

Marine debris, such as derelict fishing nets, scour and damage coral reef habitat across the state. Photo courtesy NOAA PMNM.



## Habitat Damage

Marine debris affects the beauty of the beaches and environment that many come to see in Hawai'i.



## An Eyesore

In Hawai'i, marine debris affects the beauty of our environment, is a health and safety hazard, threatens our wildlife and natural resources, and comes at an economic cost. From a beach covered in trash to a ghostnet continually trapping marine life, marine debris is a problem we cannot ignore.

# IMPACTS OF Marine Debris

Marine debris can transport alien species into new environments. Photo courtesy NOAA PFSC CREP.



## Alien Species Transport

Marine debris can be ingested, or mistakenly eaten, by animals such as seabirds, sea turtles, fish, and marine mammals. Photos courtesy C. Fackler, NOAA ONMS.



## Ingestion

Marine debris poses an entanglement hazard to marine life, including the endangered hawksbill sea turtle. Photo courtesy J. Baker, NOAA Fisheries.



## Entanglement

All of the impacts of marine debris come at an economic cost—some more obvious than others, like the impact to Hawai'i's longline fishery from entanglement (of both vessels and gear) in debris. Photo courtesy NOAA PIRO Observer Program.



## Economic Cost

From broken glass on a beach to the risk involved in underwater removal, marine debris can harm humans.



## Human Health & Safety

Marine debris is a navigational hazard. Shown here is the entangled propeller of the NOAA Ship Hiloakal. Photo courtesy NOAA OMAO.



## Navigational Hazard

# How YOU Can Help

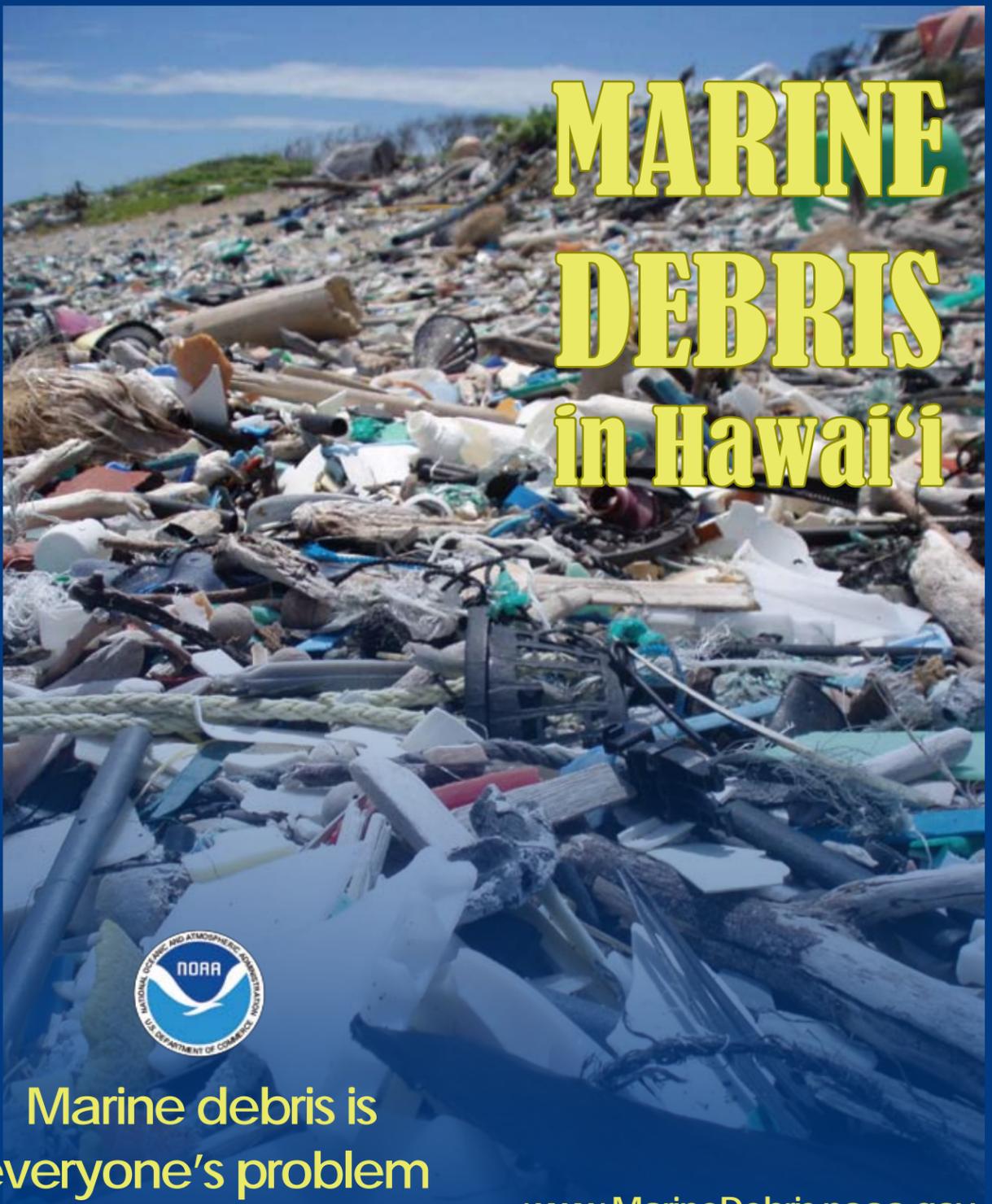
Marine debris is a problem we can solve together. Although marine debris is found worldwide, we can all help through the smallest actions. Reduce, reuse, recycle, and participate in local beach or stream cleanups. If we each do a little, together we can make a big difference.

