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The Science of Seagrass

Seagrass is:

Seagrass is a shallow, saltwater flowering plant that evolved from land plants when dinosaurs roamed the earth. Seagrass systems rank with mangroves and coral reefs in terms of providing shelter and food to marine animals, as well as water purifying. They are an important habitat for fish and other species and small, young, fish, seahorses, and other creatures use it to hide from predators.

Seagrass is not seaweeds (marine algae). Instead, they are unique plants that flower under water and have colonized in all but the most polar seas. There are only 60 species of seagrass globally and they grow under sea ice as well as adjacent to coral reefs. Seagrass live in shallow water along exposed coasts and

in sheltered lagoons and estuaries.

Seagrass is sensitive to environmental changes because of its high light requirement – among the highest of any plant in the world. Like the canaries that were used to detect deadly gases in the coal mines, seagrasses, nicknamed “coastal canaries,” are a valuable tool in the detection of harmful changes in the ocean.

Seagrass meadows are widespread and can be found around the world in both temperate and tropical ecosystems. Their locations span from southern Australia to Alaska and over a billion people live within 30 miles of a seagrass meadow. Millions of people obtain their protein from

animals that live in seagrasses. Humans have used seagrasses for over 10,000 years, using it to insulate houses, stuff furniture, thatch roofs, and it was even used to stuff seats in early models of Volkswagens.

Although only a few feet high, dense seagrass meadows have as much leaf area as towering rainforests and are more productive than fertilized corn fields. The leaf area index of seagrasses, tropical rainforests and temperate rainforests can reach 20 square feet of leaf area per one square foot of ground area. A productive seagrass meadow will fizz with oxygen bubbles, looking like champagne.

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Technology Spotlight—Sediment Tubes

One of Seagrass Recovery’s patented technologies is the Sediment Tube. This highly effective technology allows for quick rehabilitation of injured seagrass meadows. Injuries occurring from propeller scarring, boat groundings, anchoring, pipeline installations and many other types of injuries are often fully restored within 18-24 months. This highly successful technique allows for lowered risk factors in mitigation efforts, thus saving time and money on mitigation projects and more important, assured success in restoring this vital resource. From up-front mitigation to public interest components, Sediment Tubes offer a cost effective and highly successful solution for seagrass mitigation and restoration. For more information on how to apply Sediment Tubes to your project planning, please email: info@seagrassrecovery.com



Sediment Tubes installed in propeller scars

For more information about our products and services, please visit :

www.SeagrassRecovery.com

Seagrass Recovery is Proud to Support and be the Restoration Contractor for Restore-a-Scar



Florida has over 175,000 acres of propeller scarring

In July 2008, The Ocean Foundation announced the Restore-A-Scar campaign. This unique campaign allows individuals and corporations to donate into a fund dedicated to restoring damaged seagrass beds due to propeller scars and boat groundings. In early October, the first restoration launch took place in the Florida Keys National Marine Sanctuary thanks to a generous donation from ABSOLUT Vodka. The Knight's Key Bank in the NOAA Florida Keys National Marine Sanctuary near Marathon, Florida, received 4,000 square feet of restoration. For more information about this ground-breaking initiative to restore seagrass meadows in the United States, please visit www.restoreascar.org

Please consider joining us in the efforts of Restore-a-Scar by donating today!

For more information about The Ocean Foundation, please visit www.oceanfdn.org

The Ocean Foundation (TOF) is a community foundation with a specialized practice. Its niche is providing high-end philanthropic advice for a community of donors who care about the coast and oceans. TOF's mission is to support, strengthen, and promote those organizations dedicated to reversing the trend of destruction of ocean environments around the world. Its goal is to grow the financial resources available to support marine conservation. It is a 501(c)(3) non-profit, international public foundation.



