

Everglades Project - Ridge and Slough Historic Pattern Changes

Background:

Early surveys and historic accounts described the Everglades as patterned with long sawgrass ridges and interconnected open sloughs oriented parallel to predominant flow direction. The patterns extended throughout most of the Everglades. As development drove demands to control floods and provide water for agriculture and urban growth, the Everglades ecosystem was either developed or subdivided and drained by canals, levees, and roads into compartments and impoundments. Hydrologic changes degraded most of the patterning in this peatland.

Early aerial photos and historical references provide baselines against which to compare the current and pre-drainage landscapes. Impoundment and drainage histories vary throughout the remaining Everglades. Drainage caused ridge vegetation to expand into sloughs, woody species to invade, microtopography to degrade, and increases in fire frequency and intensity. Subsequent ponding reversed some of these effects, but did not restore patterning.

Using a series of historic aerial photographs, we tracked pattern changes since 1940 in 4 km by 6 km quadrants in the remaining Everglades. Patterns were digitized to measure temporal changes in percent cover, pattern orientation, patch size, length-width ratios, and perimeter-area ratios from 1940 through 2004. Patterns were compared across time and space to determine the extent of pattern degradation by water management practices for each quadrant. These analyses reveal a complex history of pattern changes suggesting that the Everglades were already strongly impacted by drainage prior to 1940, and very few areas remain that appear relatively unchanged. Knowledge gained from these histories will help guide restoration efforts in the Everglades.