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The Salinity transition zone between the southern Everglades and Florida Bay: system functioning and implications for coastal zone management

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ABSTRACT

Like many ecosystems around the world, the Florida Everglades is threatened by global change. One of the world's largest wetlands, it was described at one time as a vast, free-flowing "river of grass" extending from the Kissimmee chain of lakes to the Gulf of Mexico and Florida Bay (Douglas 1988). These subtropical wetlands support a rich diversity of plants, fish, and animals, including prolific populations of alligators, deer, panthers, manatees, wading and migratory birds, and mosquitoes. The historical Everglades encompassed a broad area of "ridge and slough" landscape (freshwater sloughs with periphyton mats, sawgrass ridges, and tree islands), marl-forming prairies on adjacent higher ground, and to the south, mangrove forests and saline tidal flats of Florida Bay. Additionally, the very health and nature of the Everglades is closely tied to the volume, periodicity, and distribution of water entering the wetlands from Lake Okeechobee overflow. Over the past 100 years, however, the hydrology, chemistry, and biology of this ecosystem were altered dramatically to accommodate rapidly growing urban populations and industrial agriculture in south Florida. Two major effects on the ecosystem include large-scale diversions of fresh water from the Everglades to the Atlantic Ocean and Gulf of Mexico and the conversion of large areas of wetlands for agricultural and urban uses. Now this dynamic relationship between the upstream freshwater lake system and the downstream "river of grass" is fundamentally altered by encroaching anthropogenic pressures.

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