Voyage to the Plastic Frontier: the Alguita sails the Pacific

Contributed by Jan Lundberg
19 July 2009

Captain Charles Moore is today one of several men of the hour. But if there are people on this planet hundreds of years from now, surrounded by all the non-biodegradable, toxic petrochemical plastic saturating the oceans, he will be spoken of as the man of the hour -- a Cassandra that people started to seriously heed. On the tenth anniversary of his findings establishing the Northern Pacific Ocean Garbage Patch, Capt. Moore and his crew are out there now sailing again.

Before the update on Captain Moore's voyage for his Algalita Marine Research Foundation, that started June 10 on the Oceanographic Research Vessel Alguita, watch his riveting seven-minute mind-blowing presentation at the TED talks. This is followed by the voyage's description and blog, ending with more resources and background. Help stop the plastic plague!

From the Green Planet Films website: http://greenplanetfilms.org/blog/?p=164

North Pacific Sub-tropical Gyre Exploration
2009 Pacific Exploration

Project Background

In conjunction with Algalita Marine Research Foundation, the ORV Alguita was the first vessel to sample the surface waters of the area that has now become known in the popular press as the “great Pacific garbage patch." Algalita’s research team was also the first to develop a standard methodology for sampling, and processing the samples, of ocean surface for micro-plastic debris. This effort has resulted in data for plastic debris levels and the corresponding zooplankton (larger than 1/3 of a millimeter) levels in the North Pacific Subtropical Gyre (NPSG), for winter and summer months.

The next move is a series of voyages back out to the NPSG during the summer of 2009 with the goal of gathering data that will expand upon what we already know. So why is it important that we collect more data?

Because the potential impacts of oceanic micro-plastic pollution, a mid-late 20th century phenomenon, are wide ranging and poorly understood. For instance, fish collected from the NPSG in 2008 were found to have plastic in their stomachs. What does this mean for the ocean ecosystem, and to a larger extent, human health? We know there are pollutants that are attracted to and concentrated on plastic, not to mention the array of pollutants within the plastic itself. What does it mean for humans and other animals that rely on these “plastic fish” for food?

In addition, very little can be done to directly fix micro-plastic pollution. For example, the exclusive economic zone (EEZ) of the United States extends 200 miles in all directions from every US coastline, including the Northwest Hawaiian Islands (NWHI). This line marks the jurisdiction of US federal environmental management agencies. However, outside of

this area they are not mandated to mitigate negative environmental impacts to protected species and to the environmental wealth of the country. This means that the open ocean waters of the world are a difficult place to justify government spending on research or cleanup efforts, unless impacts to the US Economy (i.e. damage to a fishery stock from plastic ingestion), can be, beyond all reasonable doubt proven to government (remember, we have been arguing wether cigarettes are bad for us since the 70s…).

For this reason, direct sampling of the central ocean gyres of the world has to come from nonprofit groups like Algalita Marine Research Foundation, at least until the issue is present enough in the consciousness of the general public to bring about change in what has become a true tragedy of the commons for a global generation.

In order to address this issue we will embark on a summer of sampling in the NPSG. The voyages will be split into three legs, as follows:

1. Moving Forward: 1st leg, June 10th to July 25th, 2009

2. Spreading the Word: 2nd leg, August, 2009

3. Resample of the NPSG: 3rd leg, September, 2009

Moving Forward: 1st leg of the gyre trip, June 10th to July 25th, 2009

The most logical expansion of the monitoring and quantification being done in the NPSG is west of Hawaii encircling the NWHI, including Midway and Kure. We intend to travel Northwest from California turning around after passing the International Data Line at approximately 35N Lat and returning to Hawaii on the northern side of the NWHI chain. The total trip duration will be approximately 6 weeks. This will provide both water samples from trawls and fish tissue samples for analysis back on land. Based on remote sensing data, models, and NOAA monitoring efforts within the NWHI monument, there are two major reasons for choosing this as the next expansion of our study area.

