WATER

Linking the Entire Southeast Florida Ecosystem

Water is the basis of all life on Earth. Good water quality is necessary so that we can safely drink, swim, and fish. This rule applies to both fresh and salt water, since all water on land eventually flows into the ocean.

Rain falls on land where it hydrates soils, seeps into the ground, and recharges Florida's aquifers – our source of drinking water. It flows through canals, streams, and rivers, eventually entering the ocean through one of nine coastal inlets in southeast Florida. Water is the main link between freshwater wetlands, such as marshes and cypress swamps, coastal habitats, such as mangrove forests and seagrass beds where juvenile fish and crustaceans live and grow, and offshore coral reefs.

The southeast Florida coral reef ecosystem depends on healthy connections between all of these habitats. As water flows over land, it carries organic matter, providing food and shelter for aquatic life; however, this water also carries pollutants, such as excess nutrients, sediments, heavy metals, pharmaceuticals, and pesticides, which degrade water quality and impact all of the connected ecosystems. These are collectively referred to as land-based sources of pollution.

Algae overgrows a coral reef near a partially treated wastewater outfall (upper); diver and one of southeast Florida's five partially treated wastewater outfalls (lower).

Photo: Steve Spring-Reef Rescue/Marine Photobank (upper); Brad Bedford (lower)

Sources of Pollution and Their Impact on Our Coral Reefs

Land-based sources of pollution are perceived to be one of the primary reasons for coral reef ecosystem decline in southeast Florida.[1] There are many sources of pollution that enter southeast Florida's coastal and marine waters. Naturally occurring processes like groundwater upwelling and tidal exchanges through our canals and inlets, or human-related sources such as partially treated wastewater outfalls, stormwater, and agricultural runoff, each add to the pollution load in coastal southeast Florida waters. Pollution challenges the health of corals, the reef ecosystem, and the people who rely on them.

Nutrients from wastewater and excessive use of fertilizers, pharmaceuticals, pesticides, as well as pathogens, bacteria and metal pollutants are entering the ocean.[2] In a study conducted along Broward County's coast, 25% of coral and 40% of sponge samples showed exposure to a common virus associated with human sewage.[3] Viruses and bacteria associated with human sewage can cause people to get sick. Additionally, a recent report concluded that pollution from wastewater outfall pipes might contribute to increased algae and bacteria that can smother corals.[4]

Coastal development can also directly impact water quality by churning up sediments and increasing turbidity in the water, which reduces the amount of sunlight that reaches light-dependent seagrass and corals.[3]

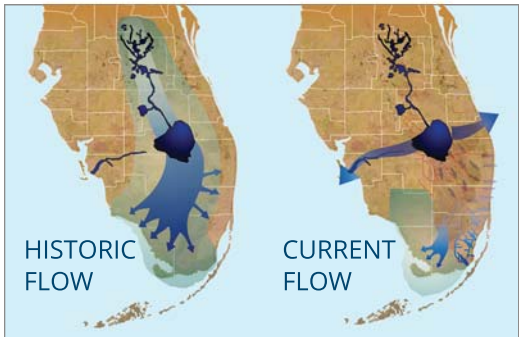
1981 NOAA air photograph, digitally enhanced, to better show turbidity plume emanating from Port Everglades.
Photo: RE Dodge, Ph.D.

Current Status of Our Water

Engineered land development has created changes in the natural water flow in southeast Florida and the Everglades. Canals were built to manage flooding of coastal urban areas and to redirect water to agricultural areas. Water flow was rerouted to coastal areas, transporting pollutants, stormwater runoff, and agricultural discharges to southeast Florida estuarine and marine habitats. As a result of these discharges, seagrass and oyster populations plummeted in the St. Lucie Estuary.[5]

Although land-based sources of pollution are perceived to be the main reason for coral reef decline, a recent region-wide water quality monitoring effort at 22 sites in southeast Florida has shown that over a two-year period water quality at our sites is generally good. The monitoring also showed that there are distinct seasonal differences in some of the water quality indicators measured, such as total phosphorus, which is due to differences in water patterns, precipitation, and land-based inputs between the wet and dry periods.[6] However, more water quality data is needed in order to understand this large and dynamic system and how these land-based sources of pollution may be impacting our reefs.

In the meantime, local, state, and federal agencies are working together to re-establish the original flow of water through the Everglades – specifically focusing on the quantity, quality, timing, and flow of discharges from Lake Okeechobee. This will allow for greater natural filtering of the water before it reaches our coastal and marine habitats.



Historic and current flow of the Kissimmee, Okeechobee, Everglades watershed.
Graphic: U.S. Army Corps of Engineers, Jacksonville District

What You Can Do

There are many ways you can help reduce water pollution including pumping out septic tanks or connecting to the sewer system, and reducing the use of fertilizers, fuel, pesticides, and chemicals. Properly dispose of hazardous waste, such as gasoline, paint, fluorescent light bulbs, batteries, and medication. Recycle and properly dispose of trash. Pick up and dispose of pet waste in a trash can. Use water conservatively and wisely – especially by not over-watering your lawn.

Effective management options to reduce water pollution do exist, and everyone has a role in the stewardship of Florida's estuarine and ocean resources. Help identify management actions to ensure a future of healthy coral reefs in Miami-Dade, Broward, Palm Beach, and Martin counties.

For more information and to provide your input on the future of southeast Florida's reefs, please visit: www.OurFloridaReefs.org

OUR FLORIDA REEFS
YOUR VOICE, OUR FUTURE

OUR FLORIDA REEFS *is a community planning process of the Southeast Florida Coral Reef Initiative (SEFCRI), a collaborative, local effort started in 2004 to understand and protect our coral reefs for the benefit of all. SEFCRI is coordinated by the Florida Department of Environmental Protection's Coral Reef Conservation Program.*

Southeast Florida Coral Reef Initiative

Department of Environmental Protection FLORIDA

NOAA CORAL REEF CONSERVATION PROGRAM

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1 Shivlani, M., and Villanueva, M. 2007. A Compilation and Comparison of Social Perceptions on Reef Conditions and Use in Southeast Florida. Florida Department of Environmental Protection. Miami, FL. 200 pp.
2 Trnka, M. et al. Land-based Sources of Pollution Local Action Strategy Combined Projects 1 & 2.
3 Futch, J.C. et al. 2011. Evaluation of Sewage Source and Fate on Southeast Florida Coastal Reefs. Marine Pollution Bulletin 62.
4 SEFCRI. 2006. SEFCRI Maritime Industry and Coastal Construction Impacts Workshop, Dania Beach, Florida, May 24-25.
5 St. Lucie River Estuary Protection Plan Update 2012
6 Boyer, J. et al. 2011. Annual Report of the Water Quality Monitoring Project for the Southeast Florida Coral Reef Initiative (SEFCRI). Miami, FL. 17 pp.