

# Response to Physical Impacts on Coral Reefs in Puerto Rico and the USVI

## 2016 Report



US reefs are impacted by 3 - 4 large groundings and hundreds of small incidents annually. In the aftermath of groundings, impacted corals are often broken, dislodged, or flipped over. These fragments are subject to abrasion, scour, and sedimentation, which ultimately result in death. Unchecked, these damages can result in additional reef loss and instability. However, if dislodged fragments can be collected and stabilized shortly after physical impacts then the probability of survival increases substantially (>90%). In 2016, the RC was notified of 57 groundings in PR and the USVI. Emergency restoration was conducted at 5 of these sites saving approximately 8,122 corals. Since 2009, the RC has performed restoration at 44 sites in PR and the USVI and has reattached over 26,000 corals (Table 1).

Response to physical impacts is a Jurisdictional Priority in both PR/USVI, an identified capacity gap in both jurisdictions, and a priority element of the draft *Acropora* recovery plan. Puerto Rico and the USVI have acknowledged that because of internal limitations and the need for quick and flexible response that more robust action on the part of NOAA was necessary to help stem the unchecked and unnecessary coral losses that were occurring after physical impacts.

In 2009, an emergency response support contract with a local firm was set up. This in combination with the RC's on-the-ground presence in the region has enabled NOAA to address the numerous impacts that were occurring annually. The support contract provides NOAA, PR DNER, and USVI DPNR support to have a functional emergency restoration. A notification network along with a form to report grounding incidents (Appendix 1) has been set up with the US Coast Guard, salvors, and the local communities so


that we are notified immediately of impacts. This notification system has allowed us to often get personnel onsite while the vessel is still aground on the reef. In many of these cases, our team has been able to provide feedback to the salvors to minimize further impacts during vessel extractions, saving countless corals. On multiple occasions we have found that the salvors preferred extraction path would have resulted in significant additional damage and on more than one occasion prevented entire thickets of *Acropora spp.* from being destroyed. A report from one of the incidents in 2016 can be found in Appendix 2.

Funding for this work was provided from NOAA’s Restoration Center, the Coral Reef Conservation Program, Protected Resources Division, Assessment and Restoration Division and the South East Regional Office. TNC has provided additional ground support in St. Croix for both response and implementing restoration. In addition to physical impact response, the support contract that has been set up has also served as a vehicle for funding additional restoration, research and monitoring activities in the region. Funds have been further leveraged by getting private parties and insurance companies to directly cover the cost of emergency restoration at multiple sites. This was only possible because we had the capability to do immediate post-grounding site assessment and an approved/permitted contractor. With all of the restoration work that has been done, there still is not enough funding to address all of the reported impacts.

**Table 1: Summary of NOAA RC grounding response activities since 2009. \* In 2014, an additional 8 Caribbean coral species were included as Threatened on the ESA list.**

<b>Year</b>	<b>Total # of Incidents Reported</b>	<b>On-Site Confirmation</b>	<b>Restoration Implemented</b>	<b># Corals Reattached</b>	<b>% of Restored Sites with Acropora/ ESA Impacts *</b>
2009	51	25%	7	9,074	43%
2010	32	47%	3	1,045	33%
2011	55	75%	7	915	57%
2012	36	50%	4	2,835	50%
2013	32	31%	3	214	100%
2014	42	48%	12	2,132	67%
2015	51	33%	3	1,919	100%
2016	57	46%	5	8,122	80%
<b>Total or Average Percent</b>	<b>356</b>	<b>44%</b>	<b>44</b>	<b>26,256</b>	<b>66%</b>

