

SUBMERGED STATUES:
An “underwater museum”
in Mexico doubles as an
artificial reef.



climate change, pollution, and fishing practices that deplete reef species. Underwater art is only one way people are getting creative in their efforts to help stressed-out reefs.

BIG ATTRACTION

Corals’ hard outer skeletons form the backbone of any reef. Sponges, soft corals, and shellfish are quick to attach to the rigid structures. Fish, crustaceans, and other creatures seek food and shelter in these biodiversity hot spots.

“Coral reefs are the most diverse marine ecosystem and are often called the rainforests of the sea,” says Konrad Hughen, a marine geochemist at Woods Hole Oceanographic Institution in Massachusetts.

The concentration of marine life makes reefs prime fishing spots. Researchers are developing medicines from chemicals produced by reef creatures. With so much at stake, people are building a variety of artificial reefs to replace the natural ones that are disappearing. Successful reef materials all have common characteristics, says Jeff Tinsman, an environmental scientist who coordinates Delaware’s artificial-reef program. “They’re all very stable so that they won’t be swept away by currents or tides,” he says. “They [also] have a long life expectancy underwater.”

A RANGE OF REEFS

One purpose of some artificial reefs—such as the Mexican sculptures—is to draw tourism to them instead of to nearby coral reefs, which get damaged when divers touch them. “People can love the reef to death,” says Hughen. “It’s a fragile environment.” In other places, such as the Maldives in the Indian Ocean, artificial reefs replace the many natural coral reefs that have been wiped out. There, scientists brought in Biorock—an artificial-reef system that uses an electric current to stimulate the formation of limestone (see *How Biorock Works*, right).

Coral larvae—free-swimming baby corals—attach to the limestone and grow.

To give the reef a jump start, researchers also attach chunks of live coral.

Along the flat seafloor off the coast of Delaware, fish find few tempting habitats. Reef-building corals can’t survive that far north, so experts created an artificial reef from recycled items, including 1,329

WHAT DO YOU THINK?

Some scientists say that once an artificial reef is fully colonized by native corals, it is no longer artificial. Do you agree or disagree? Explain.

decommissioned New York City subway cars. Marine species moved right in. “That’s sort of like an oasis in the desert,” says

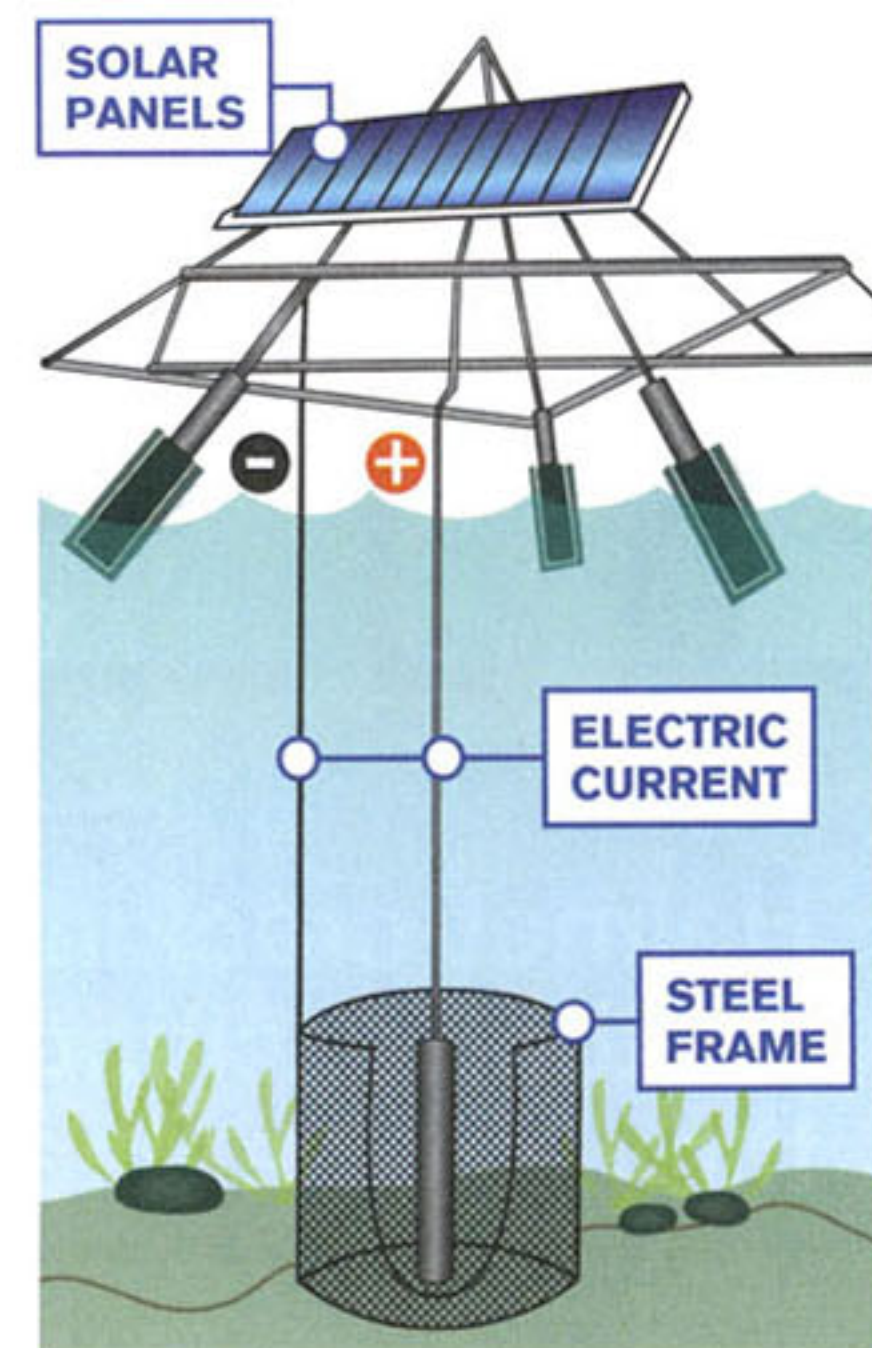
Tinsman. “Once fish find that super-productive food source, they tend to concentrate there and not leave.”

Where corals do thrive, they’re quick to call artificial reefs home. “If they get fully colonized by the native corals, then I wouldn’t call them artificial reefs anymore,” says Hughen. “At that point, you’ve created a new reef.” ❁

—Jacqueline Adams

HOW BIOROCK WORKS

Solar panels send a low-voltage current through a steel frame anchored to the ocean floor. This causes mineral crystals (calcium carbonate and magnesium hydroxide) found in seawater to accumulate as limestone on the frame. Coral larvae attach to it and grow.



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