

**TESTIMONY OF
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
OVERSIGHT HEARING ON
THE JAPAN TSUNAMI MARINE DEBRIS AND NOAA EFFORTS TO ADDRESS IT
BEFORE THE
SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD
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Introduction

Mr. Chairman and members of the Subcommittee, thank you for this opportunity to testify on the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program (MDP) and its activities surrounding marine debris generated by the devastating Japan tsunami. My name is David Kennedy, Assistant Administrator for the National Ocean Service at the Department of Commerce's NOAA.

NOAA is concerned about the threat this debris poses to our coastal economies and natural resources, and we are leading efforts with federal, state, and local partners to collect data, assess the debris, and reduce possible impacts. I would like to take this opportunity to give you some background on the program and what it does, as well as highlight the ways NOAA is working to assess and respond to the tsunami debris.

Marine Debris Impacts

Marine Debris is currently defined for the purpose of the Marine Debris Research, Prevention, and Reduction Act 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." Marine debris, which can be anything from lost or abandoned fishing gear and vessels, to plastics of any size, to glass, metal, and rubber, is an on-going international problem that impacts our natural resources. In addition to being an eyesore, it can threaten oceans, coasts, wildlife, human health, safety, and navigation. Every year, unknown numbers of marine animals are injured or die because of entanglement in or ingestion of marine debris. It can scour, break, smother, or otherwise damage important marine habitat, such as coral reefs. Many of these habitats serve as the basis of marine ecosystems and are critical to the survival of many important species. Derelict fishing gear can also cost fishermen untold economic losses. For example, crab pots and nets can continue to capture fish – something we refer to as "ghost fishing" - for years after they're lost or abandoned, depleting fisheries and reducing abundance and reproductive capacity of the stock. In addition to the ecosystem impacts, coastal communities collectively spend millions of dollars annually trying to prevent debris from washing up on their shorelines and trying to remove it once it does wash up. It not

only degrades our coasts' natural beauty, but it threatens the safety of those who work and play there.

Marine debris can also present a navigation hazard to vessels of any type. Ropes, plastics, derelict fishing gear, and other objects can get entangled in vessel propellers and cause operational problems and large items such as lost containers can actually be collision dangers. Plastic bags can clog and block water intakes and are a common cause of burned-out water pumps in recreational crafts. Such incidents involve costly engine repairs and disablement. These dangerous and costly impacts are problems for both the recreational boating and commercial shipping communities, and NOAA's MDP is actively seeking partnerships within these communities to expand our area of knowledge and begin to proactively address the dangers.

Abandoned vessels along the Coasts and waterways are another type of marine debris posing a threat to marine resources and navigational safety in our waterways. Because older or inoperable vessels are expensive to remove and become even more costly the longer they are left in place, owners sometimes leave such vessels on the shoreline or sunk close to shore after removing identifying numbers. With the economic downturn, many states are finding abandoned vessels to be a serious marine debris problem.

In addition to improving navigation safety, addressing marine debris reduces the risks of entanglement and trapping of marine species, as well as risks to human health, and it promotes vital marine habitat recovery.

The NOAA Marine Debris Program in 2012

The NOAA MDP supports national and international efforts to research, prevent, and reduce the impacts of marine debris. Its activities are mandated by the 2006 Marine Debris Research, Prevention, and Reduction Act. Since then, the program has been a leader on marine debris issues, and continually works in partnership with local and state agencies, other Federal agencies, nongovernmental organizations, academia, private industry, and the interested public to identify and address key marine debris issues.

The program, which is currently supported by 13 staff, conducts research, prevention, and reduction projects and outreach and education activities, which are implemented by NOAA directly or through grants, contracts, and cooperative agreements. Regional coordinators in several locations around the country act as a resource for local marine debris stakeholders, and work to manage, support, and coordinate marine debris activities.

The program is currently focused regionally with coordinators leading marine debris efforts in the Pacific Islands, Alaska, West Coast, Gulf of Mexico and Caribbean, East Coast, and Great Lakes. Since 2005, the program has funded over 212 projects, and held 14 regional, national, and international workshops and meetings.

As the lead federal agency addressing marine debris and Chair of the Interagency Marine Debris Coordinating Committee, NOAA continually works in partnership across federal agencies to ensure coordination in its national and international marine debris efforts.

The NOAA Marine Debris Program received \$4.6 million in FY 2012 to address and respond to marine debris and plans to use these funds for several activities over the coming year. Those activities include debris removal from the Northwestern Hawaiian Islands, improved at-sea observations, coastal monitoring, contingency planning, and model improvement. In accordance with direction given in the Senate Appropriations Committee Report on the Department of Commerce's FY 2012 appropriations (112-78), NOAA will continue to coordinate and integrate habitat conservation and coastal restoration activities, including the Marine Debris Program, within the agency in order to streamline efforts and find administrative efficiencies.

