

# DEVELOPING INFORMATION AND PARTNERSHIPS NECESSARY TO PRIORITIZE AND SUPPORT THE REMOVAL OF ABANDONED VESSELS IMPACTING CORAL RESOURCES

Doug Helton & Ian Zelo  
NOAA – Damage Assessment Center  
7600 Sand Point Way NE  
Seattle, WA 98125

## ABSTRACT<sup>1</sup>

Derelict and abandoned vessels pose significant threats to coral ecosystems by releasing pollutants, physically destroying habitat, and causing algal blooms through iron deposition. Each of these threats has been anecdotally documented in the recent academic literature and popular press, but the scale and scope of the problem is poorly understood because of reporting inconsistencies at the local level and the lack of data collection and analysis at the national level. NOAA's Damage Assessment Center is attempting to address these issues through the efforts of its Abandoned Vessel Program (AVP) by creating a comprehensive database of abandoned vessels threatening coral reef ecosystems, prioritizing vessels based in their level of threat and developing removal strategies. The program has assembled data for vessels across the entire United States and its territories and is distributing the data to agencies across the country through its website and on CD. Critical to successful program implementation and vessel removals are new partnerships with many agencies and private entities including the marine salvage and engineering communities. These groups will ensure that the AVP has the best available information, broad support and an appropriate battery of resources to apply to the issue of abandoned vessels as they affect coral habitats and, as the program expands, all marine habitats found in U.S. waters.

## INTRODUCTION

Grounded and abandoned vessels are a problem in many coastal areas, and are a significant threat for coral reef habitats. In addition to the physical crushing and smothering of habitats, grounded vessels may pose a significant threat of oil spills and releases of other pollutants, impede navigation, block public and private uses of intertidal and subtidal habitats such as aquaculture, become a site for illegal dumping of waste oils and hazardous

materials, be a visual eyesore, and become a wildlife entrapment and public health hazard.

The National Oceanic and Atmospheric Administration (NOAA) has a long and diverse interest in grounded and abandoned vessels, but action to address these threats has been limited and focused on specific threats. NOAA cartographers note the location of wrecks on nautical charts to facilitate safe navigation. NOAA Office of Response and Restoration works on pollution threats from vessels. NOAA Fisheries works on entanglement hazards and debris removal from vessels. However, with the exception of vessels grounded in the National Marine Sanctuaries, action is not usually taken to address the vessel itself, or restoration of the grounding site. This is because existing federal laws and regulations provide less than optimal authority to promptly remove grounded vessels or abandoned vessels that are causing harm to natural resources but which are not otherwise obstructing or threatening to obstruct navigation, or threatening a pollution discharge.

In 1999, the US Coast Guard, NOAA, and the government of American Samoa began a collaborative effort to address nine abandoned fishing vessels on a reef in Pago Pago, American Samoa. These vessels were a public nuisance and posed an array of threats, including pollution, public health, and physical crushing of coral habitats. Using the combined authorities of the agencies, the vessels were cleaned, cut apart, and removed from the reef. The grounding sites were also restored. This experience, combined with increasing agency concerns about the decline of coral habitats from a variety of causes, led NOAA and others to inquire whether abandoned vessels may be causing significant harm to coral habitats elsewhere.

At the same time, the US Coral Reef Task Force (CRTF) published their National Action Plan, and identified groundings as a significant factor in the loss of reef habitat.

"Every year hundreds of vessels strike U.S. coral reefs, causing significant damage that goes largely unrepaired and unrecovered. In the Florida Keys National Marine Sanctuary

---

<sup>1</sup> This article expresses the views of the authors and does not necessarily reflect the views of NOAA

alone, approximately 500 small vessel groundings occur each year. Vessels striking shallow coral reefs can cause profound damage to the habitat by destroying the benthic community, displacing resident fishes, and eliminating critically important topographic complexity and habitat structure that is the result of thousands of years of growth."

In response to the National Action Plan, NOAA began investigation of the problem abandoned and derelict vessels that affect U.S. coral reef habitats and developed the Abandoned Vessel Program. This effort has three elements: 1) Development of a database of abandoned vessels; 2) Review of existing legal authorities; and 3) Field efforts including: site visits, vessel surveys, prioritization of problem vessels based on overall threat and facilitation of vessel removals. The database and legal review efforts are on-going, and NOAA has begun conducting site visits as well as working with local governments to identify candidate vessels for removal.

#### CASE STUDIES

The following case studies provide an opportunity to grasp the complex nature of issues surrounding abandoned vessels. While they do not address all the possible problems, the potential for improved management is easily recognized.

