



September 2019

MARINE DEBRIS

Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response

Accessible Version

GAO Highlights

Highlights of [GAO-19-653](#), a report to congressional requesters

Why GAO Did This Study

Marine debris—waste such as discarded plastic and abandoned fishing gear and vessels in the ocean—is a global problem that poses economic and environmental challenges. The Marine Debris Act, enacted in 2006, requires the committee to coordinate a program of marine debris research and activities among federal agencies. The act also requires the committee to submit biennial reports to Congress that include certain elements such as an analysis of the effectiveness of the committee's recommendations.

GAO was asked to review federal efforts to address marine debris. This report examines (1) how the committee coordinates among federal agencies and the process for determining membership, (2) the extent to which the committee's biennial reports contain required elements, and (3) experts' suggestions on actions the federal government could take to most effectively address marine debris. GAO examined the Marine Debris Act and committee reports, compared committee practices with leading collaboration practices, interviewed federal agency officials, and interviewed a nongeneralizable sample of 14 marine debris experts selected to reflect various sectors and experiences with different types of marine debris.

What GAO Recommends

GAO is making four recommendations, including that NOAA establish a time frame for documenting membership and the committee develop processes to analyze the effectiveness of its efforts and identify priority funding. The agency agreed with GAO's recommendations.

View [GAO-19-653](#). For more information, contact Anne-Marie Fennell at (202) 512-3841 or fennella@gao.gov.

September 2019

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Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response

What GAO Found

The Marine Debris Research, Prevention, and Reduction Act, as amended, (Marine Debris Act) designated six agencies as members of the Interagency Marine Debris Coordinating Committee and specifies that members shall include senior officials from certain other agencies as the Secretary of Commerce determines appropriate. Within Commerce, the National Oceanic and Atmospheric Administration (NOAA) serves as the committee chair. The committee coordinates through sharing information about members' activities to address marine debris, but GAO found that NOAA has not established a process for determining committee membership for agencies not specifically designated in the act. As a result, such agencies may not be included in the biennial reports required by the act which discuss committee members' marine debris activities. NOAA officials said they plan to develop a membership process but have not established a time frame to do so. By establishing a time frame, the committee can more fully benefit from capturing all members' activities.

The committee's biennial reports provide information on members' activities such as education and cleanup, but they do not contain some information required by the Marine Debris Act. Specifically, the reports do not include (1) an analysis of the effectiveness of the committee's recommendations and strategies to address marine debris and (2) recommendations for priority funding needs. Our past work has shown that collaborative entities can better demonstrate progress if they develop a way to monitor and report the results of their collective efforts and identify and leverage resources. By doing so, the committee would be in a better position to know the extent to which it is effectively addressing marine debris and provide Congress with required information about priority funding needs.

Marine debris washed ashore on a beach



Source: National Oceanic and Atmospheric Administration. | [GAO-19-653](#)

Experts suggested a range of actions—from research to cleanup—the federal government could take to most effectively address marine debris. They stressed that there is not one solution to the growing problem (see figure). Committee officials noted factors to consider, such as cost, when evaluating these actions.

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Abbreviations

EPA	Environmental Protection Agency
Interagency committee	Interagency Marine Debris Coordinating Committee
Marine Debris Act	Marine Debris Research, Prevention, and Reduction Act, as amended
NOAA	National Oceanic and Atmospheric Administration
USAID	U.S. Agency for International Development

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September 25, 2019

Congressional Requesters

Marine debris—waste ranging from small, everyday items, such as cigarettes and discarded plastic bottles, to larger objects, such as abandoned fishing gear and vessels found in the ocean or Great Lakes environment—poses economic and environmental challenges and is an issue of growing local, national, and international concern.¹ Marine debris can harm coastal and marine species and habitats, obstruct navigational waterways, cause economic loss to fishing industries and coastal communities, and threaten human health and safety.² Debris can enter the aquatic environment directly from domestic or international water-based sources, such as when materials are intentionally dumped in the water or blown off fishing vessels. Debris can also enter the aquatic environment indirectly from land-based sources by washing into waterways that eventually flow to the ocean. Research has shown that a significant amount of marine debris stems from land-based sources, such as improperly managed plastic waste.³

¹For the purposes of this report, we use the term marine debris, but such waste is also referred to as “marine litter” or “marine trash.” National Oceanic and Atmospheric Administration and U.S. Coast Guard regulations define marine debris as “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes.” 15 C.F.R. § 909.1(a), 33 C.F.R. § 151.3000(a). This definition is also found in the Marine Debris Act Amendments of 2012. Pub. L. No. 112-213, tit. VI, § 608(2), 126 Stat. 1540, 1578 (*codified at* 33 U.S.C. § 1956(3)).

²National Oceanic and Atmospheric Administration, *Report to Congress: 2016-2017 Interagency Marine Debris Coordinating Committee Biennial Report* (March 2019).

³Jambeck, J.R., et al., “Plastic waste inputs from land into the ocean,” *Science*, 347 (2015): pp. 768-771. This study found that five Asian countries contributed the most waste by mass, but many other countries also contributed to the problem including the United States, which ranked 20th on this list. Countries were ranked by mass of mismanaged plastic waste in units of millions of metric tons per year. A metric ton is equal to 1,000 kilograms.

Numerous studies show that plastic is a particularly pervasive and persistent form of marine debris.⁴ An estimated 8 million metric tons of mismanaged plastic waste entered the marine environment in 2010 according to one study,⁵ and projections show that by 2025 this number could increase to 17.5 million metric tons each year.⁶ According to a 2018 United Nations report, studies estimate that the total economic damage to the world's marine ecosystem caused by plastic amounts to at least \$13 billion each year.⁷ Although chemicals in plastic provide valuable properties such as durability, there is growing concern that these chemicals may be toxic and harmful to marine species.⁸ Over time, through exposure to sunlight and wave action, plastic breaks apart into increasingly smaller pieces, eventually becoming tiny particles called microplastics. Marine life may ingest these microplastics, raising concerns about potential health effects for such marine life and any organisms, including humans, which may eat them.⁹

Addressing marine debris is a complex, interdisciplinary issue involving many sectors and levels of government. Multiple federal agencies, often in coordination with state and local governments, Indian tribes, industry, international parties, and nongovernmental agencies, work to prevent,

⁴See, for example, the Ocean Conservancy and the McKinsey Center for Business and Environment, *Stemming the Tide: Land-based strategies for a plastic-free ocean* (September 2015); Jambeck, J.R., et al., "Plastic waste inputs," 768-771; National Research Council, *Tackling Marine Debris in the 21st Century* (Washington, D.C.: National Academies Press, 2009); David W. Laist, "Overview of the Biological Effects of Lost and Discarded Plastic Debris in the Marine Environment," *Marine Pollution Bulletin*, vol.18 no 6B.(1987): 319-326.

⁵Written testimony of Jenna R. Jambeck, Ph.D., before the U.S. Senate Committee on Environment and Public Works, May 17, 2016, summarizing the results of Jambeck, et al., "Plastic waste inputs," 768-771. The study estimated a range of 4.8 to 12.7 million metric tons of mismanaged plastic waste, with a mid-scenario estimate of 8 million metric tons.

⁶Jenna R. Jambeck, Ph.D., presentation at American Association for the Advancement of Science panel, San Jose, CA; February 2015.

⁷United Nations Environment Programme, *Single-Use Plastics: A Roadmap for Sustainability* (Nairobi, Kenya: 2018).

⁸Environmental Protection Agency, *State of the Science White Paper: A Summary of Literature on the Chemical Toxicity of Plastics Pollution to Aquatic Life and Aquatic-Dependent Wildlife* (Washington, D.C.: December 2016).

⁹Early research has shown that microplastic-derived toxins may accumulate in organisms and potentially harm other marine life and humans when ingested, but additional research is needed. Environmental Protection Agency, *State of the Science White Paper* (December 2016).

manage, remove, and raise awareness about marine debris. To help address marine debris, the Marine Debris Research, Prevention, and Reduction Act (Marine Debris Act) was enacted in 2006 and amended in 2012 and 2018.¹⁰ The purpose of the Marine Debris Act is to address the adverse impacts of marine debris on the U.S. economy, the marine environment, and navigation safety through the identification, determination of sources, assessment, prevention, reduction, and removal of marine debris.¹¹

Among other things, the Marine Debris Act reactivated the Interagency Marine Debris Coordinating Committee (interagency committee) to coordinate a comprehensive program of marine debris research and activities among federal agencies and in cooperation and coordination with nonfederal entities, such as nongovernmental organizations, industry, universities and research institutions, states, Indian tribes, and other nations, as appropriate.¹² The act designates a senior official from the National Oceanic and Atmospheric Administration (NOAA), within the Department of Commerce, to serve as the chair of the interagency committee. Other federal agency members designated in the act are the Environmental Protection Agency (EPA), U.S. Coast Guard, U.S. Navy, Department of State, and Department of the Interior.¹³ The act also specifies that the committee shall include senior officials from other federal agencies that have an interest in ocean issues or water pollution

¹⁰Marine Debris Research, Prevention, and Reduction Act, Pub. L. No. 109-449, 120 Stat. 3333 (2006), *as amended by* Marine Debris Act Amendments of 2012, Pub. L. No. 112-213, tit. VI, 126 Stat. 1540, 1575-78 (2012); Save Our Seas Act of 2018, Pub. L. No. 115-265, tit. I, 132 Stat. 3742, 3742-3744 (2018) (*codified as amended at* 33 U.S.C. § 1951-58). The Marine Debris Act Amendments of 2012 changed the name of the act from Marine Debris Research, Prevention, and Reduction Act to Marine Debris Act. Pub. L. No. 112-213, tit. VI, § 602(a), 126 Stat. 1540, 1575 (2012). In this report we use the term “Marine Debris Act” to refer to the act as amended through 2018.

¹¹33 U.S.C. § 1951.

¹²The Coast Guard Authorization Act of 1996 required the Secretary of Commerce to establish a Marine Debris Coordinating Committee. Pub. L. No. 104-324, § 802(b), 110 Stat. 3901, 3944-45 (1996). In 2006, the Marine Debris Act reactivated this committee and established it by statute. Officials from the National Oceanic and Atmospheric Administration said they do not have records of committee activities before 2006.

¹³The Coast Guard Authorization Act of 1996 designated NOAA, EPA, the U.S. Coast Guard, and the U.S. Navy as members of the interagency committee. The Save Our Seas Act of 2018 designated the Departments of State and the Interior as members of the committee.

prevention and control as the Secretary of Commerce determines appropriate.

The Marine Debris Act requires the interagency committee to submit to Congress biennial reports that evaluate progress in meeting the purposes of the act.¹⁴ The biennial reports are to include (1) the status of implementation of any recommendations and strategies of the committee and analysis of their effectiveness, and (2) estimated federal and nonfederal funding provided for marine debris and recommendations for priority funding needs.¹⁵

You asked us to review federal efforts to address marine debris under the Marine Debris Act. This report examines (1) how the interagency committee coordinates among federal agencies and the process for determining membership and agency representation, (2) the extent to which the interagency committee's biennial reports contain required elements, and (3) experts' suggestions on actions the federal government could take to most effectively address marine debris.

To examine how the interagency committee coordinates among federal agencies and the process for determining membership and agency representation, we reviewed the Marine Debris Act and interagency committee documents, including the committee's charter and the five biennial reports to Congress issued as of March 2019.¹⁶ We also reviewed the most recently available minutes from quarterly committee meetings held from November 2012 through April 2019 to determine the types of topics and activities on which the committee has coordinated and the federal agencies that have participated. We attended five of the interagency committee's quarterly meetings (in May, September, and December of 2018, and April and July of 2019) to directly observe committee coordination among agencies during these meetings. We also reviewed documents from committee member agencies and interviewed

¹⁴Biennial reports are required to be submitted to the Senate Committee on Commerce, Science, and Transportation, the House Committee on Transportation and Infrastructure, and the House Committee on Natural Resources.

¹⁵The biennial reports are also to include other required elements listed in 33 U.S.C. § 1954(e). These other elements are about specific agency programs.

¹⁶The five biennial reports were issued in March 2010, October 2012, September 2014, December 2016, and March 2019. Collectively, the reports include activities the interagency committee members reported conducting between June 2008 and December 2017.

and reviewed written responses from those agencies to obtain information on their coordination efforts. Agencies we included were those agencies designated as members in the Marine Debris Act as well as additional agencies identified as members in the committee's charter.¹⁷ In addition, we compared these agencies' documents and written responses about the interagency committee's coordination with leading practices we identified in our past work on implementing interagency collaborative mechanisms.¹⁸

To examine the extent to which the interagency committee's biennial reports contain required elements, we compared information contained in the committee's five biennial reports (from 2010 to 2019) to the reporting requirements in the Marine Debris Act. Specifically, two analysts independently reviewed each of the five biennial reports to evaluate information the reports included about (1) the status of implementation of any recommendations and strategies of the committee, (2) analysis of the recommendations and strategies' effectiveness, (3) estimated federal and nonfederal funding provided for marine debris, and (4) recommendations for priority funding needs. The analysts then compared and summarized the results of their analyses. We also interviewed and reviewed written responses from NOAA officials (in the agency's capacity as chair of the interagency committee) and officials from other committee member agencies about steps to develop the biennial reports, including the reports' required elements. In addition, we compared information from the reports and information we obtained from agency officials to leading practices we identified in our past work on implementing interagency collaborative mechanisms.¹⁹

¹⁷These agencies are: the Department of Commerce's NOAA; the Department of Defense's U.S. Army Corps of Engineers and U.S. Navy; the Department of Homeland Security's U.S. Coast Guard; the Department of the Interior's Bureau of Safety and Environmental Enforcement, National Park Service, and U.S. Fish and Wildlife Service; the Department of Justice; the Department of State; EPA; and the Marine Mammal Commission. In addition, we interviewed officials from the National Science Foundation, the U.S. Agency for International Development, and the Office of the U.S. Trade Representative based on suggestions from interagency committee officials and marine debris experts.

¹⁸GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 27, 2012). We used leading practices that are relevant to the requirements for the interagency committee in the Marine Debris Act. These included practices related to participants, resources, outcomes and accountability, and written guidance and agreements.

¹⁹[GAO-12-1022](#).

To obtain suggestions on actions the federal government could take to most effectively address marine debris, we conducted structured interviews with a nongeneralizable sample of 14 experts with expertise in marine debris-related issues. We selected these experts using factors such as the individuals' experience with different types of debris (e.g., abandoned fishing gear or consumer debris) or association with various sectors (e.g., academia or industry). The experts included: (1) academics with expertise in areas such as sources, prevalence, and transport of plastic marine debris; (2) officials representing the plastic manufacturing, food and beverage, and commercial fishing industries; (3) officials from nonprofit organizations with expertise in marine debris removal from coastal areas, litter prevention, and recycling management systems and strategies; and (4) state and local government officials from the District of Columbia, Florida, and Washington with expertise in local litter prevention efforts, derelict vessels, and lost and derelict fishing gear.²⁰

We asked the 14 experts to suggest actions the federal government could take to most effectively address different types of marine debris. Specifically, we asked that experts identify up to 5 to 10 actions as well as advantages, disadvantages, and any challenges in potentially implementing these suggested actions. We then categorized the actions based on common themes. To do so, two analysts independently reviewed each expert's description of each action and identified an appropriate category using decision rules the team developed. For reporting purposes, we selected several actions within each of the categories to provide illustrative examples of the types of actions experts suggested. Our selection was based on such factors as the number of experts that suggested similar types of actions, the detail provided by the experts, and the availability of supporting information, such as documentation of instances where an action had been taken by state or local governments. Actions suggested by the 14 experts cannot be generalized to actions that might be suggested by other experts, but provide examples of actions federal agencies could take to address marine debris.²¹ We also interviewed and received written responses from officials from interagency committee agencies regarding issues that would be important to consider in potentially implementing any of the expert

²⁰We selected these locations using factors such as geographic area and expertise in marine debris issues.

