

Living Shorelines and Restoration in the Save Our Indian River Lagoon Project Plan

Brevard County

This fact sheet is one in a series of articles addressing components of the Brevard County Save Our Lagoon Project Plan. You can read the plan at Brevard County Natural Resources Management Department website: <http://brevardcounty.us/NaturalResources>

What are living shorelines?

Living shorelines rely on natural shoreline features such as plants, sand, rock and oysters to provide erosion control benefits while also preserving and restoring coastal habitat. Historically, Florida's shorelines were stabilized with hardened, man-made structures such as seawalls and bulkheads, which have many harmful unintended consequences. As a management strategy, living shorelines have many benefits. 1) They create habitat and maintain the connectivity between the aquatic, intertidal, and terrestrial habitats. 2) They act as natural breakwaters and reduce shoreline erosion. 3) They can improve water quality by trapping sediments and filtering out pollutants and nutrients.

Why are oysters used in restoration?

Oysters provide a variety of ecosystem services that are beneficial to the Indian River Lagoon system. Oysters are natural filter feeders. While feeding, oysters consume and remove particles including algae and plankton, and nutrients from the water. The cleaned, filtered water is then expelled. Oysters also create reef-like structures that provide food and habitat for more than 300 different species and help minimize shoreline erosion by creating a buffer to wind and waves.

How do oyster reefs reduce nitrogen?

Oysters remove nitrogen in three ways: 1) assimilation, 2) denitrification, and 3) burial.

1. As oysters filter water, feed, and grow, nitrogen from their food gets assimilated into their shell and tissue. Oyster restoration promotes the storage of nitrogen simply from oysters growing in size and number.
2. Oyster reefs have been shown to stimulate higher rates of denitrification than other coastal habitats. During denitrification, microbes under the reef convert nitrogen into inert nitrogen gas, which bubbles up out of the lagoon permanently removing nitrogen from the water.
3. Some of nutrients that oysters filter gets deposited into the sediment as waste. The accumulated waste in the

sediment contains high concentrations of nitrogen that may become buried and stored.

What about the use of native plants?

Living shorelines often rely on native plants, on land or in the water, to reduce wave energy, trap sediment, and reduce shoreline erosion, while maintaining or increasing habitat. Living shoreline plants become more stable over time as the plants and their roots grow. In contrast, hardened structures reflect wave energy, which results in erosion of the shoreline and loss of habitat.

What will the plan focus on?

The focus of oyster restoration in the IRL system is to provide denitrification, filter feeding capacity, and erosion protection along the shoreline. Due to the lack of natural recruitment in many areas of the lagoon, living shorelines with constructed oyster bars will be seeded from the citizen-based Oyster Gardening Program, where juvenile oysters are raised under lagoon-front homeowner's docks. Living shorelines will also include shoreline planting in areas that are not already hardened.

Approximately 20 miles of oyster reef living shorelines will be constructed throughout the IRL system. Construction of these reefs is expected to create enough oyster reef area to filter the volume of IRL water annually resulting in an estimated reduction of **21,120 pounds of total nitrogen** and **7,181 pounds of total phosphorus** per year at a cost of \$10 million.

The benefits of restoration projects may not be realized for several years. Once established, improvements to water quality will be amplified as oyster populations and shoreline vegetation continue to grow. Oyster restoration and living shorelines are just one part of the entire process to reduce excess nutrients in the Indian River Lagoon and restore ecosystem health.

Questions? Contact

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