##### Grounding of the Fishing Vessel *Swordman I*

On June 5, 2000, the longline fishing vessel *Swordman I*, struck the eastern fringe of Pearl and Hermes Reef in the Northwestern Hawaiian Islands (Figure 1). At the time of the incident, the 77-foot fishing vessel had more than 70 miles of longline, 500 pounds of fishhooks, and about 10,000 gallons of diesel fuel onboard. In addition to concern for the physical and oil related impacts to coral habitats, Pearl and Hermes Reef is critical habitat for birds, turtles, and monk seals. These resources were at risk of being entangled in or hooked by the fishing gear.

The United States Coast Guard (USCG) responded to rescue the crew, stabilize the vessel, and address the pollution threat. The vessel owner did not have the necessary assets to conduct the response and the USCG took over the pollution response. The USCG removed 7,500 gallons of fuel and oil-contaminated water off the *Swordman I*. As the vessel became lighter wave action pushed the vessel higher up the reef. The response team was then able to access lower compartments, where they found an additional 2,500 gallons of diesel fuel. The initial plan was to remove contaminants and floatable debris

from the wreck, but the USCG in consultation with the Trustees, determined that the remaining fuels and oil could not be removed safely and effectively and concluded that removing the vessel from the reef was warranted. A salvage vessel was contracted to refloat and tow the *Swordman I* to an authorized scuttling site 3.5 nautical miles southeast of Southeast Island, where it was sunk in 6,000 feet of water.

Since the purpose of the wreck removal was to address the residual pollution threat from the vessel, the USCG could use the Oil Spill Liability Trust Fund. The fund was opened to cover the costs of the response and vessel removal, which totaled over \$1.5 million.

The *Swordman I* incident illustrates the benefits of prompt vessel removal. Although vessel removal was expensive, the prompt action eliminated the threat of fishing gear entanglement, residual releases of oil, and collateral reef injury if the vessel had been left to deteriorate on the reef. Because these threats were eliminated, no further site cleanup or



Figure 1. The *Swordman I* grounded on a reef at Pearl and Hermes Atoll in the Northwestern Hawaiian Islands.

restoration is anticipated. The initial response plan of removing the fuel but leaving the vessel would have resulted in long-term impacts to the reef ecosystem. If only the oil had been removed, the trustees would have had few options for removing the vessel since it was not a hazard to navigation. Furthermore, the absence of a pollution threat would likely have precluded use of the federal trust fund for any further removal or damage assessment and restoration actions.

##### Scuttling of the Sailing Vessel *Karma*

In the summer of 2000, the *S/V Karma* was stripped down and intentionally scuttled by its owner to make an artificial reef in an ill-conceived ecotourism venture in seagrass beds offshore of Luis Peña Key, a small island 17 miles east of the Fajardo,



Figure 2. The *Karma* hull lying on a seagrass bed in shallow water of Luis Pena Key, Puerto Rico.

Puerto Rico (Figure 2). The vessel rests in 20-25 feet of water, less than 15 feet from a coral reef. The National Marine Fisheries Service has designated seagrasses in this area as critical habitat for endangered Green Sea Turtles. The physical presence and the motion of the *Karma* are causing physical injury to the seagrass. The nearby coral reef is in danger of being directly impacted by the boat

The vessel owner refused to remove the vessel. In an effort to prevent further injury, the Puerto Rico Department of Natural and Environmental Resources (PRDNER) temporarily stabilized the boat with four anchors. Minimizing movement of the vessel slowed further injury to the seagrass beds and reduced the risk of injury to the coral reef. Facing winter storms that could multiply the impact of the vessel and an uncooperative vessel owner, the PRDNER requested federal assistance in removing the vessel. The Environmental Protection Agency (EPA) considered fines and enforcement actions, but the vessel owner showed little response. The EPA also determined that the penalties and enforcement authorities of the Clean Water Act and the Marine Dumping Act did not apply to the situation. The Army Corps of Engineers decided that their authority under the Rivers and Harbors Act could not be used because the vessel posed no threat to navigation. The USCG determined that there was no oil pollution potential and concluded that they had no authority to remove the vessel because the owner had removed all fuels and fluids from the vessel. Even the U.S. Navy was contacted, but the removal project was too small to be used as a Navy training exercise. NOAA identified a source of funding but concluded that the vessel was still private property. As such the agency lacked clear removal authority and could be challenged for taking private property. NOAA took initial steps to determine whether the Endangered Species Act could be used to remove the vessel, either as a seizure and forfeiture for a knowing, criminal violation of the Act or through

injunctive relief to terminate an unlawful taking due to the destruction of critical habitat. This authority is specifically delegated to the law enforcement office of the National Marine Fisheries Service. Agents began an investigation into the incident but were stalled when they couldn't establish clear title to the vessel. Follow-up surveys have shown that the vessel is rapidly disintegrating and a large area around the vessel is now devoid of seagrass. Debris from the vessel is spreading into the adjacent patch reef areas.

