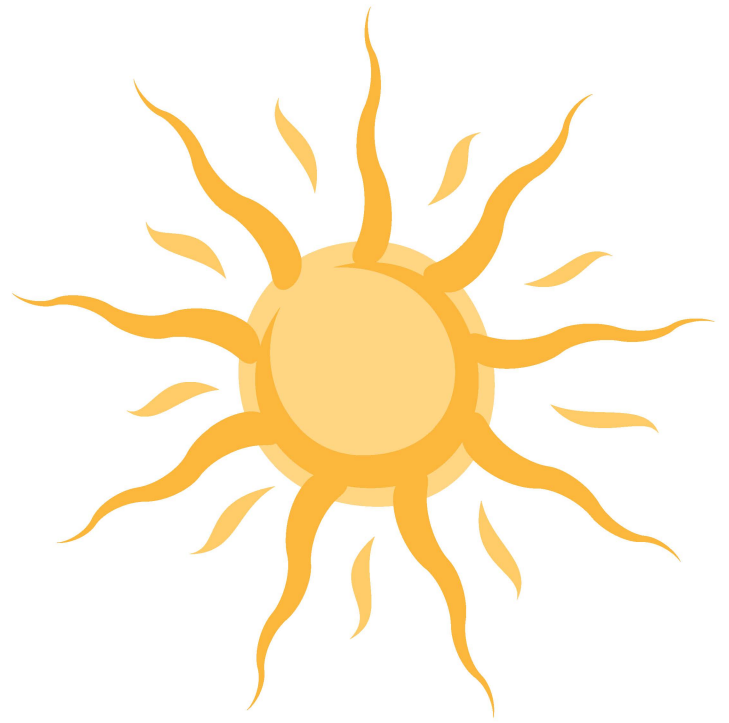
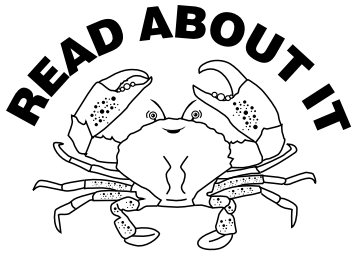


The Educator's Guide to Marine Debris

Southeast and Gulf of Mexico





Marine Debris: A Damper on Coastal Treasures!

We share our coasts with wildlife. The beaches, **estuaries**, and tidal creeks are home to a tremendous diversity of animals. Turtles, birds, crabs, dolphins, and fish use coastal and **estuarine** habitats for shelter and for places to find food, as well as for many parts of the life cycle. We all depend on a clean and healthy ecosystem for a high quality of life.

People can diminish the beauty and safety of the beaches and coasts if they irresponsibly dispose of litter, abandon boats, or lose recreational or commercial fishing gear in the environment. Marine debris is a serious problem, but it is preventable.

There are three main groups of marine debris: (1) **derelict** boats, broken docks, and other structures that end up in the waterways; (2) commercial and recreational fishing gear, such as nets, crab traps, and fishing lines; and (3) litter defined as waste that is disposed in the wrong places. Types of litter range in size from small wrappers and cigarette butts to abandoned appliances and old tires.

Most types of marine debris are made of long-lasting materials—these include plastics, glass, wood, metal, and rubber.

CHAPTER 1: WHAT IS MARINE DEBRIS?

The 2,000 miles of U.S. coastal shoreline along the Southeast and Gulf of Mexico regions offer unsurpassed natural beauty and opportunities for living and recreation. Each year, more than 20 million residents and millions of visitors are enjoying coastal communities and cities in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi. The economy of these coastal communities depends upon a clean coast, because families have the option to choose other beaches or activities for their vacations.

Mississippi Hauls Out Hurricane Debris

Residents returned to coastal Mississippi after Hurricane Katrina in 2005 to find beaches littered with splintered lumber, appliances, furniture, clothing, and personal items from homes and businesses. High winds, storm surge, and floodwaters devastated oil rigs, refineries, bridges, roadways, cars, and boats. In the process, massive amounts of debris were transported landward and up rivers and creeks, clogging miles of coastal waterways.

Thousands of volunteers helped local residents dispose of most of the shoreline debris caused by Hurricane Katrina. A special debris-mapping program sponsored by the National Oceanic and Atmospheric Administration (**NOAA**) located debris in the waterways of Louisiana, Alabama, and Mississippi. Then the Mississippi Department of Marine Resources, along with the U.S. Coast Guard and the Federal Emergency Management Agency, completed the task of debris extraction in Mississippi waters.



