

## **Not My Fault: Tsunami debris continuing to connect North America, Japan**

Lori Dengler/For the Times-Standard  
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On March 11, 2011, the tsunami generated by the magnitude 9.1 Great East Japan earthquake created about 20 million tons of debris, according to the Japanese government. The tsunami swept five million tons into the Pacific Ocean. Most of the material sank close to shore or was washed back onto the Japanese coastline. But scientists estimated about 1.5 million tons of that material was pulled far enough offshore to be caught in the great current flow of the ocean – the Northern Pacific Gyre. The first debris items beached in British Columbia, Alaska and the Pacific Northwest a little over a year later.

A group of scientists from PICES, the North Pacific Marine Sciences Organization, has been studying what happened to that debris and released a five-year analysis on the types of debris material and where it was found. The study, headed by Cathryn Clarke Murray and published in last month's Marine Pollution Bulletin, analyzing data from NOAA's marine debris monitoring program and a number of monitoring sites, found that the Hawaiian Islands received the greatest influx of tsunami debris including 60 fishing boats and tons of plastic and wooden materials. The State of Hawaii had no plan in place to deal with the unexpected influx, and not only had to deal with the costs of retrieval and disposal, but also had to be on the lookout for invasive species that had hitched a ride on the debris.

The Haida Gwaii Islands along British Columbia's remote Pacific Coast was the second most impacted spot. The most exhaustive study site was in northern Washington State where the group detailed debris surveys before and after the tsunami kept by the Coast National Marine Sanctuary. The surveys suggested the tsunami increased the overall prevalence of marine debris by a factor of ten, peaking in the summer of 2012 about 16 months after the tsunami. The tsunami contribution to the marine debris load has steadily decreased since then and debris models suggest that the period of impact has now largely passed.

Northern California received far less tsunami debris than Hawaii and coastlines further north, but one of the items that beached here continues to make waves today. On

April 7, 2013, a small boat landed at Crescent Beach. 'Kamome,' which means seagull in Japanese, was linked to a High School in Rikuzentakata, Japan and thanks to a series of extraordinary events including the efforts of Del Norte High School students, officials on both sides of the Pacific, businesses and other organizations, the boat was returned. It began an exchange of students between the two schools and a formal sister school arrangement between Takata High School and Del Norte High School.

The Rikuzentakata – Crescent City relationship continues to grow. Last week, nine Del Norte County officials and business people visited Japan to begin the final steps to formalize a Sister City relationship. The Del Norte group were hosted by Mayor Toba of Rikuzentakata and spent several days touring the city and observing the slow process of recovery and rebuilding. They also heard several presentations on what happened during the 2011 tsunami and the importance of engaging the entire community in drills and preparedness. The group presented a Crescent City flag that is now displayed at the Rikuzentakata City Hall.

The next step in the tale of these two cities will take place in April when the entire Rikuzentakata City Council and several staff members are planning to visit Crescent City. They will bring their message of preparedness and friendship and begin to finalize the legal Sister City process. And if all goes as planned, a final signing will take place in Japan this fall when Rikuzentakata and Crescent City will become the first ever Sister Cities linked by a piece of tsunami debris and driven first by the friendship between high school students.

You can see photos and background information about Kamome and the ongoing exchange at [humboldt.edu/Kamome](http://humboldt.edu/Kamome). The story became a bilingual English-Japanese children's book two years ago (available in local bookstores) and a Spanish version will be published this spring.

The diminution of tsunami debris on Northern Pacific islands and beaches has not made much of an impact on the much bigger problem of human-generated marine debris. The Ocean Conservancy's Trash Free Seas Alliance estimates that 9 million tons of plastic alone enters the world's oceans each year. The trash comes from multiple sources – cities and towns that dump trash directly or indirectly into the ocean, and boats and ships tossing unwanted items overboard. Plastic is a particularly noxious problem. It never goes away, just breaks down

into smaller and smaller bits that choke and entangle birds and marine life.

Note: If you are curious as to what Kamome looks like, you can visit a nearly identical boat at the Eureka National Weather Service Office on Woodley Island. The “Tai Shou Maru” was found by a group of kayakers in June 2014. It had been a fishing boat in Miyagi Prefecture before the tsunami. Another fishing boat landed on Washington state’s Long Island Peninsula in 2013 and is currently on display in Astoria’s Columbia River Maritime Museum.

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Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. Questions or comments about this column, or want a free copy of the preparedness magazine “Living on Shaky Ground”? Leave a message at (707) 826-6019 or email [Kamome@humboldt.edu](mailto:Kamome@humboldt.edu) <http://www.times-standard.com/opinion/20180221/lori-dengler-tsunami-debris-continuing-to-connect-north-america-japan>