Appendix 1

<h2 style="margin: 0;">Natural Resource Trustee Incident Report</h2> <p style="margin: 0; font-size: small;">This form is for reporting incidents (vessel groundings, anchor damage, marine debris, plane crashes etc.) to NOAA that have the potential to cause physical damage to marine resources (corals, seagrass, mangroves, etc).</p>		
<p><b>For Immediate Assistance Please Call:</b> 787-667-7750 or 727-647-6538 (NOAA) 941-538-2476 (PRDNER) or 340-774-3320 (USVI-DPNR)</p> <p>Please call-in all incidents requiring immediate assistance and incidents involving commercial vessels.</p>		<p>Email Report to: <a href="mailto:PRVI.Trustee@NOAA.gov">PRVI.Trustee@NOAA.gov</a></p>
<b>Vessel / Incident Information</b>		
Vessel Name: <u>MAMBO</u>		Incident Date: <u>22JUL15</u> Time: <u>1814Z</u>
Vessel Description: <u>LUXURY YACHT</u>		Type: <u>Rec. Other</u> Length: <u>112</u> Draft: <u>    </u>
Incident Type: <u>Vessel Taking on Water</u>		Reg. #/IMO#: <u>WDF9146</u> Time Freed: <u>1817Z</u>
Incident Description: <u>VESSEL CALLED MAYDAY REPORTING THEY HIT THE REEF AND WERE TAKING ON WATER</u>		
Natural Resource Affected (coral, seagrass, rocks): <u>ROCKS, CORAL</u>		
Pollution Status/Notes: <u>NONE</u>		
Fuel Onboard (type/qty): <u>    </u>		Vessel Cargo: <u>RECREATIONAL</u>
<b>Incident Location</b>		
Geographic Location: <u>PACKET ROCK 0.7 SOUTH OF ST THOMAS</u>		Nearest Town: <u>    </u>
Lat/Lon (Initial): <u>18-18.05</u> N, <u>064-53.19</u> W		Notes: <u>PACKET ROCK</u>
Lat/Lon (Alt): <u>    </u> N, <u>    </u> W		Notes: <u>    </u>
<p>Please attempt to gather and note if position is exact grounding location, any pertinent details, position type (GPS, Chart Plot, ADF) and source (vessel, CG, FURA). For large vessel groundings please request a GPS position of both the bow and stern of the vessel. Please request multiple bow/stern positions during extraction.</p>		
Vessel Route (from/to): <u>    </u>		
Location Notes: <u>    </u>		
<b>Reporting Source / Owner / Operator Information</b>		
Reporting Source: <u>DONALD VOGT</u>		Primary Phone: <u>954-383-5404</u> Alt Phone: <u>    </u>
Vessel Operator: <u>DONALD VOGT</u>		Primary Phone: <u>    </u> Alt Phone: <u>    </u>
Operator Address: <u>    </u>		
Vessel Owner: <u>    </u>		Primary Phone: <u>    </u> Alt Phone: <u>    </u>
Owner Address: <u>    </u>		
<b>Additional Information</b>		
Salvage Company: <u>SEA TOW</u>		Primary Phone: <u>340-777-4869</u> Alt Phone: <u>    </u>
Salvage Status/Notes: <u>VESSEL WAS ABLE TO MAKE IT TO DRY DOCK AT SUB BASE IN ST THOMAS CRUM BAY</u>		
SAR Status/Notes: <u>EVERYONE WAS OK</u>		
Recommendations*/Additional Notes: <u>    </u>		
<p>*tug cable floats, minimize cables touching bottom, minimize vessel movement, confirm safe exit path</p>		
<b>Report Information</b>		
Entity Filing Out Report: <u>U.S.C.G.</u>		Name: <u>OS2 ADAM JOHNS</u>
Email: <u>adam.d.johns@uscg.mil</u>		Primary Phone: <u>787-289-2041</u> Alt Phone: <u>    </u>
<b>Submittal Information</b>		
<p>Please fill-in all appropriate and available information to the maximum extent possible without delaying notification and email to <a href="mailto:PRVI.Trustee@NOAA.GOV">PRVI.Trustee@NOAA.GOV</a> or Fax to 1-888-521-6622. Feel free to submit additional forms as more information becomes available. Email and Fax notifications will be auto forwarded to Puerto Rico DNER &amp; US Virgin Islands DPNR.</p>		
<div style="border: 1px solid black; padding: 2px 10px; display: inline-block;">E-Mail Form</div>		
<p>This form is designed to facilitate communication between NOAA and the Reporting Source and does not constitute formal notification when required by the National Contingency Plan.</p>		

## Appendix 2

### Damage to *Acropora palmata* Thickets in Guanica, PR after Hurricane Matthew



Hurricane Matthew passed south of Puerto Rico in October 2016 generating large swells that impacted the south coast including 1.2 km of reef in Guanica with large numbers of the ESA listed elkhorn coral, *Acropora palmata*. This sub-population is one of the few remaining large stands of *A. palmata* on the island. The large waves caused extensive damage to many of the colonies and generated tens of thousands of coral fragments (Figure 1). Many of these fragments that land on hard substrate and are stable have a good chance at survival; but the fragments that end up in sand and sea grass or are loose and unstable will likely perish through abrasion and smothering. NOAA's Restoration Center with support from its support contractor, Sea Ventures, began an effort on October 26 to actively stabilize at-risk storm generated fragments to increase the number of corals that will recover from this event. Over the course of several weeks, approximately 8,500 at-risk fragments were rescued. Fragments were stabilized *in situ* as well as transplanted to 10 other reefs to assist population recovery in those areas. Fragments were also brought into 5 different coral nurseries to assist coral propagation efforts in the area.



**Figure 1: Fragments of *Acropora palmata* in Guanica, PR after Hurricane Matthew.**