Research

Marine debris is a relatively new research field, and there are many opportunities to advance understanding of how debris impacts the environment. Over the past several years, the NOAA MDP has focused on microplastics research, developing standardized methodologies for monitoring marine debris on shorelines and in coastal surface waters, and assessing derelict fishing gear impacts throughout the country.

The program also supports studies that close gaps in understanding. For example, in 2005 and 2007, the program funded a crab pot survey project in the Chesapeake Bay that ultimately helped form the Commonwealth of Virginia's crab recovery program.

The program developed a strategy to guide coordination of holistic, efficient, and impactful research projects through 2016, focusing on the abundance and behavior of debris in the marine environment, and investigation into the chemical, biological, and socio-economic impacts of debris on marine and coastal ecosystems. The strategy provides a framework for engaging in complementary research and planning to best address the risks of marine debris to marine systems by prioritizing the most urgent gaps in research. The knowledge gained through these projects will help focus prevention and reduction efforts on the areas of greatest concern.

Prevention

One of the best ways to reduce marine debris is through prevention, and that requires that boaters, fishermen, industry, and the general public have the knowledge and training to change behaviors that create marine debris.

The NOAA Marine Debris Program's robust outreach and education activities focus on improving awareness and changing behavior through developing and disseminating public information, and by partnering with external groups to expand its reach. For example, the program partners with the U.S. Coast Guard to educate boaters about at-sea garbage dumping regulations. Other partners include the Legacy Foundation, with whom NOAA raises awareness on cigarette butt litter, and the Ocean Conservancy, with whom we partner on digital outreach and awareness. The materials and partnership products are all free and downloadable from the NOAA MDP website, and the program's regional coordinators do extensive boots-on-the ground outreach year-round.

The program also works to educate children on the marine debris problem. It has developed and provided marine debris curriculum to schools across the country, facilitated a popular elementary and middle school art contest, and is now pursuing outreach techniques to better reach high school students.

Reduction

Since its inception in 2005, the NOAA MDP has been actively involved in marine debris abatement projects on the East and West Coasts, Hawaii, Alaska, and the Gulf Coast and Great Lakes regions. A significant portion of the program's budget goes toward supporting removal, including locally driven, community-based marine debris prevention and removal projects that benefit coastal habitat, waterways, and wildlife including migratory fish.

For example, in Washington State, the program supported the Northwest Straits Marine Conservation Initiative in its effort to survey for, assess the impact of, and remove derelict fishing gear in Puget Sound, resulting in the removal of thousands of derelict fishing nets and crab pots. Similarly, in 2007 NOAA supported the Stlilaguamish Tribe of Indians in surveying for crab pots using side scan sonar, and removing derelict crab pots deeper than the reach of divers with a remotely operated vehicle.

In Alaska's Prince William Sound, NOAA partnered with the Gulf of Alaska Keeper Foundation to remove debris from remote shorelines both inside the Sound and on the outer coast in order to prevent the re-mobilization of debris that can threaten marine species through entanglement and ingestion and help to restore valuable coastal habitat. In many areas, this removal has been paired with annual returns to the same beaches to monitor how much and how quickly debris accumulates.

The program also engages in many partnerships across the country, which often focus on removal, as well as education and outreach. One important example of a successful strategic partnership is the Fishing for Energy program. Launched in 2008 through a partnership among Covanta Energy Corporation, the National Fish and Wildlife Foundation, NOAA, and Schnitzer Steel Industries, Inc., the partnership works closely with state and local agencies, community and fishing groups, and local ports to install bins at convenient and strategic locations into which fishermen can deposit fishing gear. When these bins fill up, the gear is collected and transported to a nearby Schnitzer Steel facility where the metal (e.g., crab pots, gear rigging) is pulled for recycling, and rope or nets are sheared for easier disposal. Then the waste is brought to the nearest Covanta Energy-from-Waste facility, where the gear is converted into renewable electricity for local communities.

Regional coordination

Working with non-governmental organizations, academia, regional organizations, local, state and federal governments, and international organizations is a priority for the NOAA MDP. NOAA's marine debris regional coordinators extensively cover marine debris issues in the Pacific Islands, West Coast, Alaska, Great Lakes, East Coast, and Gulf of Mexico. While these coordinators focus on the local, state, and regional issues as a part of the national program, they are also able to bring in lessons learned and make connections across the country and the world. NOAA has

held lead roles in developing marine debris plans for Hawaii and the West Coast Governors Alliance on Ocean Health, planned multiple workshops for New England, the Great Lakes, Alaska, and Hawaii, and worked on specific projects throughout all regions. NOAA continues to work with partners throughout the country to develop and test innovative and cost-effective methods of detection and removal of marine debris, and to engage the public and industry, including shippers and fishermen, and the recreational community on marine debris.

