ALGALITA MARINE RESEARCH FOUNDATION

ANNUAL REPORT 2008

ALGALITA MARINE RESEARCH FOUNDATION

148 North Marina Drive, Long Beach, CA 90803 ■ 562.598.4889 ■ www.algalita.org

The Algalita Marine Research Foundation is dedicated to the protection of the marine environment and its watersheds through research, education, and restoration

Dear Friends of Algalita,

Anyone who has observed the frantic pace of activity at our small office must assume that our message about the seriousness of plastic pollution of the ocean is gaining traction. Requests for interviews and photographs for articles flood in daily. Answering questions and referring inquiries to the *Frequently Asked Questions* (FAQs) page on our excellent website increasingly eats up the precious time of our small, devoted staff.

Can we assume that the world now knows about the serious problem of plastics in the ocean? Though millions do, billions do not, and we still need to reach them. Many of the inquiries we receive come from people who have only recently learned about our research. Some requests come from national and international organizations that share our concerns and want to partner with us but are surprisingly unfamiliar with our findings.

High profile projects like the voyage of the JUNKraft to Honolulu, and the follow-up three nation JUNKride help greatly to publicize our message. Our gyre voyages and our Ship-2-Shore blogs add content and reach many students as well as the general public. Presentations, both local and international, by our researchers and volunteers help spread the word.

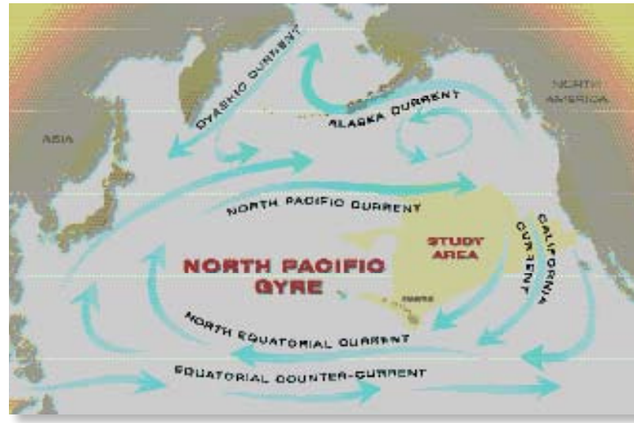
The magnificent feature films coming out showing beautiful sea creatures in their ocean habitats showcase amazing technical advancements in underwater photography and hopefully will widely expand the numbers of people who are in love with the ocean and want to protect it. Our research, while exposing dire threats to the ocean's beauty and health, relies on the public's love for the greatest of all the habitats for life in our entire solar system. We accept as true the oft-quoted adage, "we protect what we love." We've got a lot of protecting to do.

Captain Charles Moore swims amid marine debris in the North Pacific Subtropical Gyre.

Captain Charles Moore
Founder, Algalita Marine Research Foundation

FRONT COVER
Gooseneck barnacles anchor themselves to a makeshift home on a discarded plastic fishing float.

In 1998, Captain Charles Moore, returning to California from Hawaii aboard the ORV *Alguita*, made his first trip through the North Pacific Subtropical Gyre. The gyre, formerly known as the "horse latitudes," is a 10 million square mile patch of circulating current – an area of little precipitation combined with variable winds and intermittent calm. Currents flow into the gyre from all directions, carrying with them great quantities of trash – 85% of it plastic – which makes its way into the oceans via the world's watersheds. Unfortunately, most of what goes into the gyre stays there, with only the tiniest plastic particulate matter ending up on far-flung beaches. Although most trash biodegrades in seawater over time, plastic does not. Instead, it continues to break down into smaller and smaller pieces, forever circulating in the sea.



Alarmed by the plastic-laden ocean that lay before and around him, Captain Moore decided that the questions of how all that plastic found its way to the gyre, and how much actually resided there, needed to be answered. The following year, Captain Moore and a team of researchers returned to the gyre, collected samples using surface and depth trawls, and brought them back to the mainland for lab analysis. With that first sampling, the average plastic density ratio was calculated to be six parts plastic to one part zooplankton. That was nearly ten years ago. Moore's most recent 2007-08 trip to the gyre produced some samples with a density ratio of forty-six parts plastic to one part zooplankton.

