Coral comeback: Reef 'seeding' in the Caribbean

February 26 2013, by David Mcfadden

In this May 30, 2012 photo released by the Puntacana Ecological Foundation, a diver works on a coral reef restoration program in Punta Cana, Dominican Republic. According to the International Union for Conservation of Nature, live coral coverage in the Caribbean is down to an average of just 8 percent, from 50 percent in the 1970s. Caribbean islands ranging from Bonaire to the U.S. Virgin Islands, conservationists are rearing and planting fast-growing coral species to try and turn things around by "seeding" reefs. (AP Photo/Puntacana Ecological Foundation, Victor Manuel Galvan)

Mats of algae and seaweed have shrouded the once thick coral in shallow reefs off Jamaica's north coast. Warm ocean waters have bleached out the coral, and in a cascade of ecological decline, the sea urchins and plant-eating reef fish have mostly vanished, replaced by snails and worms that bore through coral skeletons.

Now, off the shores of Jamaica, as well as in Caribbean islands from Bonaire to St. Croix, conservationists are planting fast-growing coral species to try and turn things around by "seeding" reefs. The strategy has doubters, with one expert joking that prayer might be as effective, but conservationists say the problem is so catastrophic that inaction is not an option. According to the International Union for Conservation of Nature, live coral coverage on Caribbean reefs is down to an average of just 8 percent, from 50 percent in the 1970s.

Lenford Dacosta grew up in the north Jamaican fishing village of Oracabessa Bay and spear-fished the waters for most of his 46 years. Now he is part of a crew that tends to a small coral nursery in a fish sanctuary, hoping to revitalize the reef that sustained his village, whose shoreline is now dominated by ritzy resorts.

"I used to think that children would only hear about coral reefs and fish in books," said Dacosta, expressing hope that his work will yield fruit.

Seascape Caribbean, the fledgling company that employs Dacosta and touts itself as the region's first and only private coral restoration business, uses low-tech coral nurseries consisting of buoys and weights with small fragments of staghorn coral suspended from them on strings. The fragments grow on the strings until bits of tannish coral with the beginnings of antler-like branches are ready to be planted onto reefs. Other specialists grow coral fragments on concrete pedestals placed on the seabed.

Advocates say the reef restoration work, focused on the region's fast-growing but threatened staghorn and elkhorn coral species, can boost rates of recovery and improve the outlook for coral. The efforts will never resurrect the vibrant reefs of 50 years ago, they acknowledge, but they believe they can help preserve some of a reef's functionality and beauty.

In this March 16, 2012 photo released by the Puntacana Ecological Foundation, coral grows in a coral reef nursery as part of reef restoration work in Punta Cana, Dominican Republic. Advocates say the reef restoration work, focused on the region's fast-growing but threatened staghorn and elkhorn coral species, can boost rates of recovery and improve the outlook for coral. The efforts will never resurrect the vibrant reefs of 50 years ago, they acknowledge, but they believe they can help preserve some of a reef's functionality and beauty. (AP Photo/Puntacana Ecological Foundation, Victor Manuel Galvan)

"Coral cover is getting a little better here and I believe it will keep improving in the gardened areas," said Andrew Ross, a Canadian marine biologist and entrepreneur who founded Seascape Caribbean.

Reef-building coral is a tiny polyp-like animal that builds a calcium-carbonate shell around itself and survives in a symbiotic relationship with certain types of algae. Its reefs serve as vital spawning and feeding grounds for numerous marine creatures. It comes in some 1,500 known species, ranging from soft, undulating fans to those with hard skeletons that form reef bases.

But across the globe, reefs that have proven resilient for thousands of years are in serious decline, degraded by overfishing, pollution, coastal development and warming ocean waters. And threats to coral are only expected to intensify as a result of climate change and ocean acidification due to greenhouse gases.

The stakes couldn't be higher along the Caribbean Sea, which has nearly 8,000 square miles (20,720 sq. kilometers) of coral reefs.

