

The Effects of a Smaller Everglades: Less Water, Fewer Habitats

From: [FICUS Network - USF University of South Florida](#)

Including the Everglades itself, the system's original watershed was more than 8,100 square miles. The remaining marsh now comprises about 2,300 square miles-of which almost three-fifths is impounded in the Water Conservation Areas. Two-thirds of the original Everglades now subsists on the rain that falls on one-third of the original watershed. On an areal basis, the current Everglades has about half the water of the original. Everglades National Park makes up less than one-fifth of the historic Everglades.

These profound changes have reduced the availability of water and altered the Everglades hydroperiod. Historically, water in the Everglades was generally deeper for a longer period. In the remnant Everglades, however, the slow, dry-season recession of a much larger quantity of flowing water no longer takes place. Instead, impounded pools that accumulated during the wet season are rapidly drawn down.

Not only has most habitat vanished as a result of these massive changes, but less water is available for the remaining wildlife. Fourteen animal species in the Everglades are now endangered. Many others are threatened or, while not formally listed, are declining.

Scientists use wading birds as a measure of a wetland ecosystem's environmental health. For every bird you now see in the Everglades, in the early 1900s you would have seen at least ten. In other words, at least 90 percent have vanished. A drought between 1988 and 1991 exacerbated the damage to wading birds and water animals by destroying their food base and also increased the competition among human and wildlife needs. By 1989 only 5,000 wading-bird nests and 15 major colonies were counted, a very low number. In 1990, the number of nests dropped to about 1,000.

While some birds such as hawks, green herons, and anhingas are less sensitive to drought than other species, much ecologically specialized wildlife has died or been forced out of the region. In Everglades National Park, the alligator population has dropped from 50,000 to 10,000 in the last two years. Everglade or snail kites (of which fewer than 500 are left) and wood storks are now seen in Central Florida because their primary Everglades habitat is gone. Since the 1960s nesting wood storks have dropped 80 percent in the Everglades. Some scientists believe the bird is an indicator species that heralds the decline of other wading birds. (See Chapter 5 on Florida's Wetland and Freshwater Ecosystems for more information on the wood stork.)

THE SPREAD OF EXOTIC PLANTS

Still more habitat destruction in the Everglades is being caused by invasions of exotic plants. Brazilian pepper is a major problem. Far worse is the melaleuca tree, particularly east of the levees enclosing the Water Conservation Areas. Introduced in an early attempt to dry out the region, the trees consume so much water that they can dry entire swamps. Unfortunately, by the time the importance of preserving the system's natural water flows and habitats was recognized, the melaleuca was firmly established. It deprives native plants of habitat because it grows so densely that no

other vegetation can compete, and wildlife can find little food. (See Chapter 8 on Exotic Species in Florida for more information on these and other exotic invasions.)

Everglades National Park is still largely melaleuca-free because a buffer zone has been established around the park, and young melaleucas are removed as they appear. The park, however, is under continual biological assault. At the moment, human vigilance and expensive maintenance are all that is keeping melaleuca from taking over the remnant Everglades.

ALTERED WATER CHEMISTRY

The Everglades is a highly oligotrophic system. That is, in their natural state, its native communities are in balance with the very low nutrient supplies provided by unpolluted rainfall. In the natural Everglades, the rate of plant growth is probably limited by phosphorus availability. Nutrients such as nitrogen and phosphorus added by human activities cause profound imbalances that result in eutrophication, a surfeit of organic matter that accelerates a water body's aging.

Where nutrient-rich agricultural drainage water is discharged from the Everglades Agricultural Area to the Everglades, the characteristic periphyton mats of algae and microorganisms disappear, and blue-green algae appear in their place. Dense monocultures of cattails force out native plant communities and take over marsh, wet prairie, and slough, rapidly closing off open places where birds once fed. In the Loxahatchee National Wildlife Refuge, which occupies Water Conservation Area 1, 6,000 acres of cattails expanded to 20,000 acres between 1978 and 1990, an area so large it can be seen from space.

Because of the plants' rapid growth rate, detritus forms an anaerobic ooze under the cattails. Dissolved oxygen in the water is nearly zero. Other than air-breathing gambusia, no fish can survive in the water.

When the Everglades Agricultural Area was drained, oxygen entered the soil, and microorganisms then completed the process of consuming it. The soil continues to oxidize, turning to a fine dust. As a result, in 60 years the soil surface of the EAA has dropped about five feet. The microbes also excrete phosphorus-which then drains off and eventually enters the Everglades. According to a recent estimate, as many as 260 metric tons of phosphorus are released from the EAA's farms each year.

Not much is known about how rapidly the effects of phosphorus contamination are spreading in the remnant Everglades. Almost 50 square miles have so far been affected. Ordinarily, vegetation forms organic soil that buries phosphorus. Where nutrient supplies are so great that other factors limit plant growth and phosphorus storage, though, the phosphorus is passed on, and the process begins again in new territory. No one knows how long the contamination will continue spreading, but it could eventually affect the entire system.

Owners of EAA lands have raised doubts about the seriousness of the contamination. Elsewhere, widespread agreement exists. The few individuals who dispute the nature, extent, and significance of Everglades degradation appear to be employed, directly or indirectly, by agribusiness, the major pollution source.

