



Algalita Marine Research Foundation Strategic Plan 2006 to 2010

December 12, 2005

PRINCIPLE:

- ❖ The health of the marine environment is an international issue about which all humans share a common concern.

VISION:

- ❖ The time period between research, identification of an environmental problem, and application of remedies needs to be as short as possible.
- ❖ Without lifelong education of all humans, starting with the youngest among us, sustainable solutions to the problems facing the world's oceans cannot be implemented.

ISSUE:

“The base of the food chain is being displaced by a non-digestible, non-nutritive component which is actually out-weighting and out-numbering the natural food. That is our core issue.”

*Captain Charles Moore
Captain of the Algalita Oceanographic Research Vessel and
Founder of Algalita Marine Research Foundation
November 6, 2004*

AMRF has world-recognized expertise in understanding the impact of plastic contamination on our planet's oceans. The level of contamination has grown to levels that have only recently been uncovered. The accumulation of this debris is unsightly and plastic is adversely affecting marine life through ingestion, entanglement and unintentional contact. The potential impacts on the world's human population need further study.

A combination of General Strategies and Projects describe our efforts.

General Strategies:

Educational Outreach

- Disseminate information by constructing curricula for use at all educational levels, particularly elementary school, and secondary school levels, and conduct school assemblies.
- Expand to advanced educational levels and adult education programs
- Organize and contribute library materials to an AMRF Library

Promotion and Public Awareness

- Promote findings of the foundation to industry magazines, related scientific journals, television, print, radio, internet, etc.
- Utilize the Oceanographic Research Vessel *Alquita*, to expand and promote public awareness of AMRF goals and vision
- Work with local, regional, national, and international government personnel to communicate AMRF findings
- Speak at community gatherings and appropriate conferences

Organizational Optimization

- Hire professionals, technicians, etc., for key positions to enhance capability and efficiency.
- Encourage involvement of additional personnel.
- Develop new income sources, including, but not limited to, saleable products and services.
- Continue to cultivate long term beneficial relationships with, foundations, governments, commercial, industrial, and other organizations.
- Evaluate the need for facility improvements, such as laboratory, office, ocean going vessels, remote operating vessels, etc.
- Establish and maintain a repository for research materials that supports ongoing research efforts by the foundation and others.
- Develop and Conduct Endowment Campaign.
- Expand to permanent laboratory, office, and library facility.

Projects:

*Our Synthetic Sea
Biological Impact Study of Pollutants Accumulated on Plastic
Plastic Alternatives Degradable in a Marine Environment*

Our Synthetic Sea

This program is the cornerstone of Algalita Marine Research Foundation's efforts. The continuing goal is to measure and document the amount, type, and trends of accumulation of plastic pollution in the world's oceans.

Algalita Marine Research Foundation has spent a decade understanding, categorizing, recording and publishing information about the amount of plastic accumulation in the oceans of the world. This experience and data accumulation, retrieval and analysis has made AMRF a recognized leader in this type of research.

We continue to identify and report significant data about the nature of plastic distribution throughout the world. We communicate our findings to industry, environmental, government organizations, and the public, through education and outreach programs. The Education Section of AMRF is developing curricula at various student levels.

With this information, industry, government, and community leaders can make better, more informed decisions about plastic and its affects on our environment.

AMRF continues to sample, test, identify and communicate findings on plastic contamination worldwide.

The major components of "Our Synthetic Sea" program include:

- I. Investigation of effects of plastic contamination on the oceans of the world
- II. Evaluation of watershed contributions to ocean pollution
- III. Observations of contamination sources
- IV. Survey of habitats affected world wide by plastic and other contaminants

Over the next five years we will:

- Actively research plastic contamination of the oceans, including its distribution, history, and accumulation.
- Complete a circumnavigation of Pacific, including Hawaii and Japan, to study the plastic distribution, and develop cooperative programs on understanding and acting on the problems associated with plastic contamination
- Educate all levels, including elementary, secondary, and advanced classes, as well as adult lifelong learning curriculums.

- Upgrade our laboratory facilities to enhance capabilities
- Provide support for scientists in studying their region of the California Bight locally, and other areas internationally.
- Establish a working library of information related to plastic contamination

Biological Impact Study of Pollutants Associated with Plastic

The effects of persistent organic pollutants (POP's) have been investigated in several forms, including such well-known pollutants as DDT, and PCB's. The effects of these compounds on marine biology, when transferred to marine species via plastic as a carrier, are not defined. Secondly, the impact of components of plastics available for transfer would also be evaluated. A Biological Impact Study of Pollutants Associated with Plastic (BISPAP) will begin to determine these effects.

There is a need for knowledge about the mechanisms by which plastics of various types adsorb, absorb, and then release, or desorb, these organic pollutants. There is an additional need for information about how the release of these organic materials occurs after ingestion or contact with marine species. This, then, challenges the scientific community to understand the biological effects on organisms that ingest or come in contact with contaminated plastic.

The major components of this research include:

- Understand the mechanism of adsorption, absorption, and release of POP's from various types of plastic
- Determine how the release of POP's occurs after ingestion or contact with marine species.
- Define the biological effects on marine species that ingest or come in contact with plastic.

Over the next five years AMRF will:

- Upgrade the AMRF laboratory and personnel to manage a study of biological impact of pollutants accumulated on plastic
- Develop laboratory protocol for this study
- Obtain representative samples of contaminated plastics for research use
- Establishing post doctoral fellowships with candidates to research projects within the scope of the BISPAP study. Cooperative universities are, so far:
 - University of the Pacific
 - University of Hawaii
 - Autonomous University of Baja California
 - University of California, San Diego
 - UCLA
 - Cal State University Long Beach
- Communicate findings through the Educational Outreach and Curricula programs of AMRF
- Communicate findings to the medical community, government agencies, and international leadership on oceanic effects