Marine Debris and the 2011 Japan Tsunami

Marine debris typically originates from both land-based and ocean-based sources, but coastal storms and natural disasters are another source of marine debris creating hazards on our inland and coastal waters. For example, as a result of the tragic tsunami that struck Japan last year, NOAA anticipated debris that washed into the ocean would gradually reach U.S. and Canadian shores. In addition to the incredible human tragedy of the earthquake and tsunami, part of its aftermath has resulted in concern over marine debris that directly impacts our coasts.

NOAA's MDP has been focused on this issue since the day of the tsunami. The Government of Japan estimated that the tsunami swept 5 million tons of debris into the Pacific Ocean, and that 70 percent sank right away near the coast of Japan, leaving an estimated 1.5 million tons floating. The debris quickly dispersed out of the large "debris fields" that were observed in the days following the disaster, and after a few weeks, it could no longer be located with low-resolution satellite.

Now, more than a year later, it is likely that some debris has broken apart, weathered, or sank. NOAA's models show that the area where debris may have dispersed is equal to roughly three times the size of the contiguous United States. While it is difficult to tell exactly what types of debris are still floating or how much, it is believed that buoyant debris such as fishing gear, lumber from destroyed buildings, consumer plastics and styrofoam, rubber and other materials, oil and chemical drums, and possibly vessels may still be floating. The MDP is working to understand the scope of the threat, and is collecting data on debris quantity and type, location and movement, and impact.

At-sea detection

In order to understand where the debris is located today and where it may wash up on shorelines, NOAA modeled the debris' path using a model that responders have previously used during oil spills. This gave NOAA an understanding of where debris from the tsunami may be located today, because we were able to simulate how winds and ocean currents from the past year may have moved items through the Pacific Ocean. We are updating this model regularly with new data, and exploring other modeling options through collaborations with university and Cooperative Institute modelers, as well as a subject matter expert group that includes modelers from across NOAA and the University of Hawaii. For example, in FY2012, NOAA plans to leverage existing partnerships at the University of Washington to develop a model that will provide more accurate estimates of debris concentration at or just beneath the ocean's surface.

Given model limitations and the large potential area of debris drift in the vast North Pacific Ocean, NOAA is working in other ways to ensure the public and local communities have the best

information on the debris' location and types. To that end, NOAA is using ocean-going vessels, aircraft, and satellites to gather additional data.

NOAA has coordinated with groups who regularly have “eyes on the water,” to report back debris sightings, including shipping fleets, commercial fishing vessels, and scientific fleets such as University-National Oceanographic Laboratory System vessels. The U.S. Coast Guard also reports any sightings logged during regular enforcement over-flight missions, and NOAA has asked recreational pilots to do the same through the Federal Aviation Administration. NOAA established an email address, DisasterDebris@noaa.gov, where any sightings at sea or from the general public on shore may be reported, and those sightings are entered into a tracking database.

NOAA is working to acquire high-resolution satellite imagery of targeted areas in the North Pacific Ocean through NASA and the National Geospatial Intelligence Agency, so that we can inform our models and gather more information about how much debris is still floating. The Department of Defense has also offered its input on satellite imagery.

NOAA will continue to make sightings data available to our response agency partners and the public through maps, graphics, and other visualizations of debris in the water and on shorelines. The information is available on NOAA's Environmental Response Management Application (ERMA). ERMA was a successful vehicle for making data available to the public during the Deepwater Horizon oil spill response.

In FY2012, NOAA is also pursuing additional at-sea detection technologies to gather more information about the debris. Proposals are in the works to deploy drifter buoys in concentrations of marine debris or other strategic areas of interest, which will help NOAA refine its marine debris fate and transport modeling. Ship-based Unmanned Aircraft System surveys, will also be conducted from opportunistic cruises to help detect Japan tsunami marine debris at-sea in open North Pacific waters.

Coastal monitoring

Leveraging local knowledge of the shorelines and near-shore landscape is also important, since the only indications that marine debris specifically from the Japan tsunami is making landfall in a region may be changes in the quantity or the composition of debris compared to what is observed normally. NOAA is acquiring baseline information on the marine debris that is currently stranded on U.S. coastlines in advance of potential influx of tsunami debris. Using NOAA's standardized shoreline monitoring protocols, baseline marine debris surveys will be conducted in Alaska, California, Oregon, the main Hawaiian Islands, and Washington for a two-year period. Shoreline monitoring with the U.S. Fish and Wildlife Service on the Northwestern Hawaiian Islands is well underway.