Chapter 1: What is Marine Debris? (continued)

Other types of debris, such as paper products, garbage, and cloth, may decay in a short timeframe. However, all marine debris can be hazardous to people and wildlife, and it spoils our coastal treasure (Please check inserted poster for a time line).

Most marine litter can be attributed directly to coastal recreational activities, such as beach visitation, fishing, and boating. However, some litter is carried downstream by rivers from urban areas through stormwater runoff or recreational activities upstream.

Keeping our beaches and waterways clean and healthy is everyone's responsibility.

Here are a few suggestions:

- ▶ Dispose of trash properly—never leave it on the beach or boat ramp.
- ▶ If you see litter, be sure to pick it up, even if it isn't yours.
- ▶ Never toss fishing line into the environment.
- ▶ Report boats or fishing gear that appear to be abandoned or lost.
- ▶ Leave only footprints in the sand!

Source: Modified from "Turning the Tide on Trash," Special Issue, *Post and Courier* (Charleston, S.C.), August 29, 2007. Original article by Dan Burger, South Carolina Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management.

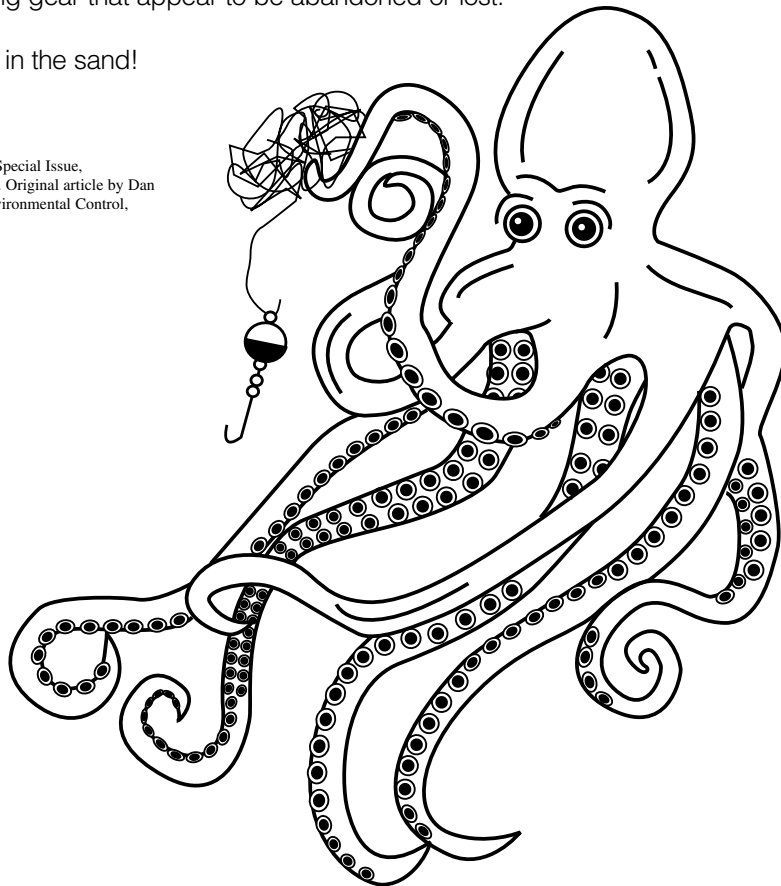
Mississippi Hauls Out Hurricane Debris (continued)

Removal work continues along the Gulf Coast region. Even today, beach visitors are cautioned to wear shoes because shifting sands continue to reveal remnants of the destruction, which even include colorful plastic Mardi Gras beads entangled in driftwood.

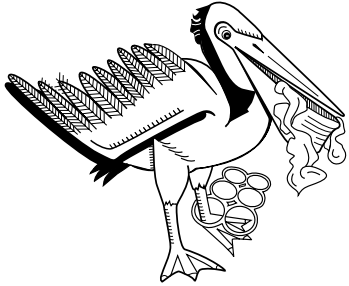
For more information on storm debris removal after Hurricane Katrina, visit this website:

<http://gulfofmexico.marinedebris.noaa.gov/>

Sidebar: Jessica Kastler, Ph.D., Center for Ocean Science Education Excellence COSEE Central Gulf of Mexico, University of Southern Mississippi, J. L. Scott Marine Education Center



What's
the word?



Glossary

► **BRD**

Acronym for Bycatch Reduction Device, a device that makes it difficult for diamondback terrapins to enter crab traps.