²¹We did not limit experts' suggestions to actions that agencies currently have authority to implement. We do not take a position on the merits of, the necessary legal authority for, or the most appropriate entity for the actions suggested by the 14 experts.

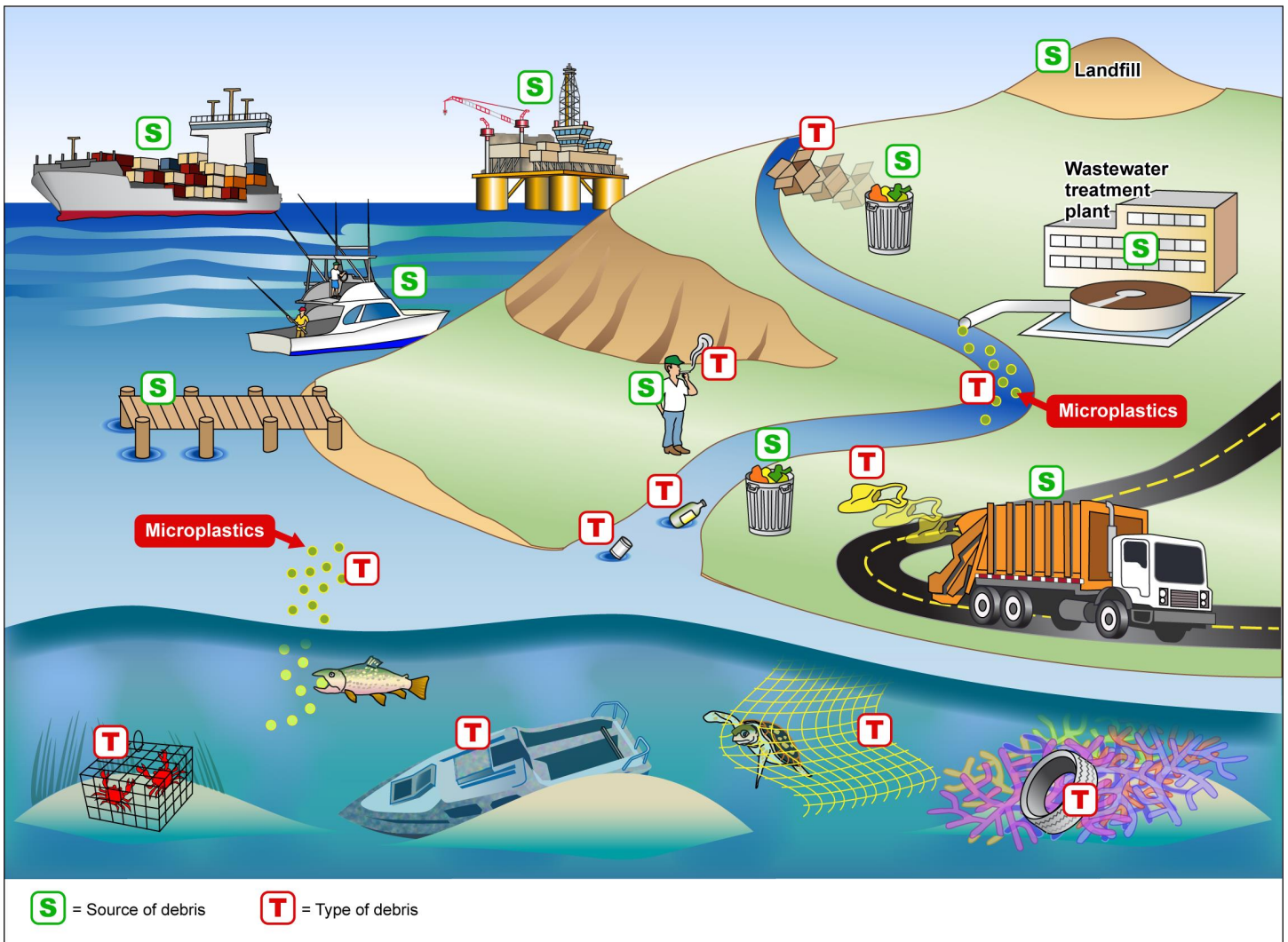
suggested actions. Appendix I presents a more detailed description of our objectives, scope, and methodology.

We conducted this performance audit from October 2017 to September 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Marine debris originates from multiple sources and types of materials, entering the marine environment in a variety of ways, as shown in figure 1.

Figure 1: Overview of Sources and Types of Marine Debris



Source: GAO. | GAO-19-653

Prevalent types of marine debris and their effects include:

- **Plastics and microplastics.** Plastics, including items such as grocery bags, food wrappers, bottles, straws, and cigarette filters, are particularly ubiquitous, having been found in the deepest reaches of

Microplastics



Most plastics do not biodegrade, that is, decay naturally and become absorbed by the environment. Instead, plastics slowly break down into smaller and smaller fragments, eventually becoming what are known as microplastics. Microplastics are very small pieces of plastic that are generally less than 5 millimeters in size (about the size of a sesame seed). The formation of microplastics occurs when plastic debris is exposed to sunlight and the plastic begins to weather and fragment. Microplastics have been found in the stomachs of numerous aquatic organisms including insects, worms, fish, and clams, according to a 2018 study. A study from 2011 showed that once animals ingest microplastics, they can be stored in tissues and cells, providing a possible pathway for the accumulation of contaminants and potentially harming the animals.

Sources: GAO analysis of scientific studies; Sherri Mason/SUNY Fredonia (photo). | GAO-19-653

- the ocean.²² Microplastics—generally defined as plastic particles less than 5 millimeters in size—are especially pervasive. For instance, one study completed in 2018 found record concentrations of microplastics in Arctic sea ice.²³ Plastic marine debris can damage habitats, entangle wildlife, cause injury via ingestion, impair vessel engines, create navigation hazards, inflict economic loss, and transport non-native species, according to NOAA documents.
- **Derelict fishing gear.** Derelict fishing gear refers to nets, lines, crab pots, and other recreational or commercial fishing equipment that has been lost, neglected, or discarded in the marine environment. According to the Global Ghost Gear Initiative, at least 640,000 tons of derelict fishing gear enters the ocean each year, a weight equivalent to two Empire State Buildings.²⁴ Derelict fishing gear may entrap sea life, adversely affect marine habitats, present hazards to navigation, and cause other harmful effects (see fig. 2). For example, according to a 2015 NOAA report, derelict fishing gear threatens a variety of fish, turtles, seabirds, whales, and seals, and may be especially problematic for endangered and protected marine species.²⁵

²²According to research published in 2018, there have been multiple sightings of plastic deep in the ocean including a plastic bag found in the Pacific Ocean’s Marianas Trench—the deepest part of the ocean and the deepest location on earth. Chiba, et al., “Human footprint in the abyss: 30 year records of deep-sea plastic debris,” *Marine Policy* 96(2018) 204-212. Another study estimated that, globally, there are now more pieces of plastic in the ocean than there are stars in the Milky Way. Lavers, et al., “Significant plastic accumulation on the Cocos (Keeling) Islands, Australia.” *Nature* 9:7102 (2019): pp. 1-9.

²³Peeken, et al., “Arctic sea ice is an important temporal sink and means of transport for microplastic,” *Nature Communications*, 9:1505 (2018): pp. 1-12.

²⁴The Global Ghost Gear Initiative is a cross-sectoral alliance committed to finding solutions to the problem of lost, abandoned and otherwise discarded fishing gear (also known as “ghost gear”) worldwide, according to its website. Participants in the alliance include the fishing industry, the private sector, academia, governments, and intergovernmental and nongovernmental organizations.

²⁵National Oceanic and Atmospheric Administration, *Impact of “Ghost Fishing” via Derelict Fishing Gear* (Charleston, SC, and Silver Spring, MD: March 2015).

Figure 2: Marine Life Entangled in Derelict Fishing Gear

Source: National Oceanic and Atmospheric Administration. | GAO-19-653

- **Abandoned and derelict vessels.** Abandoned and derelict vessels are vessels without identified ownership, in significant disrepair, or both.²⁶ There are thousands of such vessels in ports, waterways, and estuaries around the United States that have been left to deteriorate by the owner or operator or are the result of a catastrophic weather event, according to NOAA documents. Abandoned and derelict vessels can impede marine transportation by blocking navigable waterways, and, if not visible or well-marked, could pose collision risks to vessel operators. These vessels may also become sources of pollution since they may contain fuel oil or other hazardous materials that can leak into the water as the vessels deteriorate, impacting the local community, marine life, and nearby habitat.²⁷

Marine debris has garnered increasing interest from the international community. In September 2015, the United Nations General Assembly unanimously adopted an agenda with a set of global sustainable

²⁶For additional information, see GAO, *Maritime Environment: Federal and State Actions, Expenditures, and Challenges to Addressing Abandoned and Derelict Vessels*, [GAO-17-202](#) (Washington, D.C.: March 28, 2017).

²⁷According to U.S. Fish and Wildlife Service officials, abandoned and derelict vessels can also leach iron and other contaminants that result in the overgrowth of algae and invasive species that may physically damage coral reefs and other habitats.

development goals through 2030.²⁸ One of the goals (goal 14) calls for conservation and sustainable use of the oceans, seas, and marine resources, and includes a target for prevention and significant reduction of marine pollution of all kinds, including marine debris, by 2025. In June 2018, five members of the Group of Seven and the European Union endorsed the Group's Ocean Plastics Charter, which committed them to accelerating implementation of the Group of Seven Leaders' Action Plan to Combat Marine Litter, previously agreed to in 2015.²⁹ The United States and Japan were the two members of the Group of Seven that did not endorse the charter. Also, in May 2019, the parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal adopted a decision that would, beginning January 1, 2021, require parties to take appropriate measures to ensure that certain plastic waste is reduced to a minimum, taking into account social, technological and economic aspects, among other things.³⁰

Marine Debris Act

The Marine Debris Act governs the activities of the interagency committee. For example, it required the interagency committee to issue a report to Congress that included recommendations to reduce marine debris domestically and internationally.³¹ In 2008, the committee submitted an interagency recommendation report that contained 25

²⁸United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development* (adopted Sept. 25, 2015). The agenda addressed five components of sustainable development (people, planet, prosperity, peace, and partnership), and included 17 goals with 169 associated targets.

²⁹The Group of Seven is an informal grouping of seven of the world's advanced economies—Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States—that meets annually to discuss issues such as global economic governance, international security, and energy policy.

³⁰The United States is a signatory, but not a party, to the Convention. Parties to an international agreement are those countries that have consented to be bound by the agreement and for which the agreement is in force. Generally, countries express their consent to be bound by an agreement by ratifying, accepting, approving or acceding to it. Countries that have signed the agreement but not consented to be bound to it are obliged to refrain from acts that would defeat the object and purpose of the agreement until the country's intention not to become a party to the agreement is made clear.

³¹Pub. L. No. 109-449, § 5(c)(1), 120 Stat. 3333, 3337 (2006). The report was due on December 22, 2007; the committee submitted the report to the congressional committees in August 2008. This requirement was repealed in 2012. See Pub. L. No. 112-213, § 606(a)(1), 126 Stat. 1540, 1577 (2012).

recommendations intended to guide the federal government's strategies for addressing marine debris (see appendix II for a list of the 25 recommendations). The recommendations were categorized by an overarching topic, such as education and outreach or cleanup. Within each category, the committee then identified specific recommendations. For example, within the education and outreach category, the committee specified three recommendations:

- Demonstrate leadership by distributing educational materials to personnel on the sources and impacts of marine debris as well as methods for prevention with the goal of reducing the federal contribution to marine debris.
- Support public awareness campaigns by providing technical expertise and educational materials and by encouraging private sector participation, when appropriate.
- Engage and partner with state, local, tribal and nongovernmental entities to support coordinated events, such as Earth Day, the International Coastal Cleanup, and other activities that have relevance to marine debris.

The act also requires the interagency committee to submit biennial reports to Congress that evaluate progress in meeting the purposes of the Marine Debris Act. Specifically, these biennial reports are to include:

- the status of implementation of any recommendations and strategies of the committee and analysis of their effectiveness, and
- estimated federal and nonfederal funding provided for marine debris and recommendations for priority funding needs.

Starting in 2010, the interagency committee has issued five biennial reports to Congress, issuing its most recent report in March 2019.³²

The Marine Debris Act designates six federal agencies as interagency committee members. The six agencies are NOAA, EPA, U.S. Coast

³²In 2019, multiple versions of the Save Our Seas Act 2.0 were introduced in Congress. S. 1982, 116th Cong. (2019); S. 2260, 116th Cong. (2019); H.R. 3969, 116th Cong. (2019); S. 2364, 116th Cong. (2019); S. 2372, 116th Cong. (2019). If enacted into law, most of the bills would require the interagency committee to submit additional reports to Congress. For example, three of the bills would require the interagency committee to submit to Congress a report on innovative uses for plastic waste other than in infrastructure as well as a report on microfiber pollution that includes an assessment of the sources, prevalence, and causes of microfiber pollution.

Guard, U.S. Navy, Department of State, and Department of the Interior. The act also specifies that the committee shall include senior officials from other federal agencies that have an interest in ocean issues or water pollution prevention and control as the Secretary of Commerce determines appropriate. The act designates the senior official from NOAA to serve as the chair.

Interagency Committee Coordinates through Meetings, but NOAA Does Not Have a Process for Determining Committee Membership and Agency Representation

The interagency committee coordinates primarily through quarterly meetings where agencies share information about their individual activities related to addressing marine debris. Such activities range from education and outreach to research and technology development and are generally driven by the missions and authorities of the agencies. However, we found that NOAA has not established a process to determine the committee's membership. In addition, the Marine Debris Act requires the interagency committee to include a "senior official" from member agencies, but NOAA has not determined the level of official it would consider senior.

Interagency Committee Holds Quarterly Meetings to Share Information about Individual Agency Activities Such as Education and Outreach

The interagency committee coordinates primarily through quarterly meetings where federal agencies share information about their individual marine debris-related activities. According to its charter, which was last revised in 2014, the committee is responsible for sharing information, assessing and implementing best management practices, and coordinating interagency responses to marine debris. The charter states that the interagency committee will ensure the coordination of federal agency marine debris activities nationally and internationally as well as recommend research priorities, monitoring techniques, educational programs, and regulatory action. The charter also states that the interagency committee will work to consider the interests of nongovernmental organizations, industry, state governments, Indian tribes, and other nations, as appropriate.

NOAA officials said the main focus of the interagency committee has been to serve as an information-sharing body. The officials said they also seek opportunities to collaborate on individual projects, but the committee does not otherwise collaborate on activities, beyond compiling statutorily required biennial reports.³³ NOAA officials explained that individual agencies each have a unique set of authorities and missions that largely determine their role and involvement in marine debris-related issues. For example, under its Marine Debris Program, NOAA conducts a variety of education, outreach, research, and other activities to identify sources of and address marine debris. In recent years, congressional committee reports accompanying NOAA's annual appropriations have directed the agency to spend a certain amount of its appropriations on its marine debris program.³⁴ Specifically, these reports directed NOAA to spend \$7 million in fiscal year 2018 and \$7.5 million in fiscal year 2019 for its Marine Debris Program. The program is also authorized to award grants to, and enter into cooperative agreements and contracts with, eligible entities to identify the sources of, prevent, reduce, and remove marine debris.³⁵

In contrast, officials from other agencies on the interagency committee said their agencies have not received such direction or specific appropriations to address marine debris. Rather, the activities these

³³When the interagency committee was revising its charter, NOAA officials said they discussed expanding the role of the committee beyond information-sharing, but at the time participating agencies collectively agreed that the committee's primary role should be to regularly share information regarding individual agencies' activities and look for opportunities to collaborate, where possible.