NOAA will also extend activities on four to five existing shoreline monitoring sites within the Gulf of Alaska. Additionally, marine debris data will be collected on shore during planned ship-based surveys of the outer coast of South East Alaska from Dixon Entrance to Yakutat. Drop-camera searches will also be conducted opportunistically for derelict fishing net aggregations at snag points near-shore.

Results of the monitoring will help indicate when and where Japan tsunami marine debris is making landfall. NOAA Marine Debris staff will work with state and local partners from government agencies and non-governmental organizations (NGOs) to conduct shoreline monitoring of marine debris using standardized shoreline monitoring protocols. A side benefit of this project is development of monitoring partnerships that will facilitate future data collection and community engagement.

Contingency Planning

Since we do not expect the debris' impact or the response to those impacts to be the same in every state, NOAA is working with federal, state and local agencies to create regional contingency plans, which will include rapid response protocols. Ideally, each region or state will have specific protocols based on its response structure and available resources.

The NOAA MDP held contingency planning workshops in Hawaii and Washington State, which each included representation from about 50 federal and state agencies, counties, tribes, NGOs and industry. The results will help guide workshops planned for Alaska, Oregon, and California.

Communication and Coordination

NOAA meets with multiple state and federal agencies on a regular basis to coordinate on tsunami marine debris response and to exchange information and external messaging. Federal partners include the U.S. EPA, U.S. Coast Guard, Navy, Department of State, U.S. Fish and Wildlife Service, and the National Park Service. The Interagency Marine Debris Coordinating Committee, chaired by NOAA, receives regular updates on the situation and has discussed how to best leverage capabilities without duplicating efforts.

NOAA's regional coordinators are working with local representatives from these agencies in AK, CA, HI, OR, and WA, and are also working directly with state and local agencies, as well as the Government of British Columbia, to ensure they receive and share the most current information. The MDP's coordinators have participated in or led nearly 100 meetings, briefings, or public town halls on this issue in impacted regions since October.

In addition to regular meetings, the MDP hosts biweekly calls to present the latest information and status update on the situation. The call list includes over 125 individuals and is open to all interested state and federal agencies from Midway to Alaska, including those in Canada.

NOAA, along with the Department of State, has also been in regular contact with the Government of Japan, Kyoto University, and Japan consulates in Hawaii, Alaska, and U.S. West Coast states. NOAA and the Government of Japan have agreed to exchange information on research, modeling, and data collection, and NOAA staff is working with consulates on protocols for returning any sensitive items found back to Japan.

Media and public interest in this issue is high, and in order to provide the best information to a widespread audience, MDP staff has given dozens of interviews to nearly 100 different national and local media outlets. We have continually updated our NOAA MDP website with the latest information on the tsunami, providing Frequently Asked Questions and access to our latest model visualizations. Our state partners have also collaborated on a federal-state joint

information center website to provide a “one-stop shop” to the public for regional information. It includes access to fact-sheets, pictures, and guidelines for reporting debris.

Cleanup plans in regions where debris could potentially make landfall and responsibility for implementing them will vary significantly depending on what types of debris arrive and where. As part of NOAA’s contingency planning process, we will use existing response protocols to help states determine which responder would have jurisdiction in a range of scenarios. For example, if a HAZMAT item washed up on state-owned land, the responder would be different than if consumer plastics washed up in a National Park.

However, in order to make sure contingency plans are efficient, comprehensive, and useable, NOAA needs complete engagement during the planning process from state agencies, which are best equipped to make decisions about who can handle debris and what resources are available for removal. In most cases, decisions to remove debris will likely fall to the states, and it is necessary to ensure that the contingency plans help make the best use of existing resources. Contingency planning is already well underway in Hawaii and Washington, but the process has yet to start in Oregon, California, and Alaska.

Conclusion

Marine debris is a problem we can, for the most part, prevent. The NOAA MDP will continue to pursue on-the-ground research, prevention, and reduction of marine debris nationwide, and leverage every resource available to address problematic debris from the Japan tsunami. While the problem of marine debris has existed for decades, there is still much to learn as we work to address the impacts of marine debris to the environment and marine species. Additional research is needed to understand and assess the impacts of marine debris on diverse species and habitats as well as the economic impacts and the dangers to navigation posed by marine debris. NOAA is committed to minimizing the impact of marine debris, and looks forward to working with the Committee to achieve this outcome.