The Algalita Marine Research Foundation's mission is the protection of the marine environment and its watersheds through research, education and restoration. On the pages of this report you will learn of the ways in which Algalita has been fulfilling that mission, what we accomplished in 2008, and our plans for 2009.

Dr. Marcus Eriksen, aboard ORV Alguita, *sorts plastic items collected during the 2008 Gyre Expedition.*

2008 RESEARCH HIGHLIGHTS

This past year, Captain Charles Moore and his crew embarked on their sixth voyage into the North Pacific Subtropical Gyre with a mission to collect plastic marine debris samples within the same parameters they first examined in 1999. Inasmuch as it took half a century for plastic waste to make its way into and cover the gyre, it took less than a decade for the particulate matter to double in density.

Additionally, during this expedition, research was expanded for the first time to collect lantern fish and analyze their stomach contents. These tiny nocturnal members of the family Myctophidae rise from the depths to feed on surface zooplankton. Of the hundreds of fish caught and examined back on the mainland under laboratory conditions, one-third of the sample had ingested plastic – the record holder containing 84 rice grain-sized particles.

During Algalita's JUNKraft voyage later in the year, 1000 miles away from land in all directions, other scientists caught Rainbow Runner, a common restaurant and fish market item. In its stomach they found 17 large plastic fragments. As in the lantern fish from the gyre expedition, the plastic pieces could not move past the stomach.

Plastic ingestion by fish and marine mammals can result in not only restricted breathing and feeding, but a false sense of satiation, resulting in starvation. This alone is cause for concern. Add to the equation a potential for the accumulation and concentration of Persistent Organic Pollutants (POPS) in the tissues and organs of invertebrates and feeder fish – marine life that invariably impacts the oceanic and ultimately the human food chain – and the situation becomes critical.

A common restaurant fish, this Rainbow Runner found with 17 pieces of plastic in its stomach, was caught 1000 miles from land during the California to Hawaii JUNKraft voyage.

"Our research, while exposing dire threats to the ocean's beauty and health, relies on the public's love for the greatest of all the habitats for life in our entire solar system." Captain Charles Moore

This cusk eel lodged inside a broken plastic petroleum jelly jar was discovered off the coast of Long Beach, California.

Joel Paschal video-documents remnants of knotted ghost net in the Gyre.

An assortment of household plastic debris, carried from around the world by ocean currents and deposited on Hawaii's Kamilo Beach, is collected and catalogued.

For centuries, California Giant Kelp proliferated along the California coast. Vast, dense canopies could be seen floating atop the waves for hundreds of yards beyond the shoreline, but with time, and man's impact of increased hunting, fishing and pollution, the kelp forests began to meet their demise.

By the early 1900s, sea otters, the greatest defenders of kelp forests, had all but disappeared from the Southern California coastline. After two centuries of harvesting by commercial fur traders, these whiskered marine mammals, once estimated to number in the hundreds of thousands, had dwindled to near extinction. Their notable decline, in addition to sporadic El Niño conditions combined with the over-fishing and trapping of California sheephead and California spiny lobster, served as a catalyst for a population boom of the three species' favorite delicacy – and great nemesis of kelp beds – the purple sea urchin. With no natural predators to keep them at bay, sea urchins eat their way through holdfasts, over-graze stalks and fronds, and ultimately decimate kelp forests leaving beaches vulnerable to erosion.

Since 1997, Algalita has focused on reversing this destruction through its Kelp Reforestation Project. The program originally concentrated on developing in-laboratory sporing and kelp transplant techniques which were applied at Little Corona Beach in Corona del Mar. During Phase I of the project, lab-cultured plants, supplemented with adult transplants, were used to reforest a combined total of over 500 meters on the Long Beach section of the San Pedro Breakwater. In Phase II, a new process to provide on-site sporing of the transplants was first tested on the Long Beach breakwater, and then expanded to include areas of Orange County at Pelican Point and Wheeler's Reef in Crystal Cove State Park. Due to its success, the process has been extended to Deadman's Reef in Laguna Beach.