³⁴160 Cong. Rec. H475, H508 (daily ed. Jan. 15, 2014) (explanatory statement of the Consolidated Appropriations, 2014); S. Rep. No. 113-181, at 32 (2014) (Senate Report Accompanying the Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2015); S. Rep. No. 114-66 at 26 (2015) (Senate Report Accompanying the Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2016); 163 Cong. Rec. H3327, H3366 (daily ed. May 3, 2017) (explanatory statement of the Consolidated Appropriations Act, 2017); S. Rep. No. 115-139, at 27 (2017) (Senate Report Accompanying Departments of Commerce and Justice, Science, and Related Agencies Appropriations Bill, 2018); H.R. Rep. No. 116-9, at 614 (2019) (Conference Report Accompanying the Continuing Appropriations Act, 2019).

³⁵Grants and cooperative agreements are financial assistance instruments used to transfer a thing of value to a recipient to carry out a public purpose. The difference between the two instruments relates to the amount of involvement between the agency and the recipient during performance: when substantial involvement is not anticipated, agencies use grants; otherwise, they use cooperative agreements. For this report, we use the term "grants" to refer to both grants and cooperative agreements.

agencies have conducted generally tie to their authority or agency mission. For example, EPA officials said they have relied on voluntary partnerships with states, industry, and other sources and leveraged existing funds from related programs, such as the agency’s stormwater and water quality programs, to support its Trash Free Waters Program. This is a program that encourages collaborative actions by public and private stakeholders to prevent trash from entering water. EPA officials said they also support a number of other activities related to education, outreach, and research, and these activities are a high priority for the agency, but EPA does not have a line item in its budget dedicated to marine debris activities.³⁶

The interagency committee’s biennial reports describe general types of activities individual agencies reported conducting—often in coordination with nonfederal partners such as nongovernmental organizations, industry, states, Indian tribes, and other nations—to address marine debris, which include activities in the following categories: (1) education and outreach; (2) legislation, regulation, and policy; (3) cleanup; (4) research and technology development; and (5) coordination (see table 1 for descriptions of types of activities in each category; see app. III for specific examples of activities carried out by agencies).

Table 1: Activities Reported in the Interagency Marine Debris Coordinating Committee’s 2016 and 2019 Biennial Reports

Category	Description of activities	Agencies reporting these types of activities
Education and outreach	Support education and outreach activities related to addressing marine debris, such as developing and distributing educational materials, supporting public awareness campaigns, or partnering with or funding state, local, tribal, or nongovernmental education efforts.	<ul style="list-style-type: none"> • Bureau of Safety and Environmental Enforcement • Department of State • Environmental Protection Agency • Marine Mammal Commission • National Oceanic and Atmospheric Administration • National Park Service • U.S. Coast Guard • U.S. Fish and Wildlife Service • U.S. Navy

³⁶In a March 2019 speech, the EPA Administrator cited marine debris as one of the three top global water priorities for the agency.

Category	Description of activities	Agencies reporting these types of activities
Legislation, regulation, and policy	Identify or help ensure compliance with legislation and regulations and develop or encourage policies and programs to implement practices that address specific types of marine debris.	<ul style="list-style-type: none"> Bureau of Safety and Environmental Enforcement Department of State Environmental Protection Agency National Oceanic and Atmospheric Administration National Park Service U.S. Coast Guard U.S. Department of Justice U.S. Fish and Wildlife Service U.S. Navy
Cleanup	Support the removal and disposal of marine debris.	<ul style="list-style-type: none"> Environmental Protection Agency Department of State National Oceanic and Atmospheric Administration National Park Service U.S. Army Corps of Engineers U.S. Coast Guard U.S. Fish and Wildlife Service U.S. Navy
Research and technology development	Conduct or sponsor research to monitor, understand the sources of, prevent, mitigate, or reduce the effects of marine debris; support developing new technologies such as ones to produce products using more sustainable or recyclable types of materials.	<ul style="list-style-type: none"> Environmental Protection Agency Marine Mammal Commission National Oceanic and Atmospheric Administration National Park Service U.S. Coast Guard
Coordination	Foster coordination among agencies and with nonfederal partners, such as international, state, and local government agencies.	<ul style="list-style-type: none"> Department of State Environmental Protection Agency Marine Mammal Commission National Oceanic and Atmospheric Administration National Park Service U.S. Coast Guard U.S. Fish and Wildlife Service

Source: GAO analysis of Interagency Marine Debris Coordinating Committee reports. | GAO-19-653

Note: This table reflects those activities reported by the interagency committee in its 2016 and 2019 biennial reports to Congress, which cover activities conducted in 2014-2015, and 2016-2017, respectively.

To help agencies share information, NOAA chairs quarterly meetings where agencies are invited to discuss their individual activities. In reviewing meeting minutes, we found that the meetings were generally well-attended by representatives from multiple agencies. During the meetings, officials discussed marine debris issues and some provided

updates on their agencies' activities. For example, at the April 2019 meeting, officials discussed ways in which different agencies may be meeting the sense of Congress on international engagement in the Save our Seas Act of 2018.³⁷

At the May 2018 meeting, officials from NOAA and U.S. Coast Guard gave presentations on their agencies' emergency response authorities and efforts. NOAA officials described their actions in response to Hurricanes Harvey, Irma, and Maria in 2017, which included coordinating debris removal activities across federal and state agencies, such as EPA and Florida State's Department of Environmental Protection. U.S. Coast Guard officials also presented information on their marine debris removal activities in response to Hurricanes Irma and Maria. These activities included coordinating with multiple federal, state, and local agencies and contractors to remove or mitigate potential environmental impacts from 2,366 damaged or derelict vessels in Florida and the Florida Keys after Hurricane Irma and 377 vessels in Puerto Rico and the Island of Vieques after Hurricane Maria, according to U.S. Coast Guard officials.

The interagency committee has also used its quarterly meetings to identify opportunities for collaboration among federal agencies and with nonfederal partners, according to NOAA officials. For example, during committee meetings in early 2018, NOAA, the National Park Service, and the Department of State identified an opportunity to collaborate with the German government to bring the Ocean Plastics Lab to the United States. This Lab is an international traveling exhibition that explains the role of science in helping to understand and address plastic pollution in the ocean. NOAA officials said that to collaborate on this effort, officials from three federal agencies served on a steering committee, leveraged volunteers, promoted the Ocean Plastics Lab through outreach efforts to the public and helped staff the exhibits while they were on display in Washington, D.C., during the summer of 2018.

³⁷Section 102 of the Save Our Seas Act of 2018 stated that it is the sense of Congress that the President should take five actions to respond to marine debris, including to work with representatives of foreign countries that discharge the largest amounts of solid waste from land-based sources into the marine environment, to develop mechanisms to reduce such discharges.

NOAA Has Not Established a Process for Determining Interagency Committee Membership and Agency Representation

We found that NOAA has not established a process to determine interagency committee membership. The Marine Debris Act designates six federal agencies as members of the committee, and also specifies that committee members shall include senior officials from other federal agencies that have interests in ocean issues or water pollution prevention as the Secretary of Commerce determines appropriate.³⁸ The committee's 2014 charter lists five agencies as members in addition to the six identified in the act, for a total of 11 member agencies.³⁹ The charter also states that the committee consists of representatives from "any other federal agency that has an interest in ocean issues and water pollution prevention and control," but does not specify the process for documenting membership or how the Secretary of Commerce, or a delegate of the Secretary, will determine that such membership is appropriate, as required by the act.⁴⁰

Various information sources, such as the committee's biennial reports and minutes from quarterly meetings, have provided differing lists of committee member agencies. For example, the committee's March 2019 biennial report and NOAA's website as of July 2019 listed the 11 agencies identified in its charter as members. But, various meeting minutes from meetings held in fiscal year 2019 listed up to 13 members. One agency, the U.S. Agency for International Development (USAID), has regularly attended the committee's quarterly meetings since early 2018 when USAID officials said they were invited to participate on the

³⁸33 U.S.C. § 1954(b).

³⁹The interagency committee's charter identifies the following members, in addition to those listed in the Marine Debris Act: the Department of Defense's U.S. Army Corps of Engineers, the Department of the Interior's Bureau of Safety and Environmental Enforcement, National Park Service, and U.S. Fish and Wildlife Service, the Department of Justice, and the Marine Mammal Commission. The Marine Debris Act designates the Department of the Interior as a member of the interagency committee, whereas, the interagency committee's charter lists three agencies within Interior as members. For reporting purposes, we counted each of these agencies within Interior as separate member agencies.

⁴⁰The interagency committee first established its charter in 2006 and most recently revised it in 2014. The 2006 and 2014 versions of the charter list the same 11 agencies as members of the committee.

committee. USAID officials said that their understanding is that USAID is a member of the interagency committee and that this is especially important to recognize given their significant international development assistance related to marine debris over the last few years.⁴¹ However, USAID is not listed as a member on NOAA's website and the agency's marine debris-related activities are not included in the committee's 2019 biennial report. As a result, some agencies may not be included in the required biennial reports on the committee members' marine debris activities.⁴²

In April 2019, NOAA officials told us that USAID was a contributing member to the interagency committee.⁴³ The officials said that "official" member agencies are those six agencies designated by the Marine Debris Act and that they consider other participating agencies as "contributing" members.⁴⁴ They said it has been the practice of the interagency committee to enable participation and coordination with other agencies, including those who may not be designated as official members.

We found that NOAA does not have a documented process for determining membership on the interagency committee. NOAA officials were unable to locate records from 2006 or earlier documenting the addition of contributing agencies to the committee or the Secretary, or a delegate of the Secretary, making a determination of the appropriateness of such agencies being members. NOAA officials stated the need for the agency to establish a documented process to determine the appropriateness of federal agencies being committee members. The

⁴¹For example, officials from USAID said the agency assists developing countries in preventing and reducing land-based sources of marine debris through a variety of activities. Its activities include working with other countries or international cities to improve working conditions for waste collectors and piloting technology and equipment, such as bamboo trash traps in Vietnam. According to agency officials, USAID's activities in Asia—an area of the world that has been identified as a significant source of land-based marine debris—have resulted in 2.6 million people receiving or engaging in improved solid waste management services.

⁴²The biennial reports we reviewed were not consistent in capturing all members' activities.

⁴³In April 2019, NOAA officials said USAID and the White House Office of Science and Technology Policy, in addition to those agencies listed in its 2014 charter, were contributing members of the interagency committee.

⁴⁴The interagency committee's charter does not distinguish between official or contributing members.

officials said they have started working with NOAA's General Counsel to formalize and document the committee's membership process, and that the process will include a step for the Secretary of Commerce, or a delegate of the Secretary to determine the appropriateness of additional agencies being members. However, NOAA officials did not have an estimated time frame for developing such a process.

Our past work on interagency collaboration has identified the importance of ensuring that relevant participants have been included in the collaborative effort.⁴⁵ By establishing a time frame for developing a documented membership process, NOAA and the interagency committee can benefit from capturing all members' activities, and ensuring it provides Congress a complete picture of marine debris efforts across the federal government.

In addition, the Marine Debris Act requires the interagency committee to include a "senior official" from member agencies, but NOAA has not determined the level of official it would consider senior.⁴⁶ The interagency committee's charter states that the committee will be composed of "federal agency managers and technical experts," but does not define what is meant by senior official. NOAA officials said that the level of engagement from agency officials has varied over time and often depends on the specific officials participating. The officials said they have had difficulty in the past getting some member agency officials to engage during quarterly meetings and often those that do participate are not decision makers. Specifically, for some agencies, participating officials may not represent the entire agency, but rather a program within the agency, and they may not have decision-making authority, according to NOAA officials. As a result, the officials may not be able to commit agency resources, or they may be uncertain what activities their agency may be able to commit to.

NOAA officials said that it may be helpful to specify the level of official needed to represent the agencies on the interagency committee. The officials said that they have been discussing potential revisions to the interagency committee's charter, and within that broader discussion they are looking into whether the charter should specify what level of official is needed. However, NOAA officials did not have an estimated time frame

⁴⁵[GAO-12-1022](#).

⁴⁶33 U.S.C. § 1954(b).

for revising its charter or determining what those revisions may entail. Our past work on interagency collaboration has identified the importance of ensuring that participants have full knowledge of the relevant resources in the agency, including the ability to commit resources for their agency.⁴⁷ By clarifying what is meant by “senior official” such as through revisions to its charter, NOAA would have greater assurance that it has the full engagement of member agency officials who can speak for their agency and commit to activities.

Interagency Committee’s Reports Do Not Contain Some Required Elements

While the interagency committee’s biennial reports provide information on marine debris-related activities of individual agencies, our review found that they do not contain certain required elements. As previously noted, the Marine Debris Act requires the biennial reports to include (1) the status of implementation of any recommendations and strategies of the committee and analysis of their effectiveness, and (2) estimated federal and nonfederal funding provided for marine debris and recommendations for priority funding needs. However, we found that the biennial reports did not include an analysis of the effectiveness of the recommendations implemented or recommendations for priority funding needs.

Implementation of Recommendations and Analysis of Effectiveness

The five biennial reports the interagency committee issued from 2010 to 2019 lay out the committee’s 2008 recommendations along with a description of activities taken by individual member agencies related to those recommendations. Specifically, each biennial report references the 25 recommendations the committee first adopted in its 2008 interagency recommendation report, organized into categories (see app. II). The reports then provide a description of activities taken by individual member

⁴⁷[GAO-12-1022](#).

agencies that fell within the recommendation categories for each preceding 2-year period.⁴⁸

However, we found that the five biennial reports do not include an analysis of the effectiveness of the implementation of the committee's recommendations and strategies as required by the Marine Debris Act. Some of the descriptions of agencies' activities include information on the number of people reached through education or outreach efforts or other quantitative information related to specific activities, but the reports do not include an analysis of the effectiveness of those activities.

NOAA and EPA officials confirmed that the interagency committee did not include an analysis of effectiveness in its biennial reports, stating that undertaking such an effort is beyond the scope of the information-sharing focus of the interagency committee. NOAA officials said that they have attempted to bring member agencies together to discuss how the committee could analyze the effectiveness of its collective efforts, but this has been a challenge because each member has its own priorities and legal authority related to addressing marine debris. Activities to implement the committee's 25 recommendations occur at each individual agency, rather than at the committee level, according to the officials. As such, NOAA officials said each member agency may evaluate the effectiveness of its individual activities and pointed to measures NOAA has in place to evaluate its Marine Debris Program. For example, NOAA estimates the amount of debris removed annually and the number of students it reaches through education and outreach efforts.