THE OCEAN FOUNDATION

Restoration Spotlight—Red Bay Banks (Marathon, FL)

In May 2008, Seagrass Recovery took part in a community-based restoration grant in collaboration with the FWC, NOAA, Rinker Materials and Coral Shores High School, to restore over 13,600 square feet of propeller scarring and boat groundings on the Red Bay Banks near Marathon, FL in the Florida Keys National Marine Sanctuary. This restoration grant was designed to demonstrate the ability to restore seagrass using various technologies and methodologies. Over 5,700 Sediment Tubes were installed and planted with individual *Halodule wrightii* planting units to encourage seagrass re-colonization of the injury sites. This methodology was developed by Seagrass Recovery and is included in the Florida Keys Environmental Impact Statement for recommended seagrass restoration techniques. Sediment Tubes are biodegradable fabric containers that are filled with local fine grain sediment. Sediment Tubes typically fully degrade within 4 months from the time they are inserted into an injury site and in most cases, seagrass is fully restored within 18-24 months using the Sediment Tube technology. To date, the Sediment Tubes at the Red Bay Banks Project Site have degraded nearly entirely and the project is proceeding according to plan.



Two of the restoration sites that were part of the research study in conjunction with the FWC to restore boat groundings on the Red Bay Banks near Marathon, FL

The Science of Seagrass *continued from page 1*

Seagrass is Important because:

Seagrass provides food for a wide array of species, including manatees and sea turtles. Seagrass beds provide water purification and nutrient cycling, and they reduce eutrophication (the loss of oxygen through excess nitrogen in the water). The beds stabilize sediment and dampen wave and current energy. Binding sediments protects coral reefs and the dampening of storms can help protect human settlements. It is even possible that seagrasses will aid in buffering the impacts of climate change acidification on coral reefs where they co-exist. Seagrass meadows also support the commercial seafood industry. This includes seafood such as lobster, salmon, blue crab, mussels, oysters, clams, and shrimp. The seagrass meadows are the first line of defense along much of the world's coastlines, intercepting pollution that would harm the ocean.

Seagrasses provide a nursery for juvenile fish, a habitat for lobsters, crabs, and food for juvenile salmon and other fish. They are also home to many species of seahorses. There are 10 to 100 times more animals in seagrass meadows than found in adjacent sandy bottom areas. Seagrasses are the primary food source for the world's largest marine herbivores (manatees and dugong) and are a major food source for green sea turtles. Ducks, geese, and swans eat seagrass. Seagrasses occupy only 0.1 percent of the seafloor, yet are responsible for 11 percent of the organic carbon buried in the ocean, which helps reduce green house gases. In fact, seagrass is such an effective sequester of carbon that it sequesters approximately 3.5 times the carbon of terrestrial vegetation. Seagrasses protect the coast by trapping and stabilizing marine sediments, raising the sea floor at rates of 0.04 inches per year. They dissipate wave energy and shelter the coast from storms. Seagrasses are key to healthy coral reefs. In the Florida Keys National Marine Sanctuary, the sea floor is 95 percent seagrass and less than 5 percent coral reefs. Degradation and loss of seagrass beds is a cause of concern for coastal managers due to the importance of these systems to near-shore productivity, stability and biodiversity.

Threats to Seagrass:

Seagrass meadows are disappearing and so too are the services they provide to other animals in the sea. Certainly, declines far exceed reported increases. This is evident by the statistics released by the FDEP stating that in the 1950's Florida had roughly 5 million acres of seagrass. That number is merely 500,000 today. The best estimate is that we have lost over 25 percent of seagrass meadow coverage in the ocean in the last four decades. The losses continue on a daily basis due to the many threats faced by seagrass. One threat is physical damage from boat props, anchors, and vessel groundings that rip seagrass from the substrate and leave a scar that is vulnerable to further erosion and, left unchecked, can eventually destroy the whole seagrass bed.



“Seagrasses occupy only 0.1% of the seafloor, yet are responsible for 11% of the organic carbon buried in the ocean, which helps reduce green house gases.”

Seagrass Recovery in the News

- [The Ocean Foundation and Seagrass Recovery Come Together to Repair Seagrass Scars Along America's Coasts \(August 2008\)](#)
- [U.S. Congresswoman Ileana Ros-Lehtinen to Visit Damaged Seagrass Habitat in Florida Keys \(March 2008\)](#)
- [Jim Anderson Honored with Florida Conservation Award \(February 2008\)](#)



Innovative solutions for saving our oceans, estuaries and shorelines

Seagrass Recovery, based out of Indian Rocks Beach, Florida, is a company dedicated to preserving all types of seagrass. They have a wide variety of patented inventions and services that provide a rapid cost-efficient means for replanting and restoring damaged areas. For more information regarding Seagrass Recovery, please visit www.seagrassrecovery.com.

Meet our Team:

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