Through its past, present, and future planned efforts, Algalita's work will be integral to the restoration of fish and invertebrate nursery grounds and the prevention of beach erosion. As the kelp forests mature, transient marine life and larger fish species are being drawn to them, ultimately providing increased sport fishing and diving opportunities.

TOP: *A kelp forest is reestablished with transplants along Wheeler's Reef in Orange County's Crystal Cove State Park.*

MIDDLE: *With no natural predators, the purple sea urchin remains the chief nemesis of kelp forests along the Southern California coast.*

BOTTOM: *Diver Cliff Noland tows a mature kelp transplant to its sporing site along the Long Beach breakwater.*

Fueled by the dedication and guidance of Dr. Marcus Eriksen, AMRF Director of Education, Algalita sailed through 2008 with another stellar year of extraordinary outreach efforts and educational events.

JUNKraft embarked upon its Hawaii-bound voyage from Rainbow Harbor in Long Beach, California on Sunday, June 1 with a mission to raise awareness of the plastic marine debris fouling our oceans. Samohi's Team Marine, Redondo Union High School, MUSE Elementary, and the Environmental Charter High School's Green Ambassadors assisted in the construction of JUNK, employing a Cessna 310 fuselage for a sleeping cabin and 15,000 plastic water bottles for buoyancy. Anna Cummins, AMRF Education Advisor and land support coordinator, created and maintained a blog for the journey, which chronicled the activities and adventures of JUNKraft sailors Dr. Eriksen and Joel Paschal. After 88 days at sea across 2600 miles of ocean, with the two seafarers braving squalls, collecting plastic-ridden ocean surface samples, and catching fish with plastic-ingested gullets, JUNK arrived in Honolulu's Ala Wai Harbor on August 27th.

ABOVE: *Dr. Marcus Eriksen and Joel Paschal sail JUNKraft into Oahu's Ala Wai Harbor.*

BELOW: *Dr. Marcus Eriksen and Anna Cummins test exposure suits not only designed to keep wearers afloat and highly visible in the event they fall overboard but which are also complete with built-in food and water compartments.*

BOTTOM: *Volunteers commence the building of JUNKraft in Long Beach's Rainbow Harbor near the Aquarium of the Pacific*

The Ship-2-Shore Education Program invited students from around the world to interactively monitor ORV *Alguita's* onboard, day-to-day, at-sea experiences during its North Pacific Subtropical Gyre research expedition. Throughout the Winter 2008 voyage, students and educators from the U.S., Chile, and Puerto Rico, along with the ORV *Alguita* shore team, utilized satellite communications and a moderated web space to share questions, answers, and ideas as real-time marine research was conducted.

The Watershed Wonders School Tour continued its curriculum development to educate K-12 students in more than 50 schools about the importance of maintaining cleaner watersheds to promote healthier oceans. To date, the curriculum book and DVD series has been distributed to thousands of schools throughout the United States. In 2009 the Watershed Wonders video series will add a new episode "Watershed Wonders: Los Angeles River and the Adventures of the Cola Kayak," which will be distributed to 200 schools throughout Southern California.

2009's JUNKride will continue the dissemination of Algalita's message of the critical issues regarding plastic marine debris as Dr. Eriksen and Anna Cummins bicycle from Vancouver, British Columbia, Canada to Tijuana, Mexico. On the journey, they will meet with educators, organizations, and legislators along the west coast of North America to share information of the profound impact single-use plastics are wreaking upon the marine environment.