EPA officials said that determining a baseline and quantifying the results of specific marine debris efforts to determine effectiveness is challenging, as is the case for other broad, nonpoint sources of pollution. For example, trash enters water bodies through innumerable water and sewer system outfalls, so EPA may focus on strategies to change people's behavior to minimize trash from entering the systems (see fig. 3). But unlike measuring emissions from a smokestack, it is difficult to determine a baseline and then measure and demonstrate progress in terms of trash reduction exiting through the system outfalls. EPA officials said they recognize the need to measure the effectiveness of their efforts related to marine debris—especially as addressing marine debris has become a

⁴⁸The 2014, 2016, and 2019 biennial reports included activities organized by recommendation categories. The 2010 and 2012 biennial reports listed activities by agency, but not by recommendation category.

high priority for the agency—but measuring progress has yet to be determined across all of its various offices and programs that carry out marine debris-related activities. Within the Trash Free Waters program specifically, EPA officials said they take steps to evaluate the effectiveness of the program through a variety of means, such as seeking feedback from stakeholders.

Figure 3: Trash Capture Device to Prevent Debris from Entering Waterway



Source: Laura Stone, Mobile Baykeeper. | GAO-19-653

Our past work has shown that collaborative entities—including those addressing complex, cross-cutting issues—can better demonstrate progress and identify areas for improvement if they develop a means to monitor, evaluate, and report the results of their collective efforts.⁴⁹ Developing such a means would help the interagency committee ensure that its member agencies are using their authorities and aligning their priorities in the most effective manner possible. Moreover, developing and implementing a process to analyze the effectiveness of the interagency committee’s recommendations and strategies, and reporting the results in its biennial reports as required by the Marine Debris Act would better

⁴⁹[GAO-12-1022](#).

position the committee to determine the extent to which its efforts are making a difference in addressing the complex facets of marine debris.

Estimated Funding and Recommendations for Priority Funding Needs

The five biennial reports include some estimates of funding for marine debris-related activities, but do not identify recommendations for priority funding needs as required by the Marine Debris Act. Specifically, we found that the reports included estimates for some member agencies' spending related to their marine debris-related activities and estimated nonfederal spending for certain activities.⁵⁰ The reports also state that several member agencies conduct activities within multiple programs, offices, and projects indirectly related to marine debris efforts. These agencies do not receive annual appropriations specifically for marine debris activities but instead receive appropriations to fulfill their missions or implement programs, making it difficult to estimate exact spending related to marine debris, according to the reports.

The 2019 biennial report states that the interagency committee's recommendations for priority funding needs are reflected in the President's budget request and operating plan for each member agency in any given fiscal year. NOAA officials said that it would be difficult to identify and communicate priority funding needs outside of these documents, particularly given the complications associated with estimating each agency's individual spending. For example, an EPA official said that EPA's efforts to address marine debris are decentralized and the agency does not receive an appropriation specifically for marine debris-related activities, making it difficult to determine how much the agency spends—or may need to spend—on marine debris. Moreover, NOAA and EPA officials said that because the interagency committee serves primarily as an information-sharing body and each member

⁵⁰For example, in the interagency committee's 2019 biennial report, EPA estimated \$410,000 in fiscal year 2016 and \$320,000 in fiscal year 2017 for its Trash Free Waters Program. The Department of State estimated no funding for marine debris activities in fiscal year 2016 and \$1,000,000 in fiscal year 2017 for marine debris-related activities and grants. The interagency committee also stated in this report that it interpreted the reference to nonfederal funding in the act's biennial reporting requirement to mean the required nonfederal match associated with the grants program authorized under section 3 of the Marine Debris Act administered by NOAA's Marine Debris Program. NOAA estimated \$2,166,517 in nonfederal match for fiscal year 2016, and \$1,944,621 in fiscal year 2017.

agency operates independently in identifying resource needs, the interagency committee has not needed to develop a process to identify recommendations for priority funding needs.

However, the Marine Debris Act requires the interagency committee to include recommendations for priority funding needs in its biennial reports, and without a process to identify such recommendations, the interagency committee cannot meet that requirement. Our past work on leading collaborative practices has shown the importance of identifying and leveraging resources, such as funding, in collaborative efforts.⁵¹ By developing a process to identify recommendations for priority funding needs in its biennial reports, the interagency committee could provide Congress with required information about priority funding needs across the federal government to address marine debris.

Experts Suggested a Range of Actions the Federal Government Could Take to Most Effectively Address Marine Debris

The 14 experts we interviewed with expertise in marine debris-related issues suggested a range of actions that the federal government could take to most effectively address various types of marine debris. Their suggestions included increasing or improving actions already being taken by some federal agencies as well as taking new actions. The experts stressed that there is not one solution to the growing, multi-dimensional problem of marine debris. Rather, they said that a multitude of actions involving federal agencies and nonfederal partners—such as international, state and local governments, Indian tribes, industry, and environmental groups—will need to be taken to address the issue.

Experts as well as agency officials we interviewed indicated that there would be a number of factors to consider in evaluating the suggested actions. Some of these factors are overarching, applying to most or all of the actions; others relate to specific actions. For example, several experts and agency officials said that competing priorities and limited resources would be important factors to consider related to all of the suggested actions. Several agency officials also said that their agencies may not

⁵¹[GAO-12-1022](#).

have the authority to take some of the actions suggested by the experts, and therefore new legislation would need to be enacted before they could take those actions. Additionally, some actions could result in impacts or costs to particular industries, underserved communities, or consumer groups, and understanding and identifying ways to mitigate such impacts would be important. Moreover, several agency officials said some actions, such as those related to waste management, may be better suited for local or state governments and that those entities would be better-equipped to deal with particular aspects of marine debris.

The following are examples of actions the experts suggested that the federal government could take. We organized the actions into the following five categories, which generally correspond to the categories laid out in the interagency committee's reports: (1) education and outreach, (2) establishment of federal requirements or incentives, (3) cleanup, (4) research and technology development, and (5) coordination.⁵²

Education and Outreach

Seven of the 14 experts suggested actions to educate or conduct outreach to the public or specific consumer or industry groups or international governments about ways to prevent, reduce, mitigate, or clean up waste that can become marine debris. A few experts emphasized that education and outreach efforts should be focused on ways to prevent trash from entering the marine environment. Examples of education and outreach actions suggested include:

- **Domestic education and outreach.** Five experts suggested different types of education or outreach campaigns the federal government could undertake to target certain domestic groups, such as consumers. One expert suggested that the federal government develop a national campaign to educate the public about marine debris. Such a campaign would develop a single message that various entities, including federal agencies and nonfederal stakeholders, could include in advertisements, social media, and other public awareness efforts. The expert pointed to similar state-led

⁵²In our analysis, we categorized actions related to legislation, regulations, policies, or incentives as falling within the category of "establishment of federal requirements or incentives." In analyzing these actions, we did not determine whether laws would need to be enacted or regulations issued, or both, to implement such actions.

campaigns, such as “Nobody Trashes Tennessee,” a litter campaign developed by Tennessee’s Department of Transportation.⁵³ This state campaign features celebrities, such as athletes and musicians, in advertisements and involves selling stickers, hats, and other items to help spread the message. However, the expert said that securing collaboration and agreement on a single message across federal agencies and nonfederal stakeholders could pose a challenge and that a national campaign would need a long-term commitment from all parties to be successful.

NOAA officials said that national campaigns can be expensive and demonstrating results from such efforts can be difficult, especially when they are broad in nature. As a result, these officials said that NOAA’s Marine Debris Program targets its education and outreach efforts to a specific audience for a particular type of behavior change or type of debris, such as educating and training high school students to lead “Zero Litter Campaigns” in their schools and communities.

- **International outreach.** Two experts suggested actions the federal government could take to conduct outreach internationally to promote programs, policies, or technologies that can reduce marine debris. For example, one expert suggested the federal government conduct outreach to government officials in countries that have limited waste management infrastructure to demonstrate effective waste management technologies. The expert said that the federal government could partner with private sector companies to demonstrate waste-to-energy technologies, such as gasification and pyrolysis that can convert plastic waste to fuel.⁵⁴ According to the expert, demonstrating such technologies would provide information on its benefits, including reducing sources of waste and creating a source of energy to either use or sell.

Several agency officials we interviewed agreed that international outreach efforts are critical to successfully addressing marine debris and that emphasis should be placed on assisting countries with

⁵³To learn more about the Tennessee Department of Transportation campaign, see <https://nobodytrashestennessee.com/>.

⁵⁴Waste-to-energy is a term used for technologies, such as gasification and pyrolysis that convert waste, including plastics, into fuels or chemicals. Gasification breaks down organic waste (e.g., plastics, wood chips, rice hulls) with heat and controlled amounts of oxygen to produce syngas. The syngas can then be burned as a fuel or can be used as a feedstock to produce other chemicals such as methane and methanol. Pyrolysis heats plastics with no oxygen to produce liquid fuel. According to the Energy Recovery Council’s 2018 report, 75 waste-to-energy plants operate in 21 states in the United States.

improving their waste management practices. However, these officials said there are many factors to consider with regard to waste-to-energy technologies. For instance, State Department officials said such technologies may not be supported by civil organizations because of environmental concerns.⁵⁵ Waste-to-energy technologies could also entail high upfront capital investments, and waste-to-energy facilities should adhere to strict environmental standards with monitoring and enforcement to help ensure the technology is not causing negative effects, according to agency officials. As a result, they said it may not be practical for some countries to adopt such technologies. In addition, USAID officials said that promoting waste-to-energy technology presupposes that waste is already being collected in sufficient quantity and quality to serve as a fuel for such technology, but that in some countries waste is openly dumped or burned and therefore sufficient waste may not be available. They cautioned that waste-to-energy technologies can be a part of a response to address marine debris abroad, but would not be sufficient alone.

⁵⁵In some cities in the United States, groups have raised concerns with the potential environmental and human health effects of waste-to-energy facilities on surrounding communities. For example, in February 2019, the city council of Baltimore, Maryland, passed an ordinance to place restrictions on two of the city's waste-to-energy facilities because of concerns that the facilities have contributed to asthma and other respiratory illnesses in surrounding communities.

Establishment of Federal Requirements or Incentives

Eleven experts suggested actions the federal government could take to establish requirements or incentives to address various types of marine debris. Examples included:

Microfibers



Microfibers are a widespread type of microplastic; they have been found on the shorelines of six continents and in oceans, rivers, soils, table salt, and public drinking water, according to scientific studies. Microfibers enter the marine environment through various pathways. For example, microfibers are shed from synthetic clothing and other materials made of polyester and nylon. These microfibers pass through to waterways because washing machines and wastewater treatment plants typically do not have processes sufficiently refined to remove the fibers. Little is known about other potential sources of microfibers, such as carpet manufacturing; the rate of generation, such as how quickly materials break down and shed microfibers; and any health impacts to humans or wildlife.

Sources: GAO analysis of scientific studies and agency documents; Sherri Mason/State University of New York at Fredonia (photo). | GAO-19-653

- Design standards for products.** Five experts suggested establishing federal requirements for manufacturers to design certain products to minimize the chances of material becoming marine debris. For example, two experts suggested the federal government develop design standards for washing machine manufacturers to ensure filters are designed to prevent microfibers from entering wastewater systems and then the marine environment. Three experts suggested the federal government develop design standards to require or incentivize manufacturers to use specific amounts of post-consumer material in developing certain products. For example, one expert recommended requiring the manufacturers of plastic beverage bottles to produce bottles using at least a minimum amount of recycled plastic. According to the expert, this would increase the demand for recycled plastic as a raw material, which in turn would reduce the likelihood that such plastic would end up as waste. The expert said that requiring the use of recycled plastic would likely impose increased costs on manufacturers because virgin plastic—the raw material typically used in producing plastic beverage bottles—is currently less expensive than recycled plastic. Such increases would likely be short term, however, because the increased demand would decrease the price after more of the recycled material is used, according to another expert. Some federal agency officials said that establishing such proposed federal design standards could be difficult due to limited existing statutory authorities.
- Requirements for fishing gear.** Three experts suggested the federal government establish requirements to mitigate the impact of lost or derelict fishing gear in federal waters.⁵⁶ For example, one expert suggested requiring the use of modified fishing gear, such as crab traps with biodegradable escape mechanisms that allow entrapped marine life to escape if the trap is lost or abandoned (see fig. 4). Requiring the use of fishing gear with biodegradable escape mechanisms would likely impose increased costs to the fishing industry, according to the expert, but those costs could be minimized

⁵⁶Federal waters typically begin approximately 3 geographical miles from land and extend 200 nautical miles.

if the federal government offered a subsidy to help purchase required gear. NOAA officials said that it would be challenging to require the use of certain types of fishing gear in part because of the cost to the federal government in ensuring implementation of the requirement. On the other hand, NOAA officials said they promote innovation and voluntary use of certain types of fishing gear through various efforts such as their Fishing for Energy program.⁵⁷

Figure 4: Crab Trap with Biodegradable Escape Mechanism



Source: Virginia Institute of Marine Science. | GAO-19-653

- **Restrictions on single-use plastics.** Four experts suggested that the federal government establish restrictions on the manufacturing or sale of certain single-use plastics. For example, the federal government could establish restrictions on the manufacturing and distribution of plastic bags in the form of thickness or material composition requirements, or production volume limits. Two of these experts also said that the federal government could review existing local, state, and international efforts to restrict single-use plastics to identify best practices so that these types of actions could potentially be scaled appropriately at the federal level. According to the United

⁵⁷Fishing for Energy is a partnership between NOAA, the fishing industry, and other stakeholders to prevent and reduce the impacts of derelict fishing gear in the marine environment by offering no-cost options for disposing of old or unwanted gear and converting gear into energy. For example, metal gear—such as crab pots—is recycled and nonmetal material is brought to a waste-to-energy facility where it is used in the production of electricity for local communities, according to NOAA documentation.

Single-Use Plastics



Single-use plastics are any plastic items—such as plastic soda or water bottles—that are intended for use only once before they are thrown away or recycled as defined by the United Nations Environment Programme. Single-use plastics can have environmental impacts when they are left in the marine environment. For example, single-use plastics may be ingested by hundreds of species of marine wildlife, such as turtles and dolphins, who mistake them for food, potentially blocking their airways and stomachs, according to a 2018 report by the United Nations Environment Programme.

Sources: United Nations Environment Programme; National Oceanic and Atmospheric Administration (photo). | GAO-19-653

Nations Environmental Programme, 127 countries and two states have placed various types of restrictions on the retail distribution of plastic bags as of 2018.⁵⁸ One expert pointed to research that shows that plastic bags are one of the most abundant forms of marine debris and suggested that banning them would therefore significantly reduce the amount of debris entering the marine environment.⁵⁹

NOAA officials agreed that restricting the sale of single-use plastic bags could help address the marine debris problem, but said that identifying an agency with sufficient legal authority to be responsible for implementing and enforcing any restriction would be important and could be a challenge at the federal level. NOAA and EPA officials said that it would be important to carefully determine and assess trade-offs or other potential impacts before considering these types of restrictions.

- **Incentives for waste management.** Four experts suggested actions the federal government could take to provide incentives to local governments to help them improve their waste management and recycling programs. The experts said that waste and water management is typically the responsibility of local governments, but that given the scope and scale of the marine debris problem, the federal government could use its resources to provide incentives to help local governments make improvements. For example, the federal government could provide grants or subsidies to help local governments implement best management practices, such as using trash traps to help remove debris from waterways and prevent it from becoming marine debris. In addition, the experts said that the federal government could provide local governments with resources to help purchase bins with lids to help prevent inadvertent loss of waste or to pay for infrastructure such as trucks and recycling facilities to improve the collection and recycling of waste. According to one expert, transporting materials from consumers to the appropriate waste management or recycling facilities is a significant barrier to achieving better waste management.

⁵⁸In contrast, several states have enacted legislation prohibiting local governments from regulating the sale of plastic bags.

