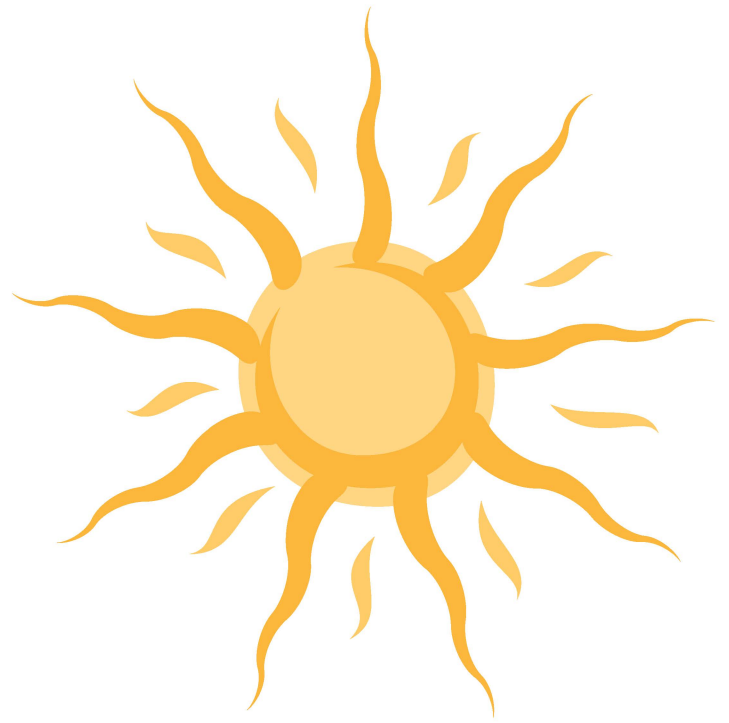
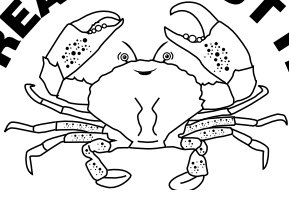


The Educator's Guide to Marine Debris

Southeast and Gulf of Mexico



READ ABOUT IT



Litter, Litter, Everywhere

CHAPTER 2: LITTER

Litter enters the U.S. coastal waters of the Southeast and Gulf regions from land and from sea. Land-based litter is carried by the wind and water from picnic sites, roads, or shopping centers. Sea-based litter is tossed overboard into the ocean from recreational boats or commercial vessels such as charter boats, commercial fishing vessels, freighters, and container ships. The Gulf Stream carries litter northward from coastal communities in the Caribbean.

Litter can be made of any material, but a majority of litter is made of plastic, and plastic can be deadly for marine animals and ecosystems.

Why is litter so harmful to marine animals?

First, litter can look really appetizing! A plastic grocery bag resembles a floating moon **jelly** that sea turtles love to eat. Too much plastic in its stomach can weaken a sea turtle.

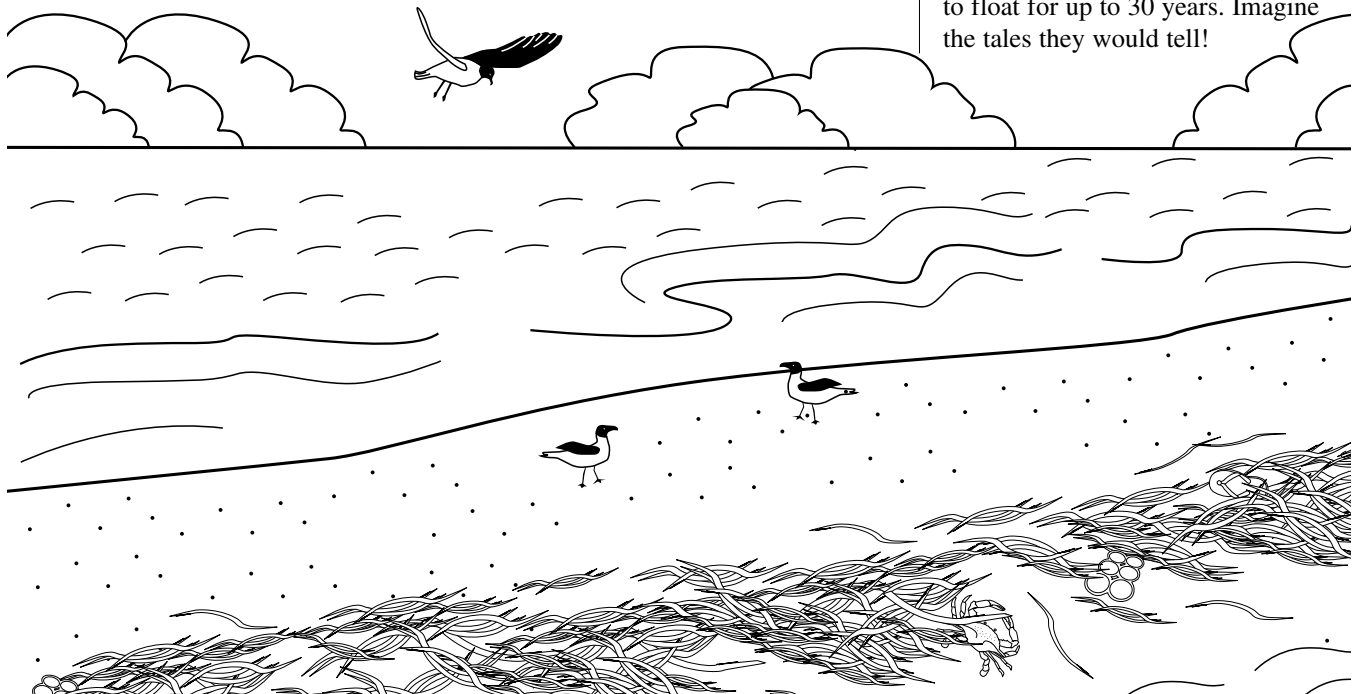
Second, litter can be brought to nests! Cigarette butts and bottle caps are often transported back to nests where the sharp edges or harmful chemicals can injure young seabirds.