Unlike the grounding of the *Swordman I*, the *Karma* scuttling was the result of an intentional and illegal act. Efforts to remove the *S/V Karma* highlight the lack of clarity in regards to federal authority to remove certain abandoned vessels that threaten sensitive marine environments

#### DATA COLLECTION, MANAGEMENT & DISTRIBUTION

Existing data describing abandoned vessels are scattered across a numerous databases, each with a different purpose, housed in different agency. The project's first task was to mine these sources for relevant data. The USCG's Abandoned Vessel Information System (AVIS), NOAA's Automated Wrecks and Obstructions Information System (AWOIS), the State of Florida's Derelict Vessel Removal Grant Program were all tapped.

After reviewing and incorporating these database sources, staff performed additional internet and paper research as well as a series of field surveys of vessels in the inventory. During the summer of 2002 field surveys were conducted in Puerto Rico and the US Virgin Islands (Research Planning Inc. 2002) Through this effort it was discovered that there are many vessels on paper that can no longer be found in the field and many more vessels in the field with no record in the database. These observations highlight the need for rigorous, centralized data collection, thorough field surveys, input from as many public and private sources as possible and further development of the Abandoned Vessel Inventory.

The inventory is housed in a Microsoft Access 2000 database. This database allows for flexible entry and association of different types of survey information and easy execution of a variety of query, filter, and reporting operations. It also manages and exports information for the project website and for electronic distribution. This database currently contains 63 vessels in the U.S. Pacific Island territories, over 70 vessels around the U.S. Caribbean Islands, and approximately 550 vessels in the Florida Keys (Figure 3).

Additionally, the program has set up a GIS that links directly to the database. This tool spatially

represents vessel locations and can relate them to other relevant spatial information. Spatial queries in the GIS allow for important analysis of the vessel data in conjunction with NOAA's most current and accurate environmental and ecosystem data.

### CHALLENGES

The case study review and the data management discussion begin to reveal the spectrum of challenges that face the Abandoned Vessel Program. The full suite of challenges includes:

- Developing accurate vessel data, including vessel ownership
- Building a better understanding of the fate and effects of vessel groundings, including case-histories of prior grounding and wreck removal efforts
- Prioritizing vessels and securing funds for removal
- Evaluating legal issues and strategies to facilitate vessel removal
- Developing cost effective and environmentally sound removal and disposal strategies
- Supporting local governments with technical and legal aspects of abandoned vessel removals
- Improving monitoring and restoration tools

As the AVP moves forward, developing partnerships with many government and private entities will be needed to overcome these hurdles. Working with the marine salvage and engineering communities in particular, will be extremely valuable when it comes to gathering missing data, performing removals, and educating local governments about the logistics and costs involved with specific cases and with vessels in general.

### FUTURE DIRECTION

The mission of the Abandoned Vessel Program is to be responsive to the CRTF's National Action Plan by improving the management of abandoned vessels in coral reef and associated habitats. To further this mission the program is striving to meet the following short-term goals:

- Fully develop the abandoned vessel database
- Conduct more site investigations to help prioritize vessels for removal
- Begin the legal and engineering research necessary to remove vessels

Although coral reefs are particularly sensitive, abandoned vessels are a problem across a much broader range of habitats. Concern is also increasing over the fate of sunken vessels throughout the entire US coastal zone. Many of these wrecks pose environmental threats, either because of the