⁵⁹For example, in 2018, the Ocean Conservancy's International Coastal Cleanup found that plastic bags were among the top five most common types of marine debris. *Building a Clean Swell: The International Coastal Cleanup's 2018 Report*, Ocean Conservancy, Washington, D.C.

EPA officials agreed with the importance of local waste management efforts. The officials emphasized that it is the agency's mission, in part, to address management of waste to prevent trash, and management of water that carries the trash to the marine environment. The officials said that this is particularly critical for addressing marine debris since an estimated 80 percent of aquatic trash originates from land-based sources. The officials said the agency has provided some funding to local governments to implement mechanisms to capture trash before it enters waterways or to remove trash from water. They added that there is no one size fits all approach, however, to working with local governments. Rather, different localities may have differing needs—such as for funding, information, or technical assistance—and EPA tries to create a climate where localities can identify and best address those needs, according to the officials.

Cleanup

Five of the 14 experts suggested the federal government support marine debris cleanup and removal activities by providing resources to organizations that coordinate cleanup projects (see fig. 5). Several agency officials said that preventing waste from entering the marine environment should be the primary focus of addressing marine debris, but cleaning up existing marine debris continues to be a critical part of the multi-faceted response to the problem, especially after severe weather events such as hurricanes. According to one expert, debris deposited into the marine environment around the Florida Keys after Hurricane Irma in 2017 included construction debris from demolished buildings, household items such as refrigerators and televisions, cars, and boats, among other types of debris. The expert suggested the federal government provide funding and technical assistance to state and local governments to help locate such debris. According to the expert, after a severe weather event, the distribution of debris can vary greatly with ocean and wind currents, and the debris can extend for miles into the ocean. As a result, the expert suggested that the federal government assist with conducting aerial flyovers to locate major concentrations of debris. The flyovers would employ mapping technology, such as global positioning system equipment and cameras, to locate and map the debris for removal. NOAA officials agreed with the importance of cleanup activities, particularly after severe weather events. In 2018, NOAA provided \$18 million to states for the detection, removal, and disposal of debris after the 2017 hurricanes.

Figure 5: Before and After Beach Cleanup at a National Park

Source: National Park Service. | GAO-19-653

Research and Technology Development

Ten of the 14 experts suggested actions related to research or technology development. A few experts commended federal research efforts related to marine debris to date but stressed that additional research is needed in multiple areas. Examples of research and technology development actions suggested by experts include:

- **Research on sources, pathways, and location of marine debris.** Five experts suggested the federal government support research on identifying and understanding the various sources, pathways, and location of marine debris. For example, one expert suggested that the federal government conduct a national study to identify where waste is generated, through which types of major pathways it enters the marine environment (such as rivers or stormwater), and where the waste ends up. This study could include a focus on specific pathways, such as where illegal dumping occurs, which has not been researched at the national level, according to the expert. The expert said that federal agencies and others could use the results of such a study to help target education for the public, policy makers, and law enforcement officials on how to prevent and properly dispose of the types of waste that most commonly end up as marine debris. NOAA officials said that illegal dumping tends to be localized, so it may be

difficult to carry out research on a national scale, but agreed with the need to better understand sources and types of marine debris since many factors contribute to the problem.

- **Research on effects of marine debris.** Four experts suggested the federal government support research to determine the effects of debris on wildlife and the marine environment as well as on human health. For example, one expert suggested that the federal government conduct or fund research to determine the effects of microplastics on human health to help the federal government and other stakeholders identify the most appropriate solutions. EPA officials said that this type of research is one among many competing areas related to marine debris research their agency has targeted.
- **Development of technology to address marine debris.** Five experts suggested actions that the federal government could take to develop new technology to help address marine debris. For example, one expert suggested that the federal government fund the development of new technology to recycle hard-to-recycle plastic materials so that these materials are less likely to end up as waste and become marine debris. The expert said that, in particular, plastic materials such as packaging used to preserve food products are not readily recyclable because the technology to recycle these types of plastics is not available or is not economically viable. EPA officials said that even when there is technology to recycle these types of plastics, food contamination is a problem that may prevent them from being recycled. In addition, an increased capacity for recycling may not result in a behavior change on the part of the consumer, which is another factor to consider in evaluating whether to pursue this type of action, according to the officials.

Coordination

Nine experts suggested that the federal government coordinate with local, state, federal, and international governments and other nonfederal partners to address marine debris. Experts emphasized that because marine debris is a complex issue with domestic and international impacts, it requires contributions from and coordination across these many groups. Examples of coordination suggested by experts include:

- **Coordination with stakeholders on management of fishing gear.** Two experts suggested the federal government coordinate to identify ways to prevent fishing gear from becoming a source of marine debris and causing harm to fish and other marine species. One expert

suggested the federal government coordinate with stakeholders to identify and implement best management practices for responsible management and use of fishing gear. Specifically, the expert suggested that the federal government coordinate with state agencies, gear designers and manufacturers, fishermen, and other stakeholders to adopt best practices in particular locations such as in the Chesapeake Bay or Puget Sound where there are extensive commercial or recreational fisheries. The expert said it would be important to work with industry stakeholders to avoid the best practices being perceived as unnecessary government intervention. In addition, one of the experts said that adoption of best practices could incur additional costs for activities such as replacing gear, which could be minimized through government subsidies or other incentives. NOAA officials said these types of coordination activities align with current efforts within their Marine Debris Program. For example, in 2016 NOAA partnered with California State University and other stakeholders to encourage the adoption of best practices to prevent the loss of gear used to catch spiny lobster in the Channel Islands in California.

- **Coordination with international governments.** Four experts suggested the federal government increase its coordination internationally such as through developing international agreements and participating in multinational forums. For example, one expert suggested that the United States and other countries enter into an international agreement to prevent further release of plastic into the ocean. Under such an agreement, each country would set a target to reduce the amount of plastic released into the ocean, develop strategies and approaches to meet that target, and measure and report on progress in meeting the target.⁶⁰ The expert said that taking actions to meet the target would incur costs and that securing commitments from countries could be difficult. However, the expert said that allowing countries the flexibility to develop their own strategies for meeting their targets could help overcome these difficulties.

State Department officials said that in addition to coordination with international governments, coordination is needed with other key stakeholders such as waste management and marine debris experts, local leaders, private-sector industry and retail entities, and

⁶⁰See *Why We Need An International Agreement On Marine Plastic Pollution*, Stephanie B. Borrelle, Chelsea M. Rochman, Max Liboiron, Alexander L. Bond, Amy Lusher, Hillary Bradshaw, and Jennifer F. Provencher.

nongovernmental organizations. This is in part because so much of the international marine debris problem stems from waste management issues at the local level. In some countries, as in the United States, the government may not have the authority to work on waste management at the local level and as a result, understanding this complexity is an important factor to consider in coordinating internationally, according to the officials. USAID officials agreed that coordination with international stakeholders beyond international governments is needed and said that given the local nature of waste management issues that contribute to the international marine debris problem, stakeholders such as local and municipal governments are also important and should be a major focus for coordination and capacity building.⁶¹

Conclusions

Marine debris is a global, multi-faceted problem and multiple federal agencies, along with nonfederal stakeholders such as nongovernmental organizations, industry, states, Indian tribes, and others, have important roles to play in addressing the problem. The interagency committee's sharing of information about its members' activities is a good first step to ensure the agencies are aware of their respective marine debris-related efforts. NOAA, as chair of the committee, has recognized the need to develop a documented membership process, but has not established a time frame for doing so. By establishing a time frame for developing a documented membership process, NOAA and the interagency committee can benefit from capturing all members' activities, and ensuring it provides Congress a complete picture of marine debris efforts across the federal government.

NOAA also recognizes that it may be helpful to specify the level of the official needed to represent the agencies through revisions to its charter, but has not determined what those revisions may entail. By clarifying what is meant by "senior official" such as through revisions to its charter, NOAA would have greater assurance that it has the full engagement of member agency officials who can speak for their agency and commit to activities.

⁶¹USAID officials further said that beyond coordination, many of the experts' suggestions to address marine debris—such as providing incentives for waste management, conducting research on sources, pathways and location of marine debris, and developing new technology to address marine debris—are also needed in developing countries.

The interagency committee's biennial reports provide information on the committee's recommendations and individual agencies' activities to implement those recommendations, but the reports do not include an analysis of the effectiveness of the committee's recommendations and strategies as required by the Marine Debris Act. By developing and implementing a process to analyze the effectiveness of the interagency committee's recommendations and strategies, and reporting the results in its biennial reports as required, the interagency committee would be in a better position to determine the extent to which its efforts are making a difference in addressing the complex facets of marine debris.

Additionally, the interagency committee has not identified required recommendations for priority funding needs. By developing a process to identify recommendations for priority funding needs and including such recommendations in its biennial reports, the interagency committee could provide the Congress with required information about priority funding needs across the federal government to address marine debris.

Recommendations for Executive Action

We are making a total of four recommendations, including two recommendations to the NOAA Administrator and two recommendations to the chair of the interagency committee, specifically:

The NOAA Administrator, in coordination with interagency committee member agencies, should establish a time frame for documenting the committee's membership process. (Recommendation 1)

The NOAA Administrator, in coordination with interagency committee member agencies, should clarify what is meant by "senior official" in the Marine Debris Act, such as through revisions to its charter. (Recommendation 2)

The chair of the interagency committee, in coordination with member agencies, should develop and implement a process to analyze the effectiveness of the interagency committee's recommendations and strategies, and include the results in its biennial reports. (Recommendation 3)

The chair of the interagency committee, in coordination with member agencies, should develop a process to identify recommendations for

priority funding needs to address marine debris, and include such recommendations in its biennial reports. (Recommendation 4)

Agency Comments and Our Evaluation

We provided the Departments of Commerce, Defense, Homeland Security, Interior, Justice, and State; EPA; the Marine Mammal Commission; and USAID a draft of this report for their review and comment. The Department of Commerce and USAID provided written comments, which are reprinted in appendixes IV and V respectively, and discussed below. We also received technical comments from the Departments of Commerce, Homeland Security, the Interior, and State; EPA; the Marine Mammal Commission; and USAID, which we incorporated into the report as appropriate. The Departments of Defense and Justice indicated that they had no comments.

In written comments from the Department of Commerce, Commerce and NOAA agreed with our four recommendations. Regarding our first two recommendations, NOAA stated that its Administrator will establish a time frame for documenting the interagency committee's membership process and, in coordination with the interagency committee, will define the term "senior official" through revisions to its charter so that the term can be consistently applied across all federal agency structures. In forming its definition of "senior official," NOAA indicated that it would consider seniority requirements of similarly situated advisory committees, along with related factors such as the ability to make decisions on behalf of an agency.

Regarding our third recommendation on developing and implementing a process to analyze the effectiveness of the interagency committee's recommendations and strategies, NOAA stated that it agreed with this recommendation to the extent it can be implemented with available budgetary resources. It indicated that the interagency committee lacks the existing resources to require and routinely evaluate the effectiveness of agency activities. Instead, individual agencies are expected to work toward implementing the interagency committee's 2008 recommendations in accordance with each agency's legal and programmatic authorities, mission priorities, and resource limitations. Nevertheless, NOAA stated that to the extent possible it will work with interagency committee members to identify common or easily translatable metrics for evaluating the effectiveness of its 2008 recommendations and include these in the next biennial report to Congress.

Regarding our fourth recommendation, NOAA stated that it agreed with our recommendation, but noted that it does not have the authority to control the implementation of a process for identifying priority funding needs of other member agencies. It stated that the interagency committee's recommendations for priority funding needs are already reflected in the President's annual budget request and operating plan for each member agency. However, NOAA stated that to the extent possible, it will work with interagency committee members to develop a process for identifying priority areas, which can be reflected in each agency's respective budgeting process and shared in the committee's biennial reports. We agree that NOAA does not have the authority to control the implementation of a process for identifying priority funding needs of other member agencies. However, as chair of the committee, NOAA can coordinate with member agencies to develop a process that each individual member agency—under its individual authority and budgetary processes—can use to identify recommendations for priority funding needs to address marine debris. We believe that coordinating such information and providing it in the committee's biennial reports could provide Congress with required information about priority funding needs across the federal government to address marine debris.

In addition, in written comments from USAID, the agency said it is committed to addressing the challenge of marine debris through its programs and in collaboration with interagency committee partners. USAID stated that it has significant opportunities to play an important role in the international response to address marine debris and, as the lead federal agency on foreign assistance, has several programs that target mismanaged municipal waste in the developing world. For example, USAID stated that the agency's Municipal-Waste Recycling Program has helped reduce land-based sources of ocean plastic waste in four of the top five contributing countries—Indonesia, the Philippines, Sri Lanka, and Vietnam—by providing small grants and technical assistance to a variety of local actors in towns and cities. USAID also stated that it greatly appreciates the work of its interagency committee partners in addressing marine debris and looks forward to continued collaboration with them.

We are sending copies of this report to the appropriate congressional committees; the Secretaries of Commerce, Defense, Homeland Security, Interior, Justice, and State; the Administrators of EPA and USAID; and the Commissioners of the Marine Mammal Commission. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or fennella@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last

page of this report. GAO staff who made key contributions to this report are listed in appendix VI.

A handwritten signature in cursive script that reads "Anne-Marie Fennell".

Anne-Marie Fennell
Director, Natural Resources and Environment

List of Requesters

The Honorable Maria Cantwell
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Richard Blumenthal
United States Senate

The Honorable Cory A. Booker
United States Senate

The Honorable Christopher A. Coons
United States Senate

The Honorable Mazie Hirono
United States Senate

The Honorable Jeffrey A. Merkley
United States Senate

The Honorable Lisa Murkowski
United States Senate

The Honorable Patty Murray
United States Senate

The Honorable Gary C. Peters
United States Senate

The Honorable Brian Schatz
United States Senate

The Honorable Tom Udall
United States Senate

The Honorable Elizabeth Warren
United States Senate

The Honorable Sheldon Whitehouse
United States Senate

Appendix I: Objectives, Scope, and Methodology

This report examines (1) how the interagency committee coordinates among federal agencies and the process for determining membership and agency representation, (2) the extent to which the interagency committee's biennial reports contain required elements, and (3) experts' suggestions on actions the federal government could take to most effectively address marine debris.

To examine how the interagency committee has coordinated among federal agencies and the process for determining membership and agency representation, we reviewed the Marine Debris, Research, Prevention, and Reduction Act, as amended (Marine Debris Act), and interagency committee documents, including the committee's 2008 report with recommendations, charter,¹ and five biennial reports to Congress issued as of March 2019.² Specifically, we reviewed meeting minutes from the interagency committee's quarterly meetings from November 2012 through April 2019,³ to understand the topics and activities the committee has coordinated on and the federal agencies that have participated. We attended five of the interagency committee's quarterly meetings (in May, September, and December of 2018, and April and July of 2019) to directly observe committee coordination among agencies during these meetings. We also reviewed documents from committee member agencies and interviewed and reviewed written responses from those agencies to obtain information on their coordination efforts. Agencies we included were those agencies designated as members in the Marine Debris Act as well as additional agencies identified as members in the committee's charter (see table 2). In addition, we

¹We reviewed the interagency committee's initial charter, developed in 2006, as well as its most recently revised 2014 charter.

²The five biennial reports were issued in March 2010, October 2012, September 2014, December 2016, and March 2019. Collectively, the reports include activities the interagency committee member agencies reported conducting between June 2008 and December 2017.