What Can You Find on North Carolina's Wrack Line?

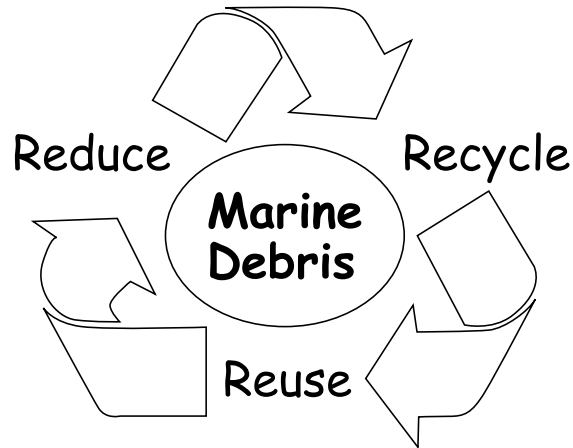
Beachcombing along the **wrack line**, that line of debris on the sand left by the last tide, yields treasure, both natural and manmade!

Bits and pieces travel around the North Atlantic Ocean on surface currents. These wind-driven currents move warm water from the equator northward. The Gulf Stream carries coolers, bottles, old boards, and pieces of trash, but also treasures from tropical rivers in South America.

The North Carolina beach areas of Cape Hatteras and Wrightsville Beach are havens for beachcombers. Many people scan the **wrack line** for seeds from tropical plants that floated from rivers such as the Orinoco to finally land on the sands of North Carolina's coast. Some seeds, called sea beans, have hard outer coverings that protect them from saltwater and predators. Sea beans have the ability to float for up to 30 years. Imagine the tales they would tell!



Chapter 2: Litter (continued)



Third, animals don't have fingers! Littered plastic bands, socks, and elastic items can cause severe entanglement. Animals have no thumbs or fingers to pull these items off their wings, fins, or necks. Stress from becoming entangled and deprived of food can cause animal starvation or exhaustion.

Prevent our amazing coastal and marine animals from becoming harmed by litter. Recycle, reuse, and reduce!

Source: Modified from "Turning the Tide on Trash," Special Issue, *Post and Courier* (Charleston, S.C.), August 29, 2007. Original article was by Meta Van Sickle, College of Charleston.

What Can You Find on North Carolina's Wrack Line? (continued)

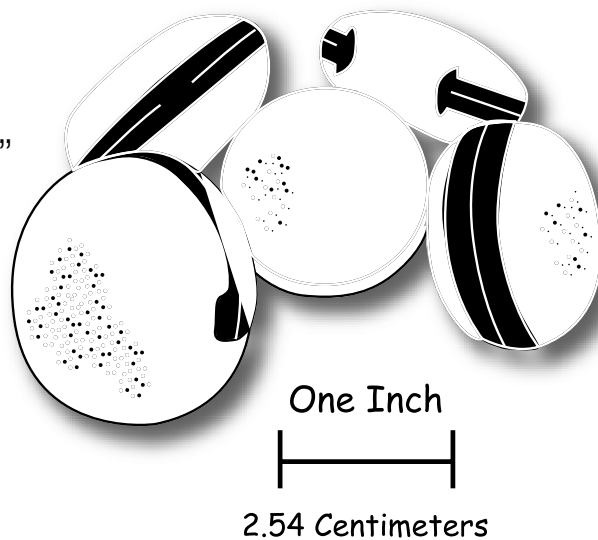
Sea beans and drifting litter found in the wrack line have long captured the imagination of beachcombers.

What's the story behind that plastic soldier found on the sand in Nags Head, NC? How far did the "hamburger sea bean" travel before it was found on Oak Island, NC? Wouldn't you like to know?

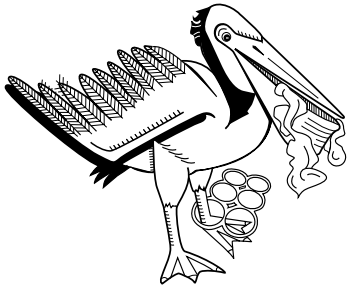
For more information on sea beans, visit www.seabeans.com

Sidebar: Terri Kirby Hathaway, Marine Education Specialist, North Carolina Sea Grant

"Hamburger"
Sea bean



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.