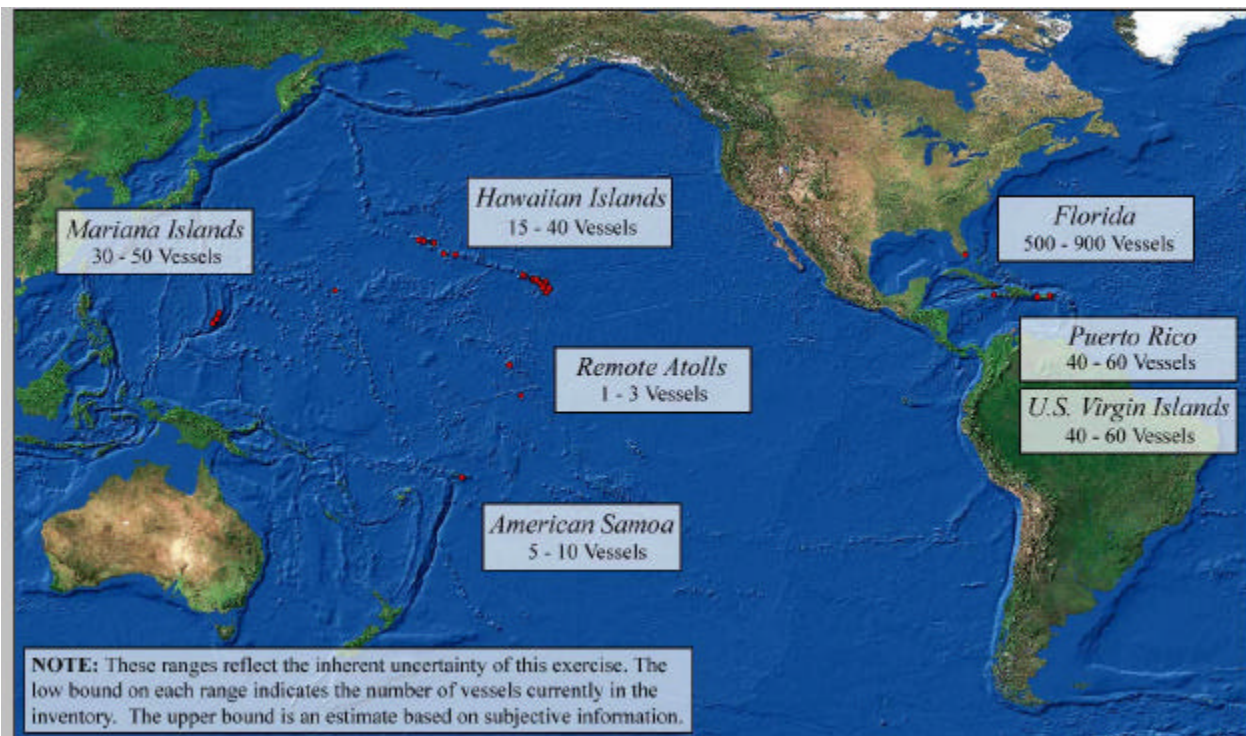


Figure 3. Graphical representation of the extent of the Abandoned Vessel Inventory.

hazardous nature of their cargoes, the presence of munitions, or because of bunker fuel oils left onboard. As these wrecks corrode and decay, they may release oil or hazardous materials.

We look forward to working with other state and federal programs on the broader issues of derelict vessels and wrecks that pose continuing threats.

### CONCLUSIONS

Coral reefs are among the most biologically productive and diverse ecosystems in the world. They are home to over 25% of all marine life and support approximately 4,000 fish species. This diversity sustains thriving tourism and fishing industries providing for billions of dollars in economic activity. Unfortunately, reefs are declining at an alarming rate. One of the factors in the decline is the cumulative impact of vessel groundings. Coral habitats, which take hundreds of years to develop, can be reduced to rubble in moments.

In the past, responders focused on the pollution threats posed by fuels on board grounded vessels, but often lacked the authority or funding to remove the vessel itself. Even though the pollution risk may be abated, these vessels continue to damage ecosystems. As they are moved and broken up by storms they batter the reef and scatter it with debris leaving significant sources of iron associated with harmful algal blooms. The focus on the oil pollution alone may miss the larger goal of environmental protection after a spill. Responders must ensure that they are considering the overall impacts of an incident and working to minimize both the pollution and vessel impacts during a grounding event.

The preliminary, coral focused, data collection efforts reported here can serve as first steps in improving the state, territorial, commonwealth, and federal response to grounded and abandoned vessels. Further effort is clearly needed both in terms of the depth and scope of response. Finally, it is clear that concern for and effort in coral habitats is only a good beginning. The environmental impacts from abandoned vessels and shipwrecks in other marine habitats should also be evaluated .

### BIOGRAPHIES

Douglas Helton is the Spill Coordinator for NOAA's Damage Assessment Center. He has directed the Abandoned Vessel Project from its inception in 2001.

Ian Zelo joined the Abandoned Vessel Program in September of 2002 and currently manages the AVP database and GIS in addition to providing technical and policy support for the program.

### REFERENCES

NOAA Damage Assessment Center "Emergency Restoration Plan and Environmental Assessment: Pago Pago Harbor, American Samoa" (1999)

Research Planning Inc. "Surveys of Abandoned Vessels: U.S. Caribbean Region, NOAA Damage Assessment Center, Seattle, WA (2002)