³Meeting minutes dating back to November 2012 were those minutes most readily available from the National Oceanic and Atmospheric Administration, the chair of the interagency committee.

interviewed officials and reviewed documents from the National Science Foundation, Office of the U.S. Trade Representative, and the U.S. Agency for International Development, based on suggestions from interagency committee officials.⁴

Table 2: Interagency Marine Debris Coordinating Committee Member Agencies, As Identified in Its 2014 Charter

Department	Agency
Department of Commerce	National Oceanic and Atmospheric Administration
Department of Defense	U.S. Army Corps of Engineers U.S. Navy
Department of Homeland Security	U.S. Coast Guard
Department of the Interior	Bureau of Safety and Environmental Enforcement National Park Service U.S. Fish and Wildlife Service
Department of Justice	Environment and Natural Resources Division
Department of State	
Environmental Protection Agency	
	Marine Mammal Commission

Source: GAO analysis of Interagency Marine Debris Coordinating Committee documents. | GAO-19-653

From the committee’s 2008 report with recommendations, the five biennial reports, and other member agency documents, we summarized activities conducted by member agencies. For reporting purposes, we selected examples from the 2016 and 2019 biennial reports (those most recently available) of activities the agencies have taken to illustrate interagency committee member efforts to address marine debris, to reflect a range of activities across categories of activities and member agencies.⁵ In addition, we compared information we received about the

⁴We subsequently removed the National Science Foundation and the Office of the U.S. Trade Representative from our review because, unlike the U.S. Agency for International Development, those two agencies have not participated on the interagency committee.

⁵The biennial progress reports identified eight categories of activities, but we consolidated activities reported under the “enforcement” and “incentive programs” categories into the “legislation, regulation, and policy” category because of similarities among the activities within these categories. Similarly, for presentation purposes, we consolidated activities reported under the “research” and “technology development” categories into one “research and technology development” category.

interagency committee's coordination to leading practices we identified in our past work on implementing interagency collaborative mechanisms.⁶

To examine the extent to which the interagency committee's biennial reports contain required elements, we compared information contained in the committee's five biennial reports to the statutory reporting requirements in the Marine Debris Act. Specifically, two analysts independently reviewed each of the five biennial reports to evaluate information the reports included about (1) the status of implementation of any recommendations and strategies of the committee, (2) analysis of the recommendations and strategies' effectiveness, (3) estimated federal and nonfederal funding provided for marine debris, and (4) recommendations for priority funding needs. The analysts then compared and summarized the results of their analyses. We also interviewed and reviewed written responses from National Oceanic and Atmospheric Administration (NOAA) officials (in the agency's capacity as chair of the interagency committee) and officials from other members of the committee about steps to develop the biennial reports, including the reports' required elements. In addition, we compared information from the reports and the information we received from the officials to leading practices we identified in our past work on implementing interagency collaborative mechanisms.⁷

To obtain suggestions on actions the federal government could take to most effectively address marine debris, we conducted structured interviews with a nongeneralizable sample of 14 experts with expertise in marine debris-related issues. We selected the experts from a list of individuals we identified through interviews with agency officials and through a snowball approach, in which we reviewed relevant literature on marine debris, such as articles the experts authored, to identify other key experts and asked experts to identify other experts for including in this review. We also identified experts through our participation in key marine debris events, such as presenting at the Sixth International Marine Debris

⁶GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 27, 2012). We used leading practices that are relevant to the requirements for the interagency committee in the Marine Debris Act. These included practices related to participants, resources, outcomes and accountability, and written guidance and agreements.

⁷[GAO-12-1022](#).

Conference.⁸ We considered factors such as the individual's experience with different types of debris (e.g., abandoned fishing gear or consumer debris) or association with various sectors (e.g., academia or industry).

Experts selected included: (1) academics with expertise in areas such as sources, prevalence, and transport of plastic marine debris; (2) officials representing the plastic manufacturing, food and beverage, and commercial fishing industries; (3) officials from nonprofit organizations with expertise in marine debris removal from coastal areas, litter prevention, and recycling management systems and strategies; and (4) state and local government officials from the District of Columbia, Florida, and Washington with expertise in local litter prevention efforts, derelict vessels, and lost and derelict fishing gear.⁹

We asked the 14 experts to suggest up to 5 to 10 actions the federal government could take to most effectively address different types of marine debris.¹⁰ We defined the term "actions" to mean any policy, program, effort, or intervention that could be taken by the federal government to prevent, remove, or dispose of marine debris. Actions could include new actions that the federal government may not have implemented or actions the federal government may already have taken. We did not limit experts' suggestions to actions that agencies currently have authority to implement. We do not take a position on the merits of, the necessary legal authority for, or the most appropriate entity for the actions suggested by the 14 experts.

Prior to the interview, we provided experts with background information about our review, the interview methodology, and definitions for key terms to ensure that terminology was used consistently throughout all the interviews. We also reviewed this information with each expert at the start of the interview. For each action, we asked that the expert identify:

⁸The Sixth International Marine Debris Conference was organized by NOAA and the United Nations Environment Programme. Over 700 participants from 54 countries attended the conference, including international governments and multinational bodies representatives; federal, state, and local government officials; coastal and ocean resource managers; waste management representatives; scientists; academics; and industry representatives.

⁹We selected these locations using factors such as geographic area and expertise in marine debris issues.

¹⁰One expert suggested 12 actions; we included each of the 12 expert's suggested actions in our analysis.

- **Name of action;**
- **Type(s) of debris:** (Select any or all of the following types of marine debris that may be affected by the action: consumer-based, abandoned fishing gear, derelict vessels, and/or miscellaneous. If miscellaneous is selected, please explain);
- **Describe this action:** (Briefly describe this action and how it will address (i.e. prevent, remove, or dispose) marine debris and if it is currently being implemented by the federal agencies);
- **Federal agency(ies)** (Please briefly describe the federal agency(ies) that have implemented or could play a role in implementing the action);
- **Nonfederal partners:** (Please briefly describe the nonfederal partners the federal agencies may need to coordinate with when implementing the action (such as international, state and local governments, nonprofit groups, industry, and/or researchers);
- **Advantages:** (Briefly describe the advantages of the federal agencies implementing the action in terms of the ability of this action to address marine debris, the cost of the action, and the technical and administrative feasibility of implementing the action, or any other advantage that you believe may affect implementation);
- **Disadvantages:** (Briefly describe the disadvantages of the federal agencies implementing the action in terms of the ability of this action to address marine debris, the cost of the action, and the technical and administrative feasibility of implementing the action, or any other disadvantage that you believe may affect implementation);¹¹
- **Challenges:** (Describe any factors that may hinder this action from being successfully implemented by the federal agencies and how these factors may be overcome);
- **Examples:** (In instances where the federal agencies have previously implemented the action, please provide examples of how it helped address marine debris. If other entities that are not federal agencies

¹¹We defined disadvantages of an action in terms of the ability of the action to address marine debris, the cost of the action, and the technical and administrative feasibility of implementing the action. We defined challenges as the factors that may hinder the action from being successfully implemented by the federal agencies. However, during many of the interviews the experts found it difficult to distinguish between the two terms. As a result, we use the term “challenge” in the report to indicate either a disadvantage or a challenge.

have successfully implemented the action, please provide examples of how the action helped address marine debris);

- **Authorities:** (Briefly describe what legal authorities these actions would be implemented under. If new authorities are needed, please describe them); and
- **Support:** (Provide any studies, reports, or research you are basing your responses on).

We conducted the interviews via teleconference between July 2018 and November 2018. The experts suggested over 70 actions that we organized into five categories based on common themes.¹² Specifically, two analysts independently reviewed each expert's description for individual actions and identified an appropriate category using decision rules the team developed. The analysts then discussed and compared their decisions. For actions the analysts categorized differently, they reviewed the decision rules together and came to agreement on the best category for a particular action. For reporting purposes, we selected several actions within each of the broader categories to provide illustrative examples of the types of actions experts suggested. Our selection of actions was based on a variety of factors, including our analysis of the number experts that suggested similar types of actions, the detail provided by the experts, and the availability of supporting information, such as instances where an action had been taken by state or local governments. Actions suggested by the 14 experts cannot be generalized to actions that might be suggested by other experts but provide examples of actions federal agencies could take to address marine debris.

We also obtained written and oral responses to questions we asked of agency officials regarding factors their agencies would need to consider in potentially implementing any of the actions identified by the 14 experts. In addition, to corroborate statements from experts and agency officials and provide additional context on marine debris, we reviewed scientific studies and documents from international organizations, such as the United Nations; academic institutions and nonprofit organizations such as

¹²The categories of actions generally correspond to the categories laid out in the interagency committee's biennial reports. However, we merged the categories "legislation, regulation, and policy," "incentive programs," and "enforcement" into the "establish federal requirements or incentives" category. We also merged the categories "technology development" and "research" to make the category "research and technology development."

the Ocean Conservancy; and federal and state agencies to understand what is known about the types, sources, and effects of marine debris. We identified these studies and documents through various means, such as recommendations from experts and agency officials and authorship by experts. We also interviewed individuals from academia, environmental groups, and industry actively working on marine debris issues and attended the Sixth International Marine Debris Conference held in San Diego, California, in March 2018, to gain an understanding of areas of emphasis in the marine debris community.

We conducted this performance audit from October 2017 to September 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Recommendations from the Interagency Marine Debris Coordinating Committee's 2008 Report

Table 3 lists the 25 recommendations contained in the Interagency Marine Debris Coordinating Committee's 2008 report entitled Interagency Report on Marine Debris Sources, Impacts, Strategies, and Recommendations.¹ According to this report, these recommendations are intended to guide the federal government's strategies with respect to addressing problems of persistent marine debris. Each of the five biennial reports the committee issued subsequent to its initial 2008 report reference the 25 recommendations; the committee has not revisited the recommendations to determine the extent to which any adjustments may be warranted.

Table 3: Interagency Marine Debris Coordinating Committee 2008 Recommendations

Category	Recommendation
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¹The interagency committee submitted this report to relevant congressional committees in response to a requirement in the Marine Debris Research, Prevention, and Reduction Act. Pub. L. No. 109-449, § 5(c)(1), 120 Stat. 3333, 3337 (2006). The report was due by December 22, 2007; the committee submitted the report to the congressional committees in August 2008. This requirement was repealed in 2012. See Pub. L. No. 112-213, § 606(a)(1), 126 Stat. 1540, 1577 (2012).

**Appendix II: Recommendations from the
Interagency Marine Debris Coordinating
Committee's 2008 Report**

Category	Recommendation
Education and outreach	<p>(1) Federal agencies should demonstrate leadership by distributing educational materials to personnel on the sources and impacts of marine debris as well as methods for prevention with the goal of reducing the federal contribution to marine debris.</p> <p>(2) Federal agencies should support public awareness campaigns by providing technical expertise and educational materials and by encouraging private sector participation, when appropriate. These campaigns may target specific threats and audiences to address the diversity of the marine debris issue.</p> <p>(3) Federal agencies should engage and partner with state, local, tribal and nongovernmental entities to support coordinated events, such as Earth Day, the International Coastal Cleanup, and other activities that have relevance to marine debris. These events should include nationwide educational and media outreach efforts to enhance awareness of sources and impacts of marine debris and to provide recommendations regarding specific actions that can be taken to prevent or reduce marine debris.</p>
Legislation, regulation, and policy	<p>(4) The committee should review the findings from the National Academy of Sciences study that will assess the effectiveness of international and national measures to prevent and reduce marine debris and its impacts, and federal agencies should take action, as appropriate.^a</p> <p>(5) Federal agencies should seek ways to strengthen and enhance their ability to fulfill both regulatory and nonregulatory mandates for marine debris prevention, where appropriate.</p> <p>(6) The committee should coordinate a correspondence group of state, local, and tribal governments to determine the marine debris-related authorities and policies at those levels, including both those that address land-based sources of marine debris and those that address ocean-based sources. The correspondence group will be an important component in the committee's gap analysis of regulatory and nonregulatory authorities that can be used to promote marine debris prevention.</p> <p>(7) Federal agencies, coordinating through the committee, should review existing international policies and strategies regarding marine debris from both land-based and ocean-based sources and develop a white paper outlining possible policies or actions for consideration by the United States.</p> <p>(8) Federal agencies should support voluntary, incentive-based programs that encourage communities to adopt environmentally responsible practices. Examples may include Heal the Bay's "A Day Without a Bag" Program (a southern California nonprofit organization) and the Clean Marina Program, an initiative involving federal agencies and state governments.^b</p> <p>(9) Federal agencies should work with state, local, tribal, and nongovernmental entities to develop efficient recycling incentive programs for municipalities or appropriate venues.^b</p> <p>(10) Federal agencies, where appropriate, should evaluate methods by which users of products that contribute significantly to marine debris can be given an incentive to select environmentally friendly alternatives or improve use of recycling infrastructure. Such incentive programs or pilot projects should include regular monitoring and evaluation of their effectiveness.^b</p> <p>(11) Federal agencies should continue to review enforcement authorities regarding marine debris and items that may become marine debris, enhance the effective use of those authorities as needed and appropriate, and ensure a coordinated approach to enforcement of relevant authorities.^c</p> <p>(12) In appropriate cases, federal agencies should refer violations of federal law, such as the Act to Prevent Pollution from Ships, Clean Water Act, and Ocean Dumping Act, to the Environment and Natural Resources Division of the U.S. Department of Justice for civil or criminal enforcement action.^c</p>

**Appendix II: Recommendations from the
Interagency Marine Debris Coordinating
Committee's 2008 Report**

Category	Recommendation
Cleanup	<p>(13) Federal agencies should work together and contribute to coordinated removal efforts of marine debris and items that can become marine debris in areas under federal jurisdiction, with priority given to heavily impacted areas.</p> <p>(14) Federal agencies should examine how existing programs can be targeted to support difficult marine debris removal efforts.</p> <p>(15) Federal agencies should partner with state, local, tribal, and nongovernmental entities to continue to support and conduct cleanup efforts.</p>
Research and technology development	<p>(16) Federal agencies, coordinating through the committee, should sponsor and conduct research to characterize the nature of marine debris and further investigate reducing, mitigating, preventing, and controlling marine debris and assessing its impacts, with a particular focus on developing cost-benefit analyses for these actions.</p> <p>(17) Federal agencies, cooperating through the committee, should improve efforts to monitor marine debris, including shoreline, floating, and submerged debris, using lessons learned from previous federally funded monitoring efforts.</p> <p>(18) The committee should convene a special session at least once a year to share and discuss the latest research findings on marine debris, with summaries and identified gaps to be passed to the Subcommittee on Integrated Management of Ocean Resources and the Joint Subcommittee on Ocean Science and Technology.</p> <p>(19) Federal agencies, coordinating through the committee, should sponsor and conduct research regarding the attitudes and practices of users of products that contribute to marine debris. In particular, such research should (a) investigate the willingness to alter attitudes and practices in a manner that would reduce marine debris; (b) identify preferences with regard to potential incentive programs and which types of incentives are most likely to produce positive responses; and (c) develop and test incentive programs intended to alter attitudes and/or practices among users of products that contribute to marine debris.</p> <p>(20) Federal agencies should partner with state, local, tribal, and nongovernmental entities to encourage the development of specific technologies that could prevent or reduce the amount of debris entering the marine environment or that could mitigate the impacts of marine debris on navigation, human health and safety, the economy, habitats, and species.^d</p> <p>(21) Federal agencies should support research, technology development, and use of materials that will not persist in the marine environment.^d</p>
Coordination	<p>(22) Federal agencies should help sponsor and participate in workshops, conferences, and lectures that address issues related to marine debris and sources of marine debris to encourage the exchange of information that can inform the development of guidelines and implementation of actions to mitigate marine debris impacts.</p> <p>(23) Federal agencies should participate in ongoing international activities to mitigate the impacts and reduce the amount of marine debris. Federal agencies also should support efforts to increase the awareness of such international marine debris efforts and encourage participation of other nations and international organizations in those efforts as well as consider options for new international activities and initiatives to mitigate the impacts and reduce the amount of marine debris.</p> <p>(24) The committee should serve as a central point for coordination of federal efforts to develop new policies, strengthen existing policies, identify new research topics or projects, and address requests from Congress for specific information or actions related to marine debris.</p> <p>(25) Federal agencies should pursue partnerships, as appropriate, with nongovernmental entities to develop, promote, and implement strategies for preventing, reducing, or mitigating the impacts of marine debris.</p>

Source: Interagency Report on Marine Debris Sources, Impacts, Strategies, and Recommendations, 2008. | GAO-19-653

**Appendix II: Recommendations from the
Interagency Marine Debris Coordinating
Committee's 2008 Report**

^aTackling Marine Debris in the 21st Century, Committee on the Effectiveness of International and National Measures to Prevent and Reduce Marine Debris and Its Impacts, National Research Council, National Academies Press (Washington, D.C.), 2009.

