Transcript

Emergency Coral Reef Restoration: The *Cape Flattery* Ship Grounding

On February 2, 2005, the vessel *Cape Flattery* ran aground on a submerged coral reef off the coast of Oahu, Hawaii. A bulk carrier, the *Cape Flattery* was carrying over 30,000 US tons of cement powder when it ran aground.

For the next ten days, crews worked to re-float the 555 foot long ship. These emergency responders prevented the ship from breaking up and spilling fuel oil, however the reef was damaged by the ship grounding and removal. As the ship's oil was removed and the ship towed back out to sea, steel tow cables scraped corals off the living reef, and the moving hull crushed reef creatures. Cement powder also spilled from the hull into the ocean, smothering corals and other marine life. To escape further impact, fish and fast-moving animals fled the affected area.

After the ship was towed back out to sea, scientists made a preliminary assessment of impacts to the reef. They found that more than 15 acres of reef habitat had been severely damaged by the grounded ship and salvage efforts. Many of the overturned and broken corals were still partially alive, however they would die if not promptly reattached to the reef in a normal upright position. Reef biologists knew they needed to move quickly to rescue the injured corals and save as much critical reef habitat as possible through a process called "emergency restoration."

To stabilize critical coral species, scientists decided to use a method first developed and implemented at ship groundings on the coast of Florida. The *Cape Flattery* restoration would mark the first time these techniques from Florida had been adapted for deeper waters, like those off the coast of Oahu. The focus of the emergency restoration would be on large corals, because they provide significant habitat for other marine life, and because these corals take decades to re-grow if they cannot be saved.

First, scientists identified priority restoration areas, targeting large coral boulders, branches, and overturned corals most likely to survive and grow. Next, they prepared the severed corals and damaged reef areas for reattachment. Divers scraped clean the scarred ocean floor with wire brushes, and lifted coral heads to clean them in the same way. Fresh cement was then placed onto the cleaned surfaces of the ocean floor to serve as adhesive for the broken corals. Finally, divers cemented the loose coral fragments onto the reef, as if cementing bricks onto a wall. Because these new coral clusters mimicked the arrangement of corals in natural reef habitats, a variety of fish and coral reef invertebrates quickly returned to the restored reefs.

To monitor the long-term success of this emergency restoration effort, NOAA will regularly photograph and measure the rescued corals over the next five years, comparing the growth and survival of the reattached corals to nearby corals that escaped impacts of the grounding. So far, the Florida reattachment technique appears to have been successful in stabilizing corals in Hawaiian waters.

Protecting and restoring coral reefs is essential to the well-being of our communities, our oceans, and our economies. NOAA works to minimize the impact of coral reef disasters by developing and testing new restoration techniques, putting these methods into practice after ship groundings, hurricanes, oil and contaminant spills, and other incidents. NOAA scientists also conduct applied research to better understand how to support resiliency, which is a reef's natural ability to recover from environmental impacts. NOAA resource managers work with local partners to implement policies and public education programs to prevent future accidents and other manmade impacts. Together with its partners, NOAA is working hard to stem the tide of global coral reef loss and to preserve these valuable resources for future generations.

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