NOAA estimates, from a 2001-2005 study; that the annual accumulation of debris within the national monument is 52 metric tons. A significant amount of material is small plastics and yet there is no study of the impacts or a mitigation plan for small particle plastic pollutants in this area. We believe, based on NOAA scientists' model simulation (OSCURS, DELI I) that a significant amount of the plastic pollution currently cycling around the North Pacific passes around or through the NWHI at some point on its journey. It is likely that most of the debris does not become ensnared by the islands or reefs, making the area a suspect for high concentration of small particle as well as large ghost net pollution.

Another important reason for wanting to conduct a study at this site is that it represents one of the most pristine coral reef habitat left on the planet with one of its most endangered marine mammals, the Hawaiian Monk seal, as well as

critical turtle and bird nesting areas. The importance of these islands for a myriad of species means that a full understanding of how these animals and their environment are interacting with plastic pollution is needed.

Spreading the Word: 2nd leg, August, 2009

In early August approximately two weeks after arrival in Hawaii we plan to have the vessel depart Honolulu as a part of a major media initiative to help bring awareness to the issue of ocean plastic pollution. Since mitigation seems unlikely, especially for the small micro-plastics, education is the best tool to fight this issue. The people of the world have to become more educated about the final destination of a wide range of disposable goods, and at the same time the plastic and disposable good industries need to provide innovative alternatives that will appeal to the general public.

Peligro Pictures in conjunction with Billabong and ScubaDrew Video will be taking part in a two week giant loop approximately 1000 miles NE of Hawaii into the NPSG, which will include not only the Alguita, but the Billabong Seaplane and another long range vessel as well. The combination will provide a platform for celebrity guests to come out and witness the problem first hand, while providing their thoughts and commentary on the issue.

Resample of the NPSG: 3rd leg, September, 2009

The trip home from Hawaii back to California will include a resample of the original 1999 summertime gyre crossing. This 10-year time span will allow for much stronger statements to be made about the rate of growth and about the seasonal changes in plastic density. The data from the 1999 trip will be significantly strengthened by a summer sampling of the same transects and beyond during this ten year anniversary of our first trip to the garbage patch. The levels of plastic can then be compared to the levels found ten years ago, and related to our model predictions, allowing for a determination of growth during that period.

This trip will also be comparing the amount of fish caught in the manta trawl, with a particular interest in the family Myctophidae (lantern fish), to levels caught during the winter transect run in February 2008, and for the first time assessing the load of Persistent Organic Pollutants (POPS) in their tissues.

Follow the ORV Alguita's summer research through the Ship's Blog

From the Alguita's blog website:

"Manta sample #33, the last of the day, ran for a half hour and produced an astounding amount of plastic. A stark contrast to Manta #29 deployed 3 hours (roughly 9 nautical miles) prior. As I stated yesterday, the trash accumulation zone is patchy and tremendously dynamic."

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Further background:

Download the 2009 Pacific Exploration Brochure:
the PDF

Two minute film by Algalita: The Garbage Patch

Courtesy Center for Biological Diversity: "Twenty Years of Saving Species"

"Sailing plastics to the Garbage Patch" The vessel Plastiki: 10,000 empty 2-liter plastic soda bottles!
June 26, 2009

sanfrancisco.bizjournals.com

"The Pacific isn't the only ocean collecting plastic trash"

June 18, 2009

A swirling 'soup' of tiny pieces of plastic has been found in the Atlantic Ocean.

"Many cities are banning plastic shopping bags or passing laws forcing stores to charge for the bags. Plastic bags are a major contributor to the plastic marine debris situation in the oceans when the bags are washed to sea by rivers and runoff after rains."

Christian Science Monitor

Critical comment from Jan Lundberg, petroleum industry analyst | 06.27.09

In the article and comments so far there is no suggestion to shut down the source. Petroleum's toxic and climate-changing nature, responsible for more than plastic, needs to be dealt with more strongly than attempts to educate and muddling toward legislation that may lack teeth. So let's boycott petroleum to save the planet (and save money). This approach has the side-benefit of preparing for ultimate petrocollapse.

We also need to recognize that we’re dominated by an ecocidal, materialistic culture that condones and rewards waste and greed. Until we reject the present system and build an alternative, the plastic plague will grow along with climate distortion.

See Culture Change's Plastic Plague webpages from our menu.

One more major story on this century's Jacques Cousteau:: PBS's Strange Days on Planet Earth

interview with Captain Moore