► **BIODEGRADE**

Breakdown of living or organic substances typically by microorganisms, such as bacteria.

► **COSEE**

Acronym for Center for Ocean Science Education Excellence.

► **DECOMPOSE**

Breakdown of dead organisms into simpler components.

► **DBT**

Acronym for diamondback terrapin, a species of turtle.

► **DENSITY**

The mass of a substance per unit volume.

► **DERELICT**

Abandoned by owner.

► **EDDIES**

Circular currents, often spin-offs from the Gulf Stream.

► **ESTUARY**

Semi-enclosed coastal body of water with rivers flowing on the mainland side and having a connection to the sea. Estuaries have a mix of saltwater and fresh water that changes with the tides.

► **GHOST FISHING**

Unintentional catch of wildlife by discarded nets, traps and lines.

► **HEADWATERS**

The very beginning of a river, often a tiny stream or spring.

► **JELLIES**

Jellyfish, invertebrate animals with stinging tentacles that swim weakly and drift with currents in the water column.

► **MOORED**

Tied up to a dock or anchor.

► **NMMSN**

Acronym for National Marine Mammal Stranding Network.

► **NOAA**

Acronym for National Oceanic and Atmospheric Administration.

► **NECROPSY**

A thorough examination of a corpse to determine the cause and manner of death and to evaluate any disease or injury that may be present. It is usually performed by a specialized medical doctor called a pathologist.

► **PERSISTENT**

Lasting a long time.

► **PROTOCOL**

A standard way or procedure to communicate or transfer information or data.

► **RUST**

Chemical process that is a reaction of iron with oxygen in the presence of water or air moisture.

► **SENTINEL SPECIES**

A plant or animal whose presence or absence provides information about environmental conditions.

► **SIDESCAN SONAR**

Instrument towed by research vessels that sends out sound waves to detect changes in relief of the seafloor or obstacles on the bottom, e.g., boats or crabtraps.

► **SONAR**

Acronym for Sound Navigation And Ranging. SONAR instruments send and receive reflected sound waves to determine distance, depth or location of objects or even fish.

► **STEWARDSHIP**

The careful and responsible management of something entrusted to one's care.

► **TURBID**

Water that is very cloudy with particles.

► **UNMOORED**

When a boat is drifting not under a captain's command.

► **WATER COLUMN**

Vertical water from surface to seafloor.

► **WATERSHED**

All of the tiny streams, creeks, and rivers that flow together into an estuary. Ridges divide one watershed from another.

► **WRACK LINE**

A line of natural and man-made debris deposited at the last high tide.

RESOURCES ON MARINE DEBRIS

NATIONAL RESOURCES:

WEB SITES

Algalita Marine Research Foundation: <http://algalita.org>
Glossary, images, informational materials
DVD: *Synthetic Sea*

American Plastics Council: www.plasticfilmrecycling.org
Recycling plastic film and bag

Beachcombers' and Oceanographers' International Association: <http://beachcombersalert.org/>

Clean Beaches Council: www.cleanbeach.org

Diamondback Terrapin Working Group: www.dtwg.org
Regional crab trap information

Digital Library for Earth System Education:
Classroom activities

Keep America Beautiful: www.kab.org

Ocean Conservancy: www.oceanconservancy.org/
International Coastal Clean Up

Surfrider Foundation: www.surfrider.org/

The Bridge: <https://masweb.vims.edu/bridge/index.cfm>
Portal to marine activities

U.S. Department of Commerce National Ocean and Atmospheric Administration (NOAA):

Office of Ocean and Coastal Resource Management, Marine Debris Information Office:
<https://coast.noaa.gov/states/fast-facts/marine-debris.html>
Derelict vessel removal, derelict fishing gear removal

Office of Response and Restoration: <http://response.restoration.noaa.gov>
Marine debris emergency

Marine Debris Program: <http://marinedebris.noaa.gov/welcome.html>
Understanding Marine Debris (activity booklet, 21 pages)

Marine Mammal Stranding Network Contacts
Southeast Regional Hotline: 1-877-433-8299
(Includes Florida, Georgia, Mississippi, North Carolina, and South Carolina)

U.S. Environmental Protection Agency: <https://www.epa.gov/trash-free-waters>
Marine debris information and lessons

U.S. Coast Guard: www.uscg.mil/top/downloads/coloring.asp
The Adventures of Captain Clearwater (coloring book)
Inky the Whale (coloring book)

PUBLICATIONS/MEDIA

Burns, Loree G. *Tracking Trash: Flotsam, Jetsam, and the Science of Ocean Motion*. Boston: Houghton Mifflin Co., 2007. ISBN 13-978 0 618 58131-3.