^bCategorized as "incentive programs" in the committee's 2008 report.

^cCategorized as "enforcement" in the committee's 2008 report.

^dCategorized as "technology development" in the committee's 2008 report.

Appendix III: Examples of Interagency Marine Debris Coordinating Committee Member Agencies' Activities

The following are examples of activities members of the Interagency Marine Debris Coordinating Committee (interagency committee) reported conducting—often in coordination with nonfederal partners such as nongovernmental organizations, industry, state governments, Indian tribes, and other nations—to address marine debris based on information from the committee's 2016 and 2019 biennial reports and agency documents and interviews.¹ These examples include activities from the categories outlined in the biennial reports: (1) education and outreach; (2) legislation, regulation, and policy; (3) cleanup; (4) research and technology development; and (5) coordination.² The examples discussed below do not represent all activities conducted by member agencies, but rather illustrate the nature and type of activities the agencies reported conducting. In addition, the examples include activities from agencies that were identified in the interagency committee's 2014 charter and were included in the committee's most recent biennial reports.³

¹The 2016 and 2019 biennial reports cover activities conducted in 2014-15, and 2016-2017, respectively. We reviewed each of the five biennial reports issued by the interagency committee between 2010 and 2019, but selected examples of activities from the two most recent biennial reports to include in our report.

²The biennial progress reports identified eight categories of activities, but we consolidated activities reported under the "enforcement" and "incentive programs" categories into the "legislation, regulation, and policy" category because of similarities among the activities within these categories. Similarly, for presentation purposes, we consolidated activities reported under the "research" and "technology development" categories into one "research and technology development" category.

³These agencies are: the Department of Commerce's NOAA; the Department of Defense's U.S. Army Corps of Engineers and U.S. Navy; the Department of Homeland Security's U.S. Coast Guard; the Department of the Interior's Bureau of Safety and Environmental Enforcement, National Park Service, and U.S. Fish and Wildlife Service; Department of Justice; Department of State; Environmental Protection Agency; and the Marine Mammal Commission.

Education and Outreach

Nine of the 11 member agencies reported conducting activities to support education and outreach related to addressing marine debris, such as developing and distributing educational materials, supporting public awareness campaigns, or partnering with or funding state, local, tribal, or nongovernmental education efforts. For example:

- **Online public education.** The Trash Free Waters Program—a program established in the spring of 2013 by the Environmental Protection Agency (EPA) to encourage collaborative actions by public and private stakeholders to prevent trash from entering water—provides information to the public, including online information about actions that can be taken to reduce trash from entering waterways. For example, in 2017, the program produced a series of eight webinars with experts on microplastics with the goal of promoting increased knowledge of the sources, distribution, and impacts of plastics and microplastics in the environment.⁴ Additional topics included research on global waste management and mismanagement of plastics, potential replacements for plastic products, and ways to improve the design of materials and products to minimize their environmental impacts.
- **Grants for public awareness projects.** The National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program awards grants to eligible entities to, among other things, develop projects to educate the public about various aspects of preventing marine debris. For example, in 2014, NOAA awarded one grant to Virginia State's Department of Environmental Quality to develop and implement a social marketing approach to reduce balloon debris. Balloons can end up in streams, rivers, and the oceans where marine animals can ingest the balloons or become entangled by their attachments, causing injury or death. This project aimed to help educate the public about the importance of refraining from releasing balloons in parks or outside schools, churches, wedding venues, or other events where balloons may be common.
- **Sea Partners Program.** Through its Sea Partners Program established in 1994, the U.S. Coast Guard Auxiliary conducts education and outreach to waterway users such as boaters,

⁴These webinars are available to the public at no cost, at: <https://www.epa.gov/trash-free-waters/trash-free-waters-webinar-series>.

fishermen, marina operators, marine industry, and the general public with information on protecting the marine environment.⁵ For example, its Sayreville, New Jersey unit reaches an annual average audience of about 10,000 people, according to a program document, including youth groups, primary and secondary education science classes, senior citizen groups, and others. Topics presented include an introduction to marine pollution and oil spills and environmental pollution and recreational boating.

Legislation, Regulation, and Policy

Nine member agencies reported conducting activities to identify noncompliance or help ensure compliance with laws and regulations and develop or encourage policies and programs to implement practices that address specific types of marine debris. For example:

- **Notice for offshore oil and gas operators.** In November 2018, the Bureau of Safety and Environmental Enforcement renewed a notice for offshore oil and gas lessees and operators in the Gulf of Mexico that clarifies and provides more detail about marine trash and debris awareness training. Specifically, the notice stated that all offshore employees and contractors active in offshore operations are to complete marine debris awareness training annually. The notice further specifies that lessees and operators are to provide the bureau with an annual report that describes their training process and certifies that the training process was followed.
- **Criminal enforcement of environmental laws.** The Department of Justice prosecuted two shipping companies in 2017 for, among other things, falsifying records regarding disposal of garbage from a ship, in violation of the Act to Prevent Pollution from Ships.⁶ Specifically, the ship's crew was instructed to throw plastic garbage bags filled with metal and incinerator ash overboard without recording the incidents in the ship's record book. The companies pled guilty and were, among

⁵The U.S. Coast Guard Auxiliary was established pursuant to statute. Its mission is to promote and improve recreational boating safety; provide trained crews and facilities to augment the U.S. Coast Guard and enhance safety and security of our ports, waterways, and coastal regions; and support U.S. Coast Guard operational, administrative, and logistical requirements.

⁶*United States v. Thome Ship Management Pte, Ltd and Egyptian Tanker Company*, No. 17-cr-00075 (E.D. Tex.).

other things, sentenced to pay a \$1.5 million fine and make a \$400,000 community service payment.⁷

- **Policies for financing waste management infrastructure in Asia.** The Department of State helped convene a meeting in Japan in 2016, under the Asia-Pacific Economic Cooperation framework, to discuss policy changes needed to overcome barriers to financing waste management infrastructure in the Asia-Pacific region to prevent and reduce debris from entering the marine environment.⁸ The meeting brought together government officials from the economic cooperation, representatives from industry, international financial institutions, and experts. Ministers of the economic cooperation endorsed nine recommendations developed at the meeting.⁹ State Department officials said they have continued to work with Asian governments, industry, and nongovernmental organizations to encourage policy changes and spur financial support for increasing waste management infrastructure and addressing land-based sources of plastic and in Asian countries. For example, at a 2017 meeting on waste management, State Department officials informed Asia-Pacific Economic Cooperation officials of the social and economic impacts of marine debris resulting from mismanaged waste in the region. Officials also said they used the meeting to connect economic cooperation officials with private sector stakeholders to encourage policy changes intended to enable private investment in waste management.

⁷The community service payment was made to the National Fish and Wildlife Foundation, a nonprofit conservation organization that awards grants for the protection and restoration of the nation's fish, wildlife, plants and habitats from monies arising from legal and regulatory actions involving natural resources and the environment.

⁸The Asia-Pacific Economic Cooperation is a regional economic forum established in 1989 to leverage the growing interdependence of the Asia-Pacific region. Consisting of 21 member countries, its aim is to create greater prosperity for the people of the region by promoting balanced, inclusive, sustainable, innovative and secure growth and accelerate regional economic integration.

⁹Meeting participants developed nine recommendations, including setting waste management targets at economy-wide and municipal levels as well as building waste management performance indicators and a methodology to track progress against economy-wide and municipal waste targets, maintain an economy-wide waste database, and encourage and acknowledge frontrunner cities for their overall waste and sanitation achievement through competitive award and certification.

Cleanup

Eight of the 11 member agencies reported conducting a variety of activities to support the removal and disposal of marine debris, often in partnership with others, such as state governments. For example:

- **Debris removal grants.** In 2016 and 2017, NOAA's Marine Debris Program awarded \$2.4 million in grants to 25 entities such as state and tribal governments in 17 coastal states and U.S. territories for projects including community cleanups, crab trap recovery, and derelict vessel removal. For example, in September 2017, the program awarded a grant to the Makah Indian Tribe to remove three sunken vessels from the Makah Marina within the Makah Tribe Indian Reservation on Washington's Olympic Peninsula.
- **National Park cleanup.** National Park Service staff conducted coastal cleanups across the various regions of the National Park System during 2016 and 2017. For example, in fiscal year 2017, park officials from Biscayne National Park, located off the coast of Southern Florida and comprised mostly of water, partnered with the Coastal Cleanup Corporation, a nonprofit organization, to organize 252 volunteers in removing 14,000 pounds of debris from the park.
- **Maintaining navigation channels.** The U.S. Army Corps of Engineers has authority to remove accumulated snags, obstructions, and other debris located in or adjacent to federally-maintained navigation channels. The Corps' operations and maintenance appropriation is available to pay for the removal of obstructions to navigation, and the Corps is sometimes directed to use this appropriation for drift removal. For instance, in fiscal year 2018, the explanatory statement accompanying the Corps' annual appropriation directed the Corps to use about \$9.9 million of its appropriation for drift removal in New York Harbor. Debris the Corps removes typically consists of lumber, trees and branches, large waste items like tires, and large plastic items, according to Corps' officials.

Research and Technology Development

Five of the 11 member agencies reported coordinating activities to conduct or sponsor research to monitor, understand the sources of, prevent, mitigate, or reduce the effects of marine debris or to support developing new technologies such as using more sustainable or recyclable types of materials. For example:

- **Research grants.** Since 2006, NOAA's Marine Debris Program has supported at least two marine debris research projects that address questions such as monitoring marine debris, identifying fishing gear improvements and alternatives, or better understanding the environmental or economic impacts of marine debris. For example, in 2016, NOAA awarded a contract to a private research and consulting firm to conduct an economic study on how marine debris affects the economies of tourism-dependent coastal communities around the United States. The purpose of the project was to evaluate changes in tourism spending based on changes in the amount of marine debris to help prioritize areas of the United States where future prevention and removal efforts may be needed. NOAA officials said they expect the final report to be issued by the end of 2019.
- **Microplastics workshop.** In June 2017, EPA hosted a Microplastics Experts Workshop that convened experts from academia and other federal agencies, including NOAA, the U.S. Geological Survey, and the Food and Drug Administration, to identify microplastics research needs. The effort resulted in a 2018 report that identified four main areas where additional research is needed: (1) standardization of research methods, (2) debris sources and fate, (3) ecological risk assessment, and (4) human health risk assessment. EPA is using the report to consider how the agency can best address these high-priority microplastics research needs as it develops the agency's larger environmental research agenda, according to EPA officials.
- **Development of new fishing gear.** In 2016, the Marine Mammal Commission awarded a grant to the New England Aquarium to test a ropeless fishing gear prototype intended to prevent whale entanglements in fishing gear. According to a document from the Commission, entanglement in fishing gear is the number one direct cause of marine mammal injury and death, including the endangered Northern Atlantic right whale.¹⁰ The Commission has used the results of this effort to emphasize the potential for ropeless gear to reduce and prevent entanglement in meetings with lobster and crab fishermen on the east and west coasts.

¹⁰Fishing gear entanglements cause the majority of right whale deaths and also contribute to declining calving rates through the prolonged health effects of nonlethal entanglements, according to a report from the Marine Mammal Commission.

Coordination

Seven of the 11 member agencies reported conducting a variety of activities to foster coordination among member agencies and with nonfederal partners, such as international, state, and local government agencies. For example:

- **Global Partnership on Marine Litter.** In 2012, the United Nations launched the Global Partnership on Marine Litter, a voluntary network of international governments, nongovernmental organizations, academia, private sector companies, and others with the goal of protecting human health and the global environment primarily by reducing and managing marine debris.¹¹ Interagency committee members, including NOAA and EPA, are partners to the global partnership. For example, from 2012 through 2017, the NOAA Marine Debris Program Director served as the Steering Committee chair of the global partnership. EPA has coordinated with the global partnership in Latin American and Caribbean countries to help develop a regional strategy for addressing marine debris in those regions and through in-person meetings and with other global partnership staff and NOAA colleagues through the steering committee.
- **Sister Cities initiative.** In 2015, the State Department announced the creation of a “Sister Cities” initiative with China to share best practices related to waste management and preventing marine debris. As part of the initiative, in November 2016, a Chinese delegation, comprised of central government officials and officials from Weihai and Xiamen, visited Chicago, New York City, and San Francisco to study U.S. practices in addressing marine debris. In November–December 2017, a U.S. delegation comprised of U.S. government officials and a New York City official, visited Xiamen, Weihai, and Beijing to learn about Chinese waste management practices. The partner city relationships

¹¹Specifically, following recommendations made in the Manila Declaration on Furthering the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities issued in January 2012, the Global Partnership on Marine Litter was launched in June 2012 at the United Nations Conference on Sustainable Development (Rio + 20) in Brazil. Among others, objectives of the partnership include reducing the impacts of marine litter worldwide on economies, ecosystems, animal welfare and human health, and enhancing international cooperation and coordination through the promotion and implementation of the Honolulu Strategy, a global framework for the prevention and management of marine debris that was developed after the Fifth International Marine Debris Conference in 2011.

were formalized with a memorandum of understanding between San Francisco and Xiamen in July 2016, and New York and Weihai in December 2017 to work together to address marine debris.

- **State emergency response guides and regional action plans.** NOAA's Marine Debris Program has coordinated with coastal managers, nongovernmental organizations, industry, academia, and other groups to develop state marine debris emergency response guides. For example, in 2016 and 2017, NOAA coordinated with Florida, Georgia, Mississippi, North Carolina, and South Carolina to develop individual guides for those states. According to NOAA officials, federal, state, and local officials used the Florida response guide during the 2017 and 2018 hurricane seasons to inform responding agencies which agency has jurisdiction and to better coordinate marine debris removal efforts after an event. In addition, NOAA coordinated efforts to develop, enhance, and implement regional action plans for the Great Lakes, the Gulf of Maine, the Gulf of Mexico, the Mid-Atlantic, the Southeast, California, Florida, Hawaii, Oregon, and Washington regions. The purpose of the action plans is to bring stakeholders together to prevent and reduce marine debris throughout the United States, according to NOAA documents. For example, NOAA officials said that under the Hawaii action plan, several federal agencies and nongovernmental organizations worked together to purchase and maintain bins to collect used fishing line for recycling.