### Easy Tips:

- **GET INVOLVED** and participate in local cleanups in your area.
- **REMEMBER** that our land and sea are connected.
- **REDUCE** the amount of waste you produce.
- **REUSE** items when you can. Choose reusable items over disposable ones.
- **RECYCLE** as much as possible! Bottles, cans, cell phones, ink cartridges, and many other items can be recycled.
- **DISPOSE OF WASTE PROPERLY** no matter where you are.



Volunteers help clean up marine debris from the southeastern shores of the Big Island of Hawai'i. Photo courtesy of NOAA Restoration Center.

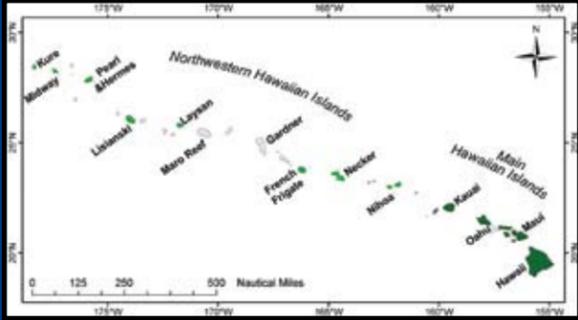


Marine debris is everyone's problem

[www.MarineDebris.noaa.gov](http://www.MarineDebris.noaa.gov)



# BACKGROUND



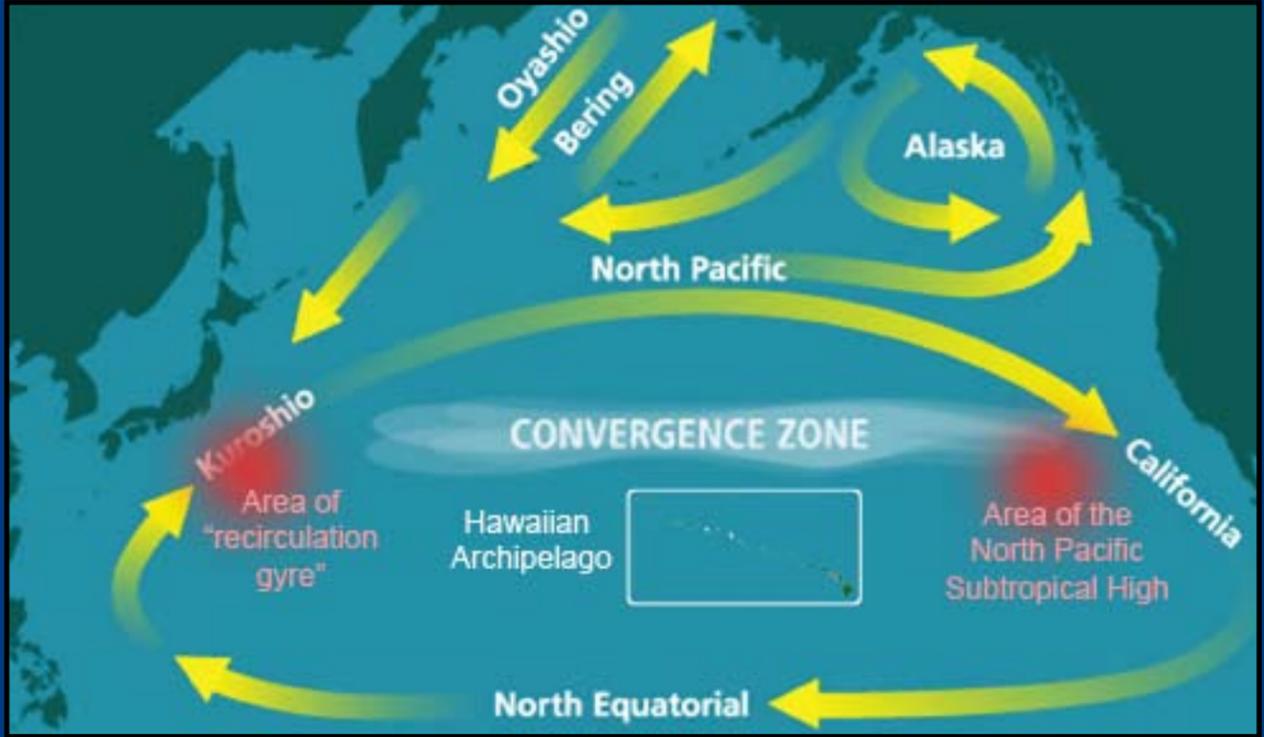
The Hawaiian archipelago, extending from the southernmost island of Hawai'i 1,500 miles northwest to Kure Atoll, is among the longest and most remote island chains in the world. These islands act as a giant comb, collecting pieces of marine debris in shallow reefs and on the beaches across the entire island chain, especially along the windward, or east-facing, shores.

