

**STATEMENT OF ANNE KINSINGER,  
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U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR  
BEFORE THE SUBCOMMITTEE ON INTERIOR, ENVIRONMENT, AND RELATED AGENCIES  
HOUSE COMMITTEE ON APPROPRIATIONS  
ON MARINE DEBRIS**

**SEPTEMBER 19, 2019**

Chair McCollum, Ranking Member Joyce, and members of the Subcommittee, thank you for the opportunity to testify today regarding marine debris work conducted by the United States Geological Survey (USGS). The USGS conducts research and monitoring related to marine debris. Although we currently do not have an extensive program in this area, marine debris is becoming an increasingly important issue in the management of the Department of the Interior (DOI) trust lands and species, and we anticipate increased programmatic focus in future years. My testimony today will focus on large debris and the breakdown products of that debris.

**Role of the U.S. Geological Survey**

The USGS is the science agency of the DOI with a mission to provide unbiased scientific information to Federal and non-Federal resource managers and planners, emergency response officials, and the public. Debris, and the breakdown products of debris, are receiving increased attention due to possible impacts on fish and wildlife, particularly in the marine environment. The DOI has land management and administrative responsibilities for numerous coastal and estuarine units of the national park system, national wildlife refuges, public lands, Indian lands, U.S. territorial islands, and other insular areas that have documented or potential impact from marine debris. In addition, the DOI has management responsibilities for migratory birds, interjurisdictional fish, federally listed species, and marine mammals that may be impacted by marine debris outside DOI managed lands.

The Department of Commerce, through the National Oceanic and Atmospheric Administration's Marine Debris Program (MDP), leads national efforts to research, prevent, and reduce the impacts of marine debris. The MDP is authorized by Congress as the Federal lead to work on marine debris through the Marine Debris Act, and last October was reauthorized for an additional five years.

Over the past 10 years, the USGS has published marine debris research in the following three areas:

Coastal Surveys: This research comprised the design, conducting, or analysis of shoreline and benthic surveys for marine debris in Hawaii, Alaska, Caribbean, Gulf of Mexico, Mediterranean,

and Pacific Islands, including Midway Atoll. These studies were designed to establish baseline conditions on specific lands important to the DOI; understand trends in marine debris accumulation over larger geographic areas; or characterize composition and transport of marine debris with potential to impact lands or species of concern. Many of these surveys involve the use of volunteers through citizen science programs.

Species Impacts: These studies focused on the incidence of ingested marine debris by sea turtles and seabirds, including black-footed albatross chicks. The purpose of these studies was to quantify the occurrence of marine debris in the digestive tract of species that utilize marine food sources in order to begin understanding if marine debris ingestion impacts survival of individuals or persistence of populations among species of concern.

Contaminants: This analysis examined the incidence of contaminants in ingested marine plastics, including those sorbed onto the plastics and those leached from the plastics. Endocrine disrupting compounds are one example. The purpose of these studies was to begin understanding if marine debris, particularly fragmented plastics, is a source of contaminants such as endocrine disruptors that can harm species directly or through decreased reproduction when ingested.

Although USGS and other science organizations have conducted research in these areas and other areas of marine debris, many unanswered questions remain related to the potential for marine debris to pose harm to lands or species managed by the DOI. This list is partially based on expert opinion of leading researchers from around the world that was published in 2014<sup>1</sup>, as well as a growing body of recent journal review articles identifying key knowledge gaps.

1. What are the impacts of marine debris on important coastal and marine habitats?
2. What are the impacts of marine debris on critical food webs?
3. Which species are most susceptible to marine debris impacts at the individual or population level?
4. What are the main sources of marine debris and what factors drive transport and deposition?
5. Does marine debris carry or concentrate contaminants of concern to wildlife when ingested?
6. What are standard approaches for the quantification of marine debris in coastal habitats?
7. How does marine debris contribute to the transport of invasive species and wildlife disease?
8. Are impacts of debris the same in freshwater systems and the Great Lakes as they are in marine environments?

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<sup>1</sup> Vegter, et al. 2014. Global research priorities to mitigate plastic pollution impacts on marine wildlife. *Endangered Species Research* 25: 225-247

## **USGS Capabilities**

The USGS maintains extensive capability to conduct physical and biological research and monitoring in support of natural resource management by DOI bureaus and other Federal, State, and tribal partners. Capabilities available to help resolve questions related to marine debris include population assessments to determine changes in species numbers over time, trophic analysis for determining disruptions in food webs, physical assessments and remote sensing capabilities to determine habitat condition and changes due to environmental stressors, and contaminants research for determining the source, transport, fate, exposure pathways, and impact of compounds on species and their habitats. In addition, the USGS maintains specialized facilities in fish and wildlife disease diagnostics to determine the cause of animal fatalities and advanced genetics and genomics capability to detect and track new species and wildlife diseases using environmental DNA (eDNA). The USGS is a national leader in design and analysis of scientifically defensible surveys, including effective use of citizen science to engage the public in gathering scientific data. Finally, the USGS has invested significant resources in developing invasive species detection, tracking, and control technologies that may be important in understanding and managing secondary effects of marine transport in global ecosystems.

Thank you for this opportunity to testify today. I would be happy to answer any questions you may have.