In this April 13, 2012 photo released by The Nature Conservancy, coral grows in a coral reef nursery as part of a Caribbean coral reef restoration program off Cane Bay, St. Croix, U.S. Virgin Islands. Across the globe, reefs that have proven resilient for thousands of years are in serious decline, degraded by over fishing, pollution, coastal development and warming ocean waters. And threats to coral are only expected to intensify as a result of climate change and ocean acidification due to greenhouse gases. (AP Photo/The Nature Conservancy, Kemit-Amon Lewis)

The tropical islands' iconic reefs protect fragile coastlines by absorbing energy from waves during hurricanes and normal conditions. Financially, the Caribbean has a multibillion-dollar beach tourism and commercial fishing economy. In Jamaica alone, reef fisheries support up to 20,000 fishermen.

Caribbean coral has deteriorated so badly in recent decades that a new

report from a team of international scientists says that the rocky structures of the reefs are on the threshold of gradual erosion.

"The Caribbean, as a whole region, seems to be in a very poor state," said Chris Perry, a geography professor at the University of Exeter who led the regional coral research.

In this March 16, 2012 photo released by the Puntacana Ecological Foundation, a healthy coral grows in Punta Cana, Dominican Republic. Some scientists predict that coral is headed for extinction, possibly within this century. (AP Photo/Puntacana Ecological Foundation, Victor Manuel Galvan)

In the face of this decline, some coral specialists and conservationists say passive inaction would be a grave mistake. They argue that the results of

the nascent coral restoration work will be seen in coming years.

In the U.S. Virgin Islands, scientists with The Nature Conservancy have reared some 2,500 coral colonies and transplanted over 1,000 fragments to local reefs with the aid of U.S. stimulus money. In the Dominican Republic, the Puntacana Ecological Foundation in the thriving tourist town of Punta Cana has planted some 1,200 fragments of Acropora coral, a genus that includes staghorn and elkhorn.

"What started as an experiment to protect the endangered Acropora species has become one of the largest nurseries in the Caribbean and a laboratory for other resorts and researchers to conduct restoration work," said Jake Kheel, the foundation's environmental director.

The Key Largo, Florida-based Coral Restoration Foundation, a pioneer in efforts to revitalize stressed reefs, has helped the Dutch Caribbean island of Bonaire set up coral nurseries. Meanwhile, in southern Jamaica, researchers are feeding low-voltage electricity to young coral to try and spur growth, a method that has been used in places like Indonesia and Malaysia.

Some coral experts say the labor-intensive reef restoration projects may be increasingly popular but they have yet to see any significant successes out of them. These critics believe the scope of the problem is simply too vast and restoration efforts don't address the underlying, accelerating forces collapsing reefs.

In this Oct. 18, 2011 released by the Puntacana Ecological Foundation, a healthy coral grows in Punta Cana, Dominican Republic. The tropical islands' reefs protect fragile coastlines by absorbing energy from waves during hurricanes and normal conditions. In the face of decline of coral reefs, some coral specialists and conservationists say passive inaction would be a grave mistake. (AP Photo/Puntacana Ecological Foundation, Victor Manuel Galvan)

"It responds more to the very human need to 'do something' in the face of calamity, even if what you do is really a waste of time. Prayer would be just as useful," said Roger Bradbury, an ecologist and adjunct professor of resource management at Australian National University in Canberra.

Bradbury argues that coral restoration actually diverts scarce resources away from what should be researchers' main focus, which is what to do with reef regions after the reefs are gone. "The reefs just won't be there,

but something will—a new sort of ecosystem," he said.

Phil Kramer, a marine geologist who is director of The Nature Conservancy's Caribbean program, acknowledges that the long term outlook for coral reefs is poor in the face of current threats and projected increases in temperature and ocean acidification. But he says that can't justify the "abandonment" of reefs.

"It is true that Caribbean reefs are generally in bad shape at the moment and that if more interventions are not taken we will continue to lose what remains. But I remain cautiously optimistic about the future," Kramer said.

In this May 30, 2012 photo released by the Puntacana Ecological Foundation, healthy coral protect a school of fish in Punta Cana, Dominican Republic. In the

Dominican Republic, in the thriving tourist town of Punta Cana, the Puntacana CQ Ecological Foundation has planted some 1,200 fragments of Acropora coral, a genus which includes staghorn and elkhorn