In Hawai'i, marine debris continues to present a hazard to marine habitat, safe navigation, and wildlife, including the endangered Hawaiian monk seal, humpback whale, and threatened green sea turtle.



The Hawaiian monk seal, endemic to Hawai'i, is the most endangered seal species in the U.S. One of the threats to this seal's survival is entanglement in marine debris. Photo courtesy of NOAA PIFSC CRED.

# WHERE DOES IT ALL COME FROM?



Marine debris is moved by ocean currents and winds, sometimes far from its origin. Marine debris in Hawai'i comes from local sources as well as U.S. and international sources across the Pacific. The location of the Hawaiian Islands within the North Pacific Subtropical Gyre (made up of four large currents: North Pacific, California, North Equatorial, and Kuroshio) and near the Subtropical Convergence Zone (STCZ) results in the accumulation of debris in the islands. The STCZ is one of several oceanographic features that concentrate marine debris in the open ocean. Two other notable concentrations are shown above in red and referred to in the media as the eastern and western "garbage patches."



Indirectly from **land-based** sources, for example washing into a storm drain and out to the ocean.

In general, marine debris comes from two places—the land and the ocean.



Directly from **ocean-based** sources such as boats and fishing vessels.

# HAWAII'S NETS TO ENERGY PROGRAM

Net debris collected during marine debris removal efforts is used to create electricity through this process.



Net debris is transported to the Schnitzer Steel facility where it is cut into small pieces suitable for combustion.



**100 tons of derelict net creates enough electricity to power 43 homes for a year each!**



Chopped net debris is then transported to the H-Power waste-to-energy facility where it is used to create electricity.



Instead of adding these nets to already congested landfills, in 2002, Hawaii's marine debris partners devised a unique program to recycle this marine debris into usable electricity.

The net debris, collected from several projects across the state, is transported to the facility of Schnitzer Steel Hawaii Corporation, a scrap metal recycler headquartered on the mainland. There the nets are chopped into small pieces suitable for combustion at the City and County of Honolulu's H-Power waste-to-energy facility run by Covanta Energy. Schnitzer transports the chopped net pieces to the H-Power facility. There the nets are combusted, producing steam that drives a turbine that creates electricity. All services (including transport) are provided at no cost by these partners.

This program is possible only through the partnership and support of Hawaii's marine debris partners, including the businesses listed above as well as Matson Navigation Company and Alliance Trucking.

Today, all NOAA-funded marine debris removal projects in Hawai'i incorporate this recycling as a component for success.

# PLASTIC DEBRIS

Plastic marine debris is one of the most prevalent types of debris seen on shores around the world. Part of that is due to the floatable (vs. sinkable) nature of most types of plastic. Plastic is also a common and durable material and one that is, for the most part, inexpensive. Once this material enters the marine environment, it has impacts ranging from being an eyesore on a beach to entanglement and ingestion by marine life.

Here are a few plastic debris items you may see on a Hawai'i beach:

- Derelict fishing net
- Soap bottle
- Disposable utensil
- Straw
- Broken pieces of plastic



## Do Plastics Degrade?

Based on research to date, most commonly used plastics degrade extremely slowly. On a human timescale, plastics do, however, break down into smaller and smaller pieces.

For more information visit [www.marinedebris.noaa.gov/info/plastic.html](http://www.marinedebris.noaa.gov/info/plastic.html)