Appendix IV: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE
The Secretary of Commerce
Washington, D.C. 20230

September 18, 2019

Ms. Anne-Marie Fennell
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

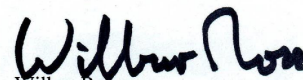
Dear Ms. Fennell:

Thank you for the opportunity to review and comment on the Government Accountability Office's (GAO) draft report entitled *Marine Debris: Interagency Committee Members Are Taking Action, But Additional Steps Could Enhance the Federal Response* (GAO-19-653).

The Department of Commerce agrees with GAO's four recommendations regarding the National Oceanic and Atmospheric Administration and the Chair of the Interagency Marine Debris Coordinating Committee. Enclosed is our response and recommended technical changes to the draft report.

Should you have any further questions, please contact MaryAnn Mausser, GAO Liaison, at (202) 482-8120 or MMausser@doc.gov.

Sincerely,


Wilbur Ross

Enclosure

Department of Commerce
National Oceanic and Atmospheric Administration
Response to the GAO Draft Report Entitled
*Marine Debris: Interagency Committee Members Are Taking Action,
But Additional Steps Could Enhance the Federal Response*
(GAO-19-653, September 2019)

General Comments

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) appreciates the opportunity to review the Government Accountability Office's (GAO) report on the Interagency Marine Debris Coordinating Committee (IMDCC) and Federal efforts to address marine debris. The report's analysis of IMDCC's current operations and the obligations of IMDCC and member agencies under the Marine Debris Act (33 U.S.C. § 1954) presents and analyzes the Federal Government's actions to fulfill this Congressional mandate.

NOAA Response to GAO Recommendations

The draft GAO report made four recommendations:

Recommendation 1: "The NOAA Administrator, in coordination with interagency committee member agencies, should establish a time frame for documenting the committee's membership process."

NOAA Response: NOAA agrees with this recommendation. The NOAA Administrator will establish a time frame for documenting the IMDCC's membership process that provides opportunities for both IMDCC and NOAA-based input. The Marine Debris Act, as amended by the Save Our Seas Act of 2018, requires six named agencies to participate in IMDCC. In addition to these agencies, IMDCC shall include such other Federal agency members that have an "...interest in ocean issues or water pollution prevention and control..." as the Secretary of Commerce determines appropriate. NOAA, in consultation with IMDCC, will determine objective criteria for evaluating Federal agency interest and identify other factors to consider as part of the membership process. NOAA is continuing to formalize and document the committee's membership process.

Recommendation 2: "The NOAA Administrator, in coordination with interagency committee member agencies, should clarify what is meant by "senior official" in the Marine Debris Act, such as through revisions to its charter."

NOAA Response: NOAA agrees with this recommendation. NOAA will work with IMDCC to revise the charter, which was last updated in 2014. As part of this process, NOAA, in coordination with IMDCC members, will define the term "senior official" so that the definition can be consistently applied across all Federal agency structures. In forming its definition, NOAA will consider seniority requirements of similarly situated advisory committees, along with related factors, such as the ability to make decisions on behalf of an agency and general awareness of an agency's available resources.

Recommendation 3: “The Chair of the interagency committee, in coordination with member agencies, should develop and implement a process to analyze the effectiveness of the interagency committee’s recommendations and strategies, and include the results in its biennial reports.”

NOAA Response: NOAA agrees with this recommendation to the extent it can be implemented using available budgetary resources. IMDCC is primarily a coordinating body focused on information sharing, and its biennial report highlights agency activities implementing the 2008 report recommendations (including 25 recommendations organized into eight overarching topics). However, IMDCC itself lacks the existing resources to require and routinely evaluate the effectiveness of these activities. Instead, individual agencies are expected to work toward implementing the 2008 report recommendations in accordance with each agency’s legal and programmatic authorities, mission priorities, and resource limitations. To the extent possible, NOAA will work with IMDCC members to identify common or easily translatable metrics for evaluating the effectiveness of the 2008 recommendations and implement these in the next biennial report to Congress.

Recommendation 4: “The Chair of the interagency committee, in coordination with member agencies, should develop a process to identify recommendations for priority funding needs to address marine debris, and include such recommendations in its biennial reports.”

NOAA Response: NOAA agrees with this recommendation, but notes that NOAA does not have the authority to control the implementation of a process for identifying priority funding needs of other member agencies. NOAA believes that IMDCC’s recommendations for priority funding needs are already reflected in the President’s annual budget request and operating plan for each member agency. To the extent possible, NOAA will work with IMDCC members to develop a process for identifying priority areas, which can be reflected in each agency’s respective budgeting process and shared in IMDCC’s biennial reports.

Appendix V: Comments from the U.S. Agency for International Development

Appendix V: Comments from the U.S. Agency
for International Development



Anne-Marie Fennell
Director
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20226

Re: Marine Debris: Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response (GAO-19-653)

Dear Ms. Fennell:

I am pleased to provide the formal response of the U.S. Agency for International Development (USAID) to the draft report produced by the U.S. Government Accountability Office (GAO) titled, *Marine Debris: Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response* (GAO-19-653).

USAID remains committed to addressing the challenge of marine debris through our programs, in collaboration with interagency partners. Given the global nature of the problem, USAID has significant opportunities to play an important role in the international response, and is already doing so by providing technical assistance on the international titles of the draft "Save Our Seas 2.0" legislation. Through programs such as the Municipal-Waste Recycling Program, a partnership with Circulate Capital, and the new Clean Cities Blue Ocean initiative, USAID continues help developing countries manage these challenges.

I am transmitting this letter and the enclosed comments from USAID for inclusion in the GAO's final report. Thank you for the opportunity to respond to the draft report, and for the courtesies extended by your staff while conducting this engagement. We appreciate the opportunity to participate in the complete and thorough evaluation of our efforts to combat marine debris.

Sincerely,

A handwritten signature in blue ink that reads "Frederick Nutt".

Frederick Nutt
Assistant Administrator
Bureau for Management

Enclosure: a/s

**COMMENTS BY THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT ON
THE DRAFT REPORT PRODUCED BY THE U.S. GOVERNMENT
ACCOUNTABILITY OFFICE (GAO) TITLED, MARINE DEBRIS: Interagency
Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal
Response (GAO-19-653)**

The U.S. Agency for International Development (USAID) would like to thank the U.S. Government Accountability Office (GAO) for the opportunity to respond to this draft report. We appreciate the extensive work of the GAO's engagement team.

USAID appreciates the GAO's recognition of the challenge posed by marine debris and the incorporation of Agency's input on this important topic. In particular, USAID appreciates that the GAO's final report acknowledges the importance of municipal waste as a significant source of marine plastic pollution (p. 1), as well as recognizes USAID's participation in the Interagency Marine Debris Coordinating Committee.

As noted in the *Science* article cited in Footnote 3 on page one, the majority of plastic ocean debris comes from mismanaged municipal waste in the developing world, where waste-management systems, infrastructure, and governments struggle to keep pace with increasing amounts of trash from growing urban populations in riverine and coastal areas. As the lead Federal Agency on foreign assistance, USAID has several programs that target this aspect of the problem:

- **Municipal-Waste Recycling Program (2016–2021):** Reduces land-based sources of ocean plastic waste in four of the top five contributing countries—Indonesia, The Philippines, Sri Lanka, and Vietnam—by providing small grants and technical assistance to a variety of local actors in towns and cities.
- **Partnership Circulate Capital Partnership:** In June 2019, USAID's leadership launched a partnership, managed by Circulate Capital and funded by multinational companies, that leverages more than \$100 million to incentivize private investment in the recycling value-chain in South and Southeast Asia.
- **Clean Cities, Blue Ocean:** USAID recently awarded a new \$50 million contract to TetraTech to implement a program aimed at preventing land-based sources of ocean plastic pollution. The program will build capacity and commitment for the "3Rs"—reducing, reusing, recycling—and solid-waste management in urban and peri-urban settings, particularly in riverine and coastal areas.

USAID greatly appreciates the work of its interagency partners that are engaged in addressing marine debris, and looks forward to continued collaboration with them.

Appendix VI: GAO Contact and Staff Acknowledgments

GAO Contact

Anne-Marie Fennell, (202) 512-3841, fennella@gao.gov

Staff Acknowledgments

In addition to the contact named above, Alyssa M. Hundrup (Assistant Director), Mark Braza, Jeanette Soares, Jason Trentacoste, and Lisa Vojta made key contributions to this report. Eric Charles; Kim Frankena; Ellen Fried; Karen Howard; Edward J. Rice, PhD.; Dan C. Royer; Anne Stevens; and Sarah Veale also contributed to the report.

Appendix VII: Accessible Data

Agency Comment Letters

Accessible Text for Appendix IV Comments from the Department of Commerce

Page 1

September 18, 2019

Ms. Anne-Marie Fennell Director

Natural Resources and Environment

U.S. Government Accountability Office

441 G Street, NW

Washington, DC 20548

Dear Ms. Fennell:

Thank you for the opportunity to review and comment on the Government Accountability Office's (GAO) draft report entitled Marine Debris: Interagency Committee Members Are Taking Action, But Additional Steps Could Enhance the Federal Response (GAO-19-653).

The Department of Commerce agrees with GAO's four recommendations regarding the National Oceanic and Atmospheric Administration and the Chair of the Interagency Marine Debris Coordinating Committee. Enclosed is our response and recommended technical changes to the draft report.

Should you have any further questions, please contact MaryAnn Mausser, GAO Liaison, at (202) 482-8120 or MMAusser@doc.gov.

Sincerely,

Wilbur Ross

Enclosure

Page 2

General Comments

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NOAA Response to GAO Recommendations

The draft GAO report made four recommendations:

Recommendation 1: "The NOAA Administrator, in coordination with interagency committee member agencies, should establish a time frame for documenting the committee's membership process."

NOAA Response: NOAA agrees with this recommendation. The NOAA Administrator will establish a time frame for documenting the IMDCC's membership process that provides opportunities for both IMDCC and NOAA-based input. The Marine Debris Act, as amended by the Save Our Seas Act of 2018, requires six named agencies to participate in IMDCC. In addition to these agencies, IMDCC shall include such other Federal agency members that have an "...interest in ocean issues or water pollution prevention and control..." as the Secretary of Commerce determines appropriate. NOAA, in consultation with IMDCC, will determine objective criteria for evaluating Federal agency interest and identify other factors to consider as part of the membership process. NOAA is continuing to formalize and document the committee's membership process.

Recommendation 2: "The NOAA Administrator, in coordination with interagency committee member agencies, should clarify what is meant by

"senior official" in the Marine Debris Act, such as through revisions to its charter."

NOAA Response: NOAA agrees with this recommendation. NOAA will work with IMDCC to revise the charter, which was last updated in 2014. As part of this process, NOAA, in coordination with IMDCC members, will define the term "senior official" so that the definition can be consistently applied across all Federal agency structures. In forming its definition, NOAA will consider seniority requirements of similarly situated advisory committees, along with related factors, such as the ability to make decisions on behalf of an agency and general awareness of an agency's available resources.

Page 3

Recommendation 3: "The Chair of the interagency committee, in coordination with member agencies, should develop and implement a process to analyze the effectiveness of the interagency committee's recommendations and strategies, and include the results in its biennial reports."

NOAA Response: NOAA agrees with this recommendation to the extent it can be implemented using available budgetary resources. IMDCC is primarily a coordinating body focused on information sharing, and its biennial report highlights agency activities implementing the 2008 report recommendations (including 25 recommendations organized into eight overarching topics). However, IMDCC itself lacks the existing resources to require and routinely evaluate the effectiveness of these activities. Instead, individual agencies are expected to work toward implementing the 2008 report recommendations in accordance with each agency's legal and programmatic authorities, mission priorities, and resource limitations. To the extent possible, NOAA will work with IMDCC members to identify common or easily translatable metrics for evaluating the effectiveness of the 2008 recommendations and implement these in the next biennial report to Congress.

Recommendation 4: "The Chair of the interagency committee, in coordination with member agencies, should develop a process to identify recommendations for priority funding needs to address marine debris, and include such recommendations in its biennial reports."

NOAA Response: NOAA agrees with this recommendation, but notes that NOAA does not have the authority to control the implementation of a

process for identifying priority funding needs of other member agencies. NOAA believes that IMDCC's recommendations for priority funding needs are already reflected in the President's annual budget request and operating plan for each member agency. To the extent possible, NOAA will work with IMDCC members to develop a process for identifying priority areas, which can be reflected in each agency's respective budgeting process and shared in IMDCC's biennial reports.

Accessible Text for Appendix V Comments from the U.S. Agency for International Development

Page 1

Anne-Marie Fennell Director

U.S. Government Accountability Office

441 G Street, N.W.

Washington, D.C. 20226

Re: Marine Debris: Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response (GAO-19-653)

Dear Ms, Fennell:

I am pleased to provide the formal response of the U.S. Agency for International Development (USAID) to the draft report produced by the U.S. Government Accountability Office (GAO) titled, Marine Debris: Interagency Committee Members Are Taking Action, but Additional Steps Could Enhance the Federal Response (GAO-19-653).

USAID remains committed to addressing the challenge of marine debris through our programs, in collaboration with interagency partners. Given the global nature of the problem, USAID has significant opportunities to play an important role in the international response, and is already doing so by providing technical assistance on the international titles of the draft "Save Our Seas-2.0" legislation. Through programs such as the Municipal-Waste Recycling Program, a partnership with Circulate Capital, and the new Clean Cities Blue Ocean initiative, USAID continues help developing countries manage these challenges.

I am transmitting this letter and the enclosed comments from USAID for inclusion in the GAO's final report. Thank you for the opportunity to respond to the draft report, and for the courtesies extended by your staff while conducting this engagement. We appreciate the opportunity to participate in the complete and thorough evaluation of our efforts to combat marine debris.

Sincerely,

Frederick Nutt

Assistant Administrator

Bureau for Management

Enclosure: a/s

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The U.S. Agency for International Development (USAID) would like to thank the U.S. Government Accountability Office (GAO) for the opportunity to respond to this draft report. We appreciate the extensive work of the GAO's engagement team.

USAID appreciates the GAO's recognition of the challenge posed by marine debris and the incorporation of Agency's input on this important topic. In particular, USAID appreciates that the GAO's final report acknowledges the importance of municipal waste as a significant source of marine plastic pollution (p. 1), as well as recognizes USAID's participation in the interagency Marine Debris Coordinating Committee.

As noted in the Science article cited in Footnote 3 on page one, the majority of plastic ocean debris comes from mismanaged municipal waste in the developing world, where waste-management systems, infrastructure, and governments struggle to keep pace with increasing amounts of trash from growing urban populations in riverine and coastal areas. As the lead Federal Agency on foreign assistance, USAID has several programs that target this aspect of the problem:

- Municipal Waste Recycling Program (2016- 2021): Reduces land-based sources of ocean plastic waste in four of the top five contributing countries—Indonesia, The Philippines, Sri Lanka and

Vietnam-by providing small grants and technical assistance to a variety of local actors in towns and cities.

- Partnership Circulate Capital Partnership: In June 2019, USAID's leadership launched a partnership, managed by Circulate Capital and funded by multinational companies, that leverages more than \$100 million to incentivize private investment in the recycling value-chain in South and Southeast. Asia.
- Clean Cities, Blue Ocean: USAID recently awarded a new \$50 million contract to TetraTech to implement a program aimed at preventing land-based sources of ocean plastic pollution. The program will build capacity and commitment for the "3Rs" — reducing, reusing, recycling — and solid-waste management in urban and peri-urban settings, particularly in riverine and coastal areas.

USAID greatly appreciates the work of its interagency partners that are engaged in addressing marine debris, and looks forward to continued collaboration with them.

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