

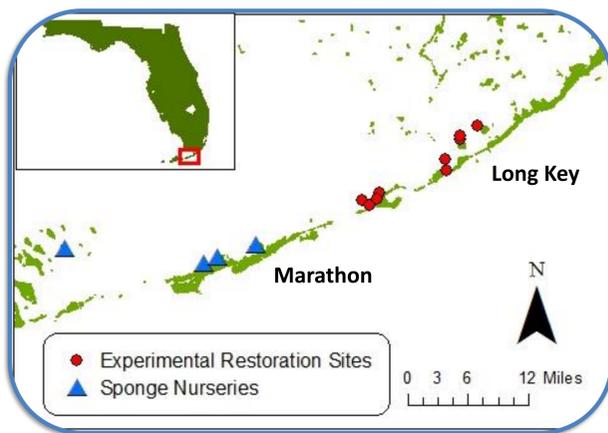
Summary

Where have all the sponges gone? Healthy sponge populations are an important part of the Florida Keys ecosystem. But a series of harmful cyanobacteria blooms have essentially eliminated once-thriving sponge communities affecting >500 km² of Florida Bay.

Raising stakeholder awareness about the ecosystem services sponges provide is critical, as they are the dominant filter feeders in Florida Bay & essential habitat for two economic drivers in the Florida Keys: spiny lobster & bonefish.

In 2016, a 3-year research-outreach partnership was initiated by researchers from Old Dominion University (ODU), the Florida Fish & Wildlife Conservation Commission (FWC) & project partners University of Florida IFAS Florida Sea Grant, The Nature Conservancy (TNC), Bonefish & Tarpon Trust (BTT) & the Florida Keys Environmental Fund to restore shallow-water sponges in Florida Bay.

This large-scale community sponge restoration program seeks to scale-up sponge restoration efforts by inviting volunteers to work side by side with scientists to restore >15,000 sponges in the Florida Keys. Sponge restoration efforts can be enhanced by trained volunteers and through public outreach to convey the importance and ecological value sponges provide to the nearshore environments in the Florida Keys.



Sponge nurseries & research sites, Marathon & Long Key, Florida. Map credit FWC

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Mahogany Youth, a Miami-based youth fishing club, learn to identify sponge species at the sponge nursery on Long Key. Photo credit Florida Sea Grant

Shallow-Water Sponges in the Florida Keys

Sponges are the dominant features of the nearshore shallow hard-bottom habitats of the Florida Keys. More than 60 sponge species provide ecosystem services by filtering the water of picoplankton & providing structural complexity & essential fish habitat for a diverse array of fish and invertebrates. Unfortunately, harmful cyanobacteria blooms in the early 1990s, 2007 & 2013 caused massive sponge die-offs, resulting in the decimation of sponge communities in Florida Bay. 22 of the 24 most common shallow-water sponge species experienced a >90% mortality rate. Recovery is protracted because sponge larval duration is short (6-8 hours) & the currents within Florida Bay do not transport larvae very far from the parent sponges. Sponges will regenerate from fragments. Using novel sponge restoration techniques, researchers & trained volunteers are restoring sponge communities by strategically placing sponges inside die-off areas to accelerate recolonization.



Vase sponges regenerating from fragments at a sponge nursery



Vase sponge cutting, 4 years later. Photo credits Dr. Mark Butler

Community Sponge Restoration Program Goals

- ❖ Restore >15,000 sponges (loggerhead, vase, brown branching, sheepswool, golfball, glove & yellow) to Florida Bay
- ❖ Develop & incorporate community participation & a coordinated public outreach & education component
- ❖ Test whether sponge nurseries are an efficient method for large-scale sponge restoration
- ❖ Calculate costs to conduct large-scale sponge restoration using trained volunteers

Outreach & Education

Year 1 yielded important lessons learned for volunteer recruitment, student liability issues, and best practices to assemble volunteers to achieve community sponge restoration program goals. 4 sponge nurseries and 9 research sites were established in the Middle Keys. Students from UF, ODU and Goshen University stocked the nurseries and research sites. Long Key State Park and Lignumvitae Key Aquatic Preserve staff were invited to assist with sponge propagation and for assistance in future efforts to solicit volunteers for large-scale sponge out-planting events. The group, Mahogany Youth, snorkeled a sponge nursery site and learned to identify key sponge species.

During Year 2, a concerted multimedia campaign with all of the project partners will be developed using press releases to national and local newspapers, radio, factsheets & community sponge outreach events.

In Year 3, under direct supervision of the involved agencies, volunteers (middle-school aged and above) will be trained to collect, propagate & transplant 7 sponge species at multiple restoration sites in Florida Bay.

Community involvement is an important component to engender stakeholder support, and increasingly, research grants are requiring an outreach component. Organizations like Florida Sea Grant have the skillsets required to assist researchers share their research and involve community volunteers with ecosystem restoration.

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