

Experimental canal restoration in the Florida Keys

Effects on plants, animals, & sediments



What's happening?

Many of the over 500 canals in the Florida Keys have signs of poor water quality: dark water, unfavorable odors, and a lack of plants and animals. Changes in waste water management will help reduce nutrient loading, but Monroe County is taking additional steps to clean up waterways. Ten canals were selected to receive technologies designed to improve water circulation and reduce the organic muck piled up on canal bottoms. Successful and cost-effective technologies can be used in further canal clean-up projects.



Left - Floating wrack in canal impairs water quality, Right - culvert dug to improve circulation, Page top - air curtain keeps out wrack

Monroe County Canals by the numbers

- 2014** Monitoring started
- 25** Canals monitored
- 8** Canals recieved technologies
- 375** Monitoring sites
- 827** Sediment samples analyzed
- 12** Presentations that included canal data
- 9** Students trained
- 4** Canals already showing improvements

How were canals studied?

Seagrasses, fish, and animals are what we want to see in our canals, but they're also reliable indicators of water quality. Starting 2014, The Seagrass Ecosystems Research Laboratory at Florida International University has been monitoring these indicators inside and out canals to understand the effectiveness of the demonstrated technologies.



Left - Sediment cores are collected, then analyzed in the lab, Right - Researchers identify and quantify seagrasses, algae, and animals

Did remediation work?

Some demonstrated technologies have already started showing improvements in water quality. Backfilling deep, stagnant canals with fresh sand improved conditions enough to bring back clearer water, macroalgae, seagrasses, and fish. In other canals, muck piled high enough to interfere with boat propellers was successfully removed through dredging. The experimental culvert installed in Geiger Key has already improved water clarity and fish abundance. These technologies induced rapid improvements but continued monitoring and management are critical to sustain them. Other technologies like air curtains, aerators, and some culverts will require longer periods before they can be proven effective. Improvements in wastewater management and continued restoration projects in impaired canals will help maintain outstanding waters in the Florida Keys. Read more in the [full report](#).

Left - Dark waters become clearer with plant life after backfilling, Middle - Muddy canal sediment compared to sandy backfill material, Right - Mangrove snappers near newly installed culvert where there were previously none

