream) wetlands can have a role in the hydrologic dynamics, with greatly elevated evaporation rates, and can be a water loss pathway that depends on both lake water and plant dynamics. At the same time, wetlands can influence nutrient dynamics through either plant uptake or biogeochemical transformation. Compared to native deserts or retreating shoreline, wetlands can stabilize the land surface and reduce dust emissions. Wetlands associated with the Salton Sea are also connected to key species conservation concerns. These wetlands are a key stop for migrating bird species spanning much of the western United States, Canada, and Mexico. They are also associated with aquatic habitat for the desert pupfish.

Saving the Salton Sea Wetlands

More information about ecosystem and conservation roles of Salton Sea wetlands are needed to assess and manage these ecosystems to achieve policy goals. The 2018 Salton Sea Management Plan describes building Species Conservation Habitats: diked ponds with water pumped from agricultural drains, groundwater, and the salty Salton Sea open waters. The ponds are projected to allow for the growth of endangered desert pupfish, tilapia, as well as important invertebrates for feeding wildlife. There is no guarantee that these expensive. engineered habitats will prove sustainable in the short term or long term, however. A more cost-effective strategy for developing bird habitat may be to cultivate the new wetlands that are emerging at drain outlets as the Sea recedes. According to U.S. Fish and Wildlife biologist T. Anderson, these vegetated areas are “doing a fine job suppressing dust and producing entirely new thriving ecosystems at no cost to taxpayers” and can be improved and sustained with minimal modification or maintenance.