Congressional Research Service
Informing the legislative debate since 1914

IN FOCUS

Updated February 11, 2019

Marine Debris: NOAA's Role

NOAA's Marine Debris Program

In 2006, Congress enacted the Marine Debris Research, Prevention, and Reduction Act (Marine Debris Act, 33 U.S.C. §1951 *et seq.*; P.L. 109-449). It defines *marine debris* to include "any persistent solid material, manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or Great Lakes." Marine debris may include, for example, materials made of plastic, rubber, metal, glass, or treated or painted wood.

Under the Marine Debris Act, the National Oceanic and Atmospheric Administration (NOAA) is the lead federal agency responsible for coordinating the federal government's efforts to address marine debris. The act established the Marine Debris Program (MDP) within NOAA. Its purpose is to help identify, determine sources of, assess, prevent, reduce, and remove marine debris and to address the adverse impacts of marine debris on the U.S. economy, marine environment, and navigation safety. Congress has also passed other legislation authorizing several agencies to take some responsibility to address certain aspects of marine debris. This CRS product concentrates on NOAA's role.

According to NOAA, the MDP achieves its mission through five program "pillars": prevention, removal, research, regional coordination, and emergency response. Through the MDP, NOAA tracks the location of marine debris and supports community- and region-based efforts to remove it and research its effects on humans and the environment. To do so, NOAA provides technical and financial assistance to state and local agencies, tribes, nongovernmental organizations, academia, and industry.

Location of Marine Debris

Marine debris is found in oceans around the globe and from the ocean surface to the sea floor. It has been recorded in numerous marine environments, such as shorelines, coral reefs, polar regions, and estuaries. The dynamic combination of diverse marine debris sizes, types, and sources; ocean currents; and wind makes it difficult to establish an accurate estimate of the total mass of marine debris currently in or entering the oceans.

NOAA tracks issues related to marine debris across environments, including on U.S. shorelines and coastal waters, in the open ocean, and within "garbage patches"—large areas of rotating ocean currents or gyres that can pull in and concentrate marine debris. Marine debris from these areas may be redistributed and redeposited on nearby shores. This is an increasing problem in certain U.S. states and territories (**Figure 1**).

Figure 1. Marine Debris on a Hawaiian Shoreline

Source: NOAA Marine Debris Program.

Sources of Marine Debris

Marine debris is difficult to trace back to its source, which may include ocean- and land-based sources. Marine debris from ocean-based sources may include derelict fishing gear (e.g., nets, lines), abandoned and derelict vessels, and equipment or waste released—intentionally or unintentionally—from at-sea vessels (e.g., cruise or container ships, fishing boats, or other vessels).

Until the 1970s, developed countries around the world disposed of municipal and industrial waste directly into the oceans. Most countries currently prohibit ocean dumping. Still, mismanaged waste may find a pathway to the ocean. Mismanaged waste generally includes littering or illegal dumping or inadequate disposal. Inadequate disposal may include disposal in an open dump or a poorly contained landfill. The United States and other developed countries have laws prohibiting such practices. However, countries where vast amounts of waste are disposed (e.g., China and other Asian countries) are known to allow inadequate disposal. A number of studies have identified inadequately or illegally discarded waste as a potentially substantial land-based source of marine debris and found that rivers can act as major transport pathways for that waste to reach the ocean.

Plastic waste from land-based sources comes in a range of sizes and types, from microplastics to larger plastic items or macroplastics (e.g., bottles, bags, or foam materials). Plastics from many sources may reach oceans, but determining the exact sources of plastics in a given waterbody can be difficult. For example, municipal wastewater treatment facilities have been identified as one source of microplastic discharges to freshwater and, potentially, to oceans.

Microplastics

NOAA identifies *microplastics* as plastic particles less than 5 millimeters in size. (Especially small particles have also been referred to as nanoplastics.) They can be categorized as primary or secondary. Primary microplastics are manufactured as microbeads, capsules, fibers, or pellets and are used in cosmetics, personal care products, industrial products, and microfibers from synthetic textiles. Secondary microplastics form through the natural degradation and fragmentation of larger plastic items. Microplastics have been found in high concentrations in both freshwater and marine environments.