Coe, James M., and D.B. Rogers, editors. *Marine Debris: Sources, Impacts, and Solutions*. New York: Springer-Verlag, 1997. ISBN 0-387-94759.

Environmental Media Corp., Beaufort, South Carolina:
DVD: *Journey of the Loggerhead* (life cycle and threat)
Video: *Death of a Whale*
Video: *The Yellow Hat* (debris from river to sea)

REGIONAL RESOURCES:

FLORIDA

Florida Coastal Cleanup: <https://floridadep.gov/rcp/coral/content/shore-based-beach-cleanups>

Florida Department of Environmental Protection: www.dep.state.fl.us/coastal/programs/coral/debris1.htm
Monofilament line recycling, hurricanes, and marine debris

Florida Fish and Wildlife Conservation Commission Monofilament Recovery and Recycling Program:
<https://mrrp.myfwc.com/>

Florida Sea Grant: <http://flseagrant.org> and http://stjohns.ifas.ufl.edu/sea/marine_marine.html
Monofilament line recycling, clean-up events, crab trap

Mote Marine Lab: www.mote.org
Marine debris impacts on marine mammals

University of Florida Agricultural Center: http://stjohns.ifas.ufl.edu/sea/marine_debris.html
Monofilament line recycling and recovery, clean up events, marine debris timeline

University of South Florida College of Marine Science: www.marine.usf.edu/beachbuddies/index.html
Marine debris lesson plans

Water Action Volunteers: <https://www.sjrwmd.com/>
Community clean-up calendar of events

GEORGIA

Georgia Department of Natural Resources

Coastal Resources Division: www.CoastalGaDNR.org

Fishing line recycling, documenting abandoned and derelict vessels

Environmental Protection Division

Rivers Alive Clean-Up Events: www.riversalive.org

Georgia Power: <https://www.georgiapower.com/community.html>

Clean-up events

Keep Georgia Clean and Beautiful: <https://www.kgbf.org/>

Downloadable education resources

Clean-up events

University of Georgia Marine Extension Service

Marine Advisory Services: <https://gacoast.uga.edu/>

Monofilament fishing line recycling maps and services

MISSISSIPPI

Mississippi Coastal Cleanup: www.masgc.org/cleanup/index.htm

Mississippi Department of Marine Resources: <https://dmr.ms.gov/>

Monofilament line recycling

Keep Mississippi Beautiful: www.kmbpal.org/index.html

Clean up events

Gulf of Mexico Program, Environmental Protection Agency

www.epa.gov/gmpo/edresources/debris_t.html

Marine debris timeline

Gulf of Mexico, NOAA: <https://marinedebris.noaa.gov/gulf-mexico>

Marine debris mapping project

NORTH CAROLINA

North Carolina Maritime Museum: <http://capelookoutstudies.org/NCMRRP/ncmrrp.shtml>
Monofilament line recycling program, wildlife entanglement

North Carolina Big Sweep: <https://www.ncdot.gov/initiatives-policies/environmental/litter-management/Pages/litter-sweep-volunteers.aspx>

Clean up events

Publications:

Ripples: A Big Sweep Elementary Activity Guide

Splash Splash: A Big Sweep Aquatic Primer

Undercurrents: A Big Sweep Middle School Teacher's Guide

SOUTH CAROLINA

Center for Ocean Sciences Education Excellence SouthEast:

<http://www.cosee.net/>

"Litter from Land and Sea" marine debris poster

National Marine Educators Association, "Marine Debris for Educators" PowerPoint presentation

Keep South Carolina Beautiful and Palmetto Pride: www.palmettopride.org

Clean-up events

South Carolina Aquarium: www.scaquarium.org

Marine debris exhibit

Marine debris programs

South Carolina Department of Health and Environmental Control

Office of Ocean and Coastal Resource Management: www.scdhec.gov

Marine debris

Adopt-A-Beach Program

"Marine Debris from Land and Sea"
poster

South Carolina Department of Natural Resources

Monofilament recycling program: <http://saltwaterfishing.sc.gov/monofilament.html>

South Carolina Sea Grant Consortium: <http://www.scseagrant.org>

South Carolina Beach Sweep/River Clean Up Event: www.scseagrant.org/content/?cid=49

"Turning the Tide on Trash," Special Issue, *Post and Courier* (Charleston, S.C.), August 29, 2007.