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Discovery Porthole

Sharing Research with Educators and the Public

Sargassum: Floating Nurseries

Sargassum seaweed is often found floating freely in both the Atlantic Ocean and the Gulf of Mexico. Take a closer look and you will find a community of organisms thriving around these floating islands. Unfortunately, the Deepwater Horizon oil spill threatened these open-ocean habitats and the animals that depend on them. To assess how pelagic Sargassum was impacted by the oil spill, researchers from the University of Southern Mississippi (USM) set out in the fall of 2010 to collect samples.

While *seaweed* may be viewed as nothing more than a smelly nuisance by many beach-goers and sunbathers, it provides important habitat and food for marine life. *Sargassum*, also known as “gulf weed,” provides critical nursery habitat for many species of fish, crabs, shrimp and other invertebrates, as well as endangered sea turtles. Some of the fish seeking shelter amongst the brown algae include larval and juvenile tuna, dolphin fish (mahi mahi), wahoo, and several species of billfish. The floating algae provides the young with shelter from predators and also food. Later, some of the same fish will return to the sargassum as adults looking for small fish to feed on.



A clump of sargassum floats in the clear blue waters of the Gulf of Mexico. Credit: Seabird McKeon

James Franks and his team from USM were a part of three research cruises during the fall and winter following the oil spill. The goal of their trips was to collect oiled and non-oiled sargassum. This would have allowed them to count and identify all of the animals that were using the habitat and document differences between the two. However, they did not encounter any *oiled Sargassum* during the sampling trips. This came as a surprise to the researchers because their study included waters around the Deepwater Horizon site, an area where Franks and his team previously found *oiled Sargassum* during a summer 2010 cruise associated with another study. However, observations made by other scientists in the area during fall and winter 2010 did include oiled Sargassum.

Although the focus of this study was on potential impacts of juvenile fish, 98% of the animals caught in the Sargassum were invertebrates. These were primarily small shrimp and crabs uniquely camouflaged to blend in with the seaweed. Additionally, small sea slugs, worms and other microscopic and nearly-microscopic crustaceans were collected. Small, filter-feeding animals called bryozoans both encrusted and branched from the surface of the sargassum in high densities as well. While Franks did not find what he was expecting, the data collected from his sampling trips are extremely valuable. Recreationally and commercially important species were collected in the sargassum samples including triggerfish, pompano and tripletail. This work compiles valuable information about a living marine resource and essential open-water habitat. This information helps organizations like *NOAA* and the Gulf states regarding the Gulf of Mexico *ecosystem-based management* decision making process.



Sargassum associated animals (l to r): planehead filefish, sargassum fish, brown grass shrimp, nudibranch and sargassum crab (Credit: Seabird McKeon)

Education Extension

Key Terms: *sargassum, habitat, ecosystem, food web, camouflage*

Classroom Activity: Habitat Balance

Sargassum is a floating brown algae that is common to the northern Gulf of Mexico. They provide critical habitat for many marine species and are therefore critical to the food web. In this activity, students will learn about its importance and how it was affected by the Deepwater Horizon oil spill.

Supplies: *game blocks, playing cards, info cards, paint, paper*

Directions: 1) Visit the Gulf of Mexico Alliance Environmental Education Network website http://www.gulfallianceeducation.org/OilSpill_Prof_Develop.php 2) Use the presentation from Dr. Frank Hernandez to teach students about Sargassum in the northern Gulf of Mexico. 3) After discussing Sargassum and its role in the open ocean, discuss how it was affected by oil from the Deepwater Horizon disaster. 4) Use the Habitat Balance lesson plan (also on the website) and play a balancing game to pull the lesson together.

Visit <http://dhp.disl.org/resources.html> for lesson plans and additional marine-related activities.

**Use the key terms above to search for additional lesson plans on the web!*

Ocean Literacy Principles: 5. The ocean supports a great diversity of life and ecosystems, 6. The ocean and humans are inextricably interconnected

National Science Standards: A. Science as Inquiry: Abilities necessary to do scientific inquiry; C. Life Science: Populations and ecosystems; G. History and Nature of Science: Science as a human endeavor

Did You Know...

Seaweed is a somewhat generic term given to red, brown and green algae and even some cyanobacteria living in the ocean. The term should not be confused with seagrass, which reflects true flowering aquatic plants.

Sargassum is used in cooking all over the world and has even been used as cattle and hog feed. This was once a common occurrence but research into its importance in the open ocean has since limited this practice.

Oiled sargassum has been observed in the Gulf of Mexico by a number of research cruises and oil response vessels since the oil spill began. Some of the oiled sargassum was burned even though some people, like Jim Franks, discouraged this practice due to the potential for unoiled mats and their associated animals to be mistakenly burned.

Ecosystem-based management is an environmental management approach that, instead of looking at only a single species or issue, accounts for all of the interactions that take place within an ecosystem.

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The Northern Gulf Institute (NGI) is a National Oceanic and Atmospheric Administration (NOAA) Cooperative Institute addressing the research needs of the northern Gulf of Mexico. Mississippi State University leads this collaboration of the University of Southern Mississippi, Louisiana State University, Florida State University, Alabama's Dauphin Island Sea Lab, and NOAA scientists at laboratories and operational centers.

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