Impacts to Humans and the Environment

Marine debris may have varying effects on marine wildlife and human uses of marine environments. Wildlife may become entangled with items such as derelict fishing gear, rubber bands, and balloon strings and, as a result, can experience injury, illness, suffocation, starvation, and death. Wildlife are also at risk of ingesting marine debris, which may lead to starvation, internal injury, and blockage. Ingestion may also provide a pathway for toxic constituents associated with certain marine debris, such as plastics, to be absorbed by wildlife. Adverse impacts to the animal or, in some instances, its offspring may include inflammation and reproductive or development impairment.

Several studies have noted the effects of marine debris on human uses of marine resources. Debris at the surface can cause navigation and boating hazards, whether through damage to the vessel on impact or via tangled propellers and clogged intake pipes. Communities with shoreline marine debris may experience a decrease in tourism and could incur higher cleaning and maintenance costs. Plastics have also been found in several foodstuffs, including tap water, bottled water, and table salt.

Interagency Coordination

Section 5 of the 2006 Marine Debris Act re-established the Interagency Marine Debris Coordinating Committee (IMDCC; 33 U.S.C. §1954), with NOAA as chair. The IMDCC coordinates federal agency activities and makes recommendations on research priorities, monitoring, and regulatory action. The IMDCC also includes the Department of the Interior's Bureau of Safety and Environmental Enforcement, U.S. Fish and Wildlife Service, National Park Service, Department of Justice, Department of State, Marine Mammal Commission, U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Environmental Protection Agency, and U.S. Navy.

Amendments to the Marine Debris Act

The Marine Debris Act has been amended several times, including in 2012, and most recently in 2018 through Title I of the Save Our Seas Act of 2018 (P.L. 115-265). Section 101 of P.L. 115-265 expands the MDP components to include consulting with the Department of State and other agencies to promote international efforts to reduce marine debris. It also authorizes NOAA to determine whether there is a "severe marine debris event." In part, Section 102 states the sense of Congress that the President should support research and development on systems that reduce derelict fishing gear and the amount of solid waste generated from land-based sources that enter the marine environment and should work with foreign countries that discharge the largest amounts of solid waste from land-based sources to reduce such discharges. The remaining sections express congressional support for the Great Lakes Land-Based Marine Debris Action Plan, expand IMDCC membership to include the Department of State, and authorize appropriations for NOAA and the U.S. Coast Guard to implement the act.

Other Recent Efforts by Congress

The 115th Congress also appropriated funding to NOAA to carry out marine debris assessment and removal related to Hurricanes Harvey, Irma, and Maria (P.L. 115-123, Title II, Division B).

Some Members have continued to express concern over global and domestic issues with marine debris. It is unclear how or whether Congress may involve NOAA in efforts to address those issues. Members may also consider previously proposed legislation, such as bills introduced in the 115th Congress (**Table 1**).

Table 1. Selected Legislative Proposals in the 115th Congress

Public Law or Bill Number	Marine Debris Provisions
H.R. 2748, Save Our Seas Act of 2017	Similar to P.L. 115-265 but would have emphasized providing assistance to rural and remote communities and habitats of national concern, among other differences.
Provisions in various House appropriations bills, including H.R. 695, H.R. 3686, and H.R. 4667	Would have appropriated additional funds to NOAA for marine debris surveys, assessment, and removal related to major disasters, such as the 2017 and 2018 hurricanes, Typhoon Yutu, and wildfires.
H.R. 5763 (Title I), Albatross and Petrel Conservation Act	Would have authorized NOAA to research the effects of marine debris on these species and implement conservation efforts to minimize identified effects.
H.R. 5996 (Title I), Coral Reef Conservation Reauthorization Act of 2018	Would have authorized NOAA to provide assistance to state and local government agencies to prevent or minimize impacts of marine debris on coral reefs.

Source: CRS.

Eva Lipiec, elipiec@crs.loc.gov, 7-1815
Linda Luther, lluther@crs.loc.gov, 7-6852

IF10967