STATEMENT OF ACTIVITIES

ALGALITA MARINE RESEARCH FOUNDATION

FOR THE YEAR ENDING DECEMBER 31, 2008

	UNRESTRICTED	TEMPORARILY RESTRICTED	PERMANENTLY RESTRICTED	TOTAL
SUPPORT & REVENUES				
Contributions & grants	$553,840	$151,646	$45,000	$750,486
Program service revenue	13,763	-	-	13,763
Membership	10,767	-	-	10,767
Special Events, net	4,226	-	-	4,226
Interest and dividends	4,455	1,411	-	5,866
Net realized & unrealized loss on investments	(86,112)	(25,245)	-	(111,357)
Other income	-	-	-	-
Net assets released from restrictions:	202,295	(202,295)	-	-
TOTAL SUPPORT & REVENUE	703,234	(74,483)	45,000	673,751
EXPENSES				
Program services				
Restoration	16,375	-	-	16,375
Research	499,294	-	-	499,294
Education	169,212	-	-	169,212
Total program service expenses	684,881	-	-	684,881
Supporting services				
Management & general	59,624	-	-	59,624
Fundraising	30,587	-	-	30,587
Total supporting services expenses	90,211	-	-	90,211
TOTAL EXPENSES	775,092	-	-	775,092
CHANGE IN NET ASSETS	(71,858)	(74,483)	45,000	(101,341)
NET ASSETS				
AT BEGINNING OF YEAR	175,836	205,445	50,000	431,281
AT END OF YEAR	$103,978	$130,962	$95,000	$329,940

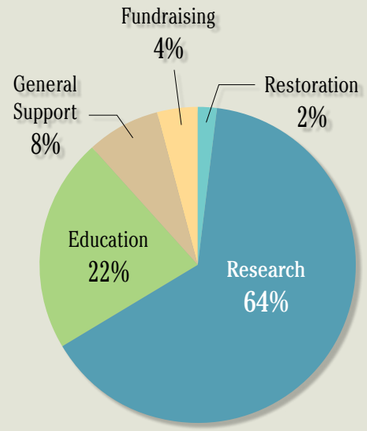
STATEMENT OF FINANCIAL POSITION

ALGALITA MARINE RESEARCH FOUNDATION

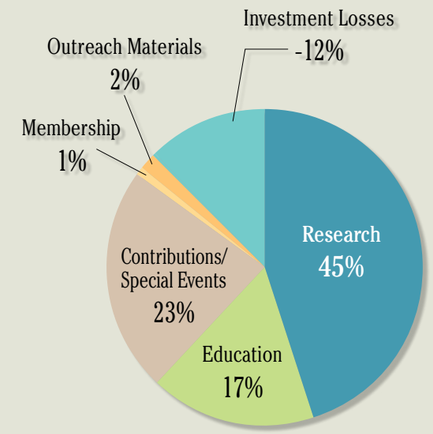
FOR THE YEAR ENDING DECEMBER 31, 2008

ASSETS	
Cash and cash equivalents	$189,540
Promises to give & accounts receivable, net	13,104
Investments	239,077
Equipment	17,096
Other assets	563
TOTAL ASSETS	$459,380
LIABILITIES	
Accounts payable	53,478
Accrued expenses	75,962
TOTAL LIABILITIES	$129,440
NET ASSETS	
Unrestricted	103,978
Temporarily restricted	130,962
Permanently Restricted	95,000
TOTAL NET ASSETS	$329,940
TOTAL LIABILITIES & NET ASSETS	$459,380

EXPENSES



SUPPORT & REVENUE



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HOW TO HELP ALGALITA

- Make a one-time, tax-deductible donation online at www.algalita.org, or by mail to Algalita Marine Research Foundation, 148 Marina Drive, Long Beach, California 90803.
- Corporate or Foundation support.
- Become a member online at www.algalita.org or call 562.598.4889.
- Give a memorial or tribute donation in honor or in memory of someone or to commemorate a special occasion.
- Contribute with a gift of stock.
- Explore Planned Giving options.
- Contribute to the Algalita Marine Research Foundation's Endowment Fund.
- If you are a federal employee or retiree and would like to support Algalita through the Combined Federal Campaign (CFC), our CFC number is 12273.

For more information call 562.598.4889 or visit www.algalita.org

Captain Charles Moore sailing to the North Pacific Subtropical Gyre aboard ORV **Alguita**

TOP: *The Big Island of Hawaii becomes the repository for international flotsam and jetsam routinely washed up on Kamilo Beach.*

BOTTOM: *Joel Paschal, in the Zodiac, films Captain Charles Moore and a flotilla of trash during the 2008 Gyre Expedition.*

CREDITS & ACKNOWLEDGEMENTS

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