



2.25.2013

Artificial Reefs: Ocean Junk or Help for an Endangered Ecosystem?



by [Candice Gaukel Andrews](#) | February 8th, 2013 | [7 Comments](#)

topic: [Eco Travel](#), [Green Living](#)



Coral reefs around the world are in trouble. According to the [World Wildlife Fund](#), about one-quarter of coral reefs are considered damaged beyond repair, with another two-thirds under serious threat. Some suffer from heavy fishing pressures, while others are succumbing to pollution or careless

tourism. [Climate change](#), with its attendant rising sea temperatures, is exacerbating the problem, speeding coral deaths.

More than half a billion people live near corals, relying on them for food, shelter from storm surges and the income that tourism brings. With natural reefs diminishing, artificial reefs are increasingly gaining favor. These structures usually take the form of [sunken ships](#), decrepit oil platforms or other human trash.

But is depositing more human refuse in the oceans in order to create artificial reefs healthy for the environment – and for us?



CTA-022-Ocean Junk-Worlds Oceans

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

Turning trash to treasure



In some places, “reef tourism” is responsible for creating thousands of jobs. ©Tim Boyes

Coral reefs are a big part of the ocean food chain. Occupying less than one quarter of one percent of the [marine environment](#), they are home to more than 25 percent of all known marine fish species. Coral reefs can yield an average of 15 tons of fish and other seafood per 0.38 square miles each year.

While a coral may look like a single entity, it’s actually a partnership between two microscopic organisms: a polyp, which is a tiny assemblage of mouths and tentacles; and a single-celled organism, usually an alga or dinoflagellate, which lives within that assemblage. The polyp builds a tiny calcium-carbonate structure that shelters the alga, and through photosynthesis, the alga provides food to the polyp. Millions of these little partnerships accumulate to form enormous, iconic reefs.

But warming waters can cause corals to expel their algal partners. The corals then turn bone white and die — a phenomenon called “bleaching.”

Unfortunately, according to the [National Oceanic and Atmospheric Administration](#) (NOAA), global sea surface temperatures have risen by about 1.5 degrees Fahrenheit over the last century. To put that in perspective, from 1876 to 1979 only three bleaching events were recorded. From 1980 to 1993, there were 60.

This decline of coral reefs has ecological and economic consequences. If the reefs vanished, experts say, hunger, poverty and political instability could ensue. Commonly consumed species of fish, such as grouper and snapper, could disappear altogether, while oysters, clams and other creatures — vital to many people’s diets — would also suffer. Commercial fisheries would not be able to meet the demand for seafood.

In Florida alone, more than 500 species of fish live and depend on [coral reefs](#). In a state that is no stranger to storms, healthy reefs buffer up to 90 percent of the force of incoming waves, thus providing shoreline protection to people and property. Just in the [Florida Keys](#), more than 33,000 jobs are dependent on ocean recreation and tourism, which accounts for 58 percent of the local economy and an average of \$2.3 billion a year.

That’s why Florida has deployed derelict autos and old refrigerators in the [Gulf of Mexico](#). Hard surfaces — whether natural coral or man-made — appeal to tiny creatures such as plankton, which in turn attract species up the food chain. Steel structures, especially, are soon covered by calcareous algae, which provide an adequate surface for coral larvae to grow quickly. The state



CTA-022-Ocean Junk-Worlds Oceans

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

of [New York has sunk retired subway cars](#) in the Atlantic in hopes of creating artificial reefs, and researchers in the Red Sea have found that several shipwrecks have become thriving coral communities.

These artificial reefs attract divers, easing human pressure on natural reefs. Artificial reefs can even enhance the development of rare coral species that are not often found in natural reefs. With time, say some scientists, there is no appreciable difference between a natural and [artificial reef habitat](#).

Reef watchers needed

Disposing of our trash in the world's waters isn't without risk, however. There is a possibility that the metal structures can contribute to toxins in the ocean, which can affect and accumulate in any of the species that colonize the reefs. Anglers may be catching and consuming fish that have absorbed contaminants such as carcinogenic polychlorinated biphenyls (PCBs), as well as [oil, asbestos and other pollutants](#) leaching from sunken vessels.



Are artificial reefs helping to rebuild an endangered ecosystem, or polluting the ocean environment? ©Roberto Plaza

Too, dropping large objects into the sea to serve as artificial reefs can damage preexisting habitats or displace wildlife from their homes. And some artificial reefs have an unreliable safety record. According to *Newsweek*, an artificial reef composed of disused tires ended

up coming apart, distributing two million tires throughout the sea and causing damage to natural reefs, boats and the shore. In addition, the safety of diving on decommissioned vehicles and vessels is questionable.

Another issue with artificial reefs involves who should monitor and maintain them once they are dropped into the water. Some artificial reefs require maintenance, repair or removal over time, which can be costly. They also need monitoring to track their effectiveness and impact on the environment.

Jane Lubchenco, a marine biologist who heads NOAA, was quoted as saying, "Reefs are precious sources of [food](#), medicine and livelihoods for hundreds of thousands around the world. They are



CTA-022-Ocean Junk-Worlds Oceans

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

also special places of renewal and recreation for thousands more. Their exotic beauty and diverse bounty are global treasures.”

Reefs are certainly treasures that we can’t afford to lose, but they may also be ones we take a risk in making.

Do you think that creating artificial reefs with trash is a good way to help rebuild one of the world’s most endangered ecosystems, or a dangerous use of our garbage?

Happy trails,

Candy

Feature photo: Reefs appeal to tiny creatures such as plankton, which in turn attract species up the food chain. ©Jeff Foote

Vic Ferguson

The World Federation for Coral Reef Conservation

President/Founder

P.O. Box 311117

Houston, Texas 77231

vic.ferguson@wfcrc.org

www.wfcrc.org

281.886.7428 (office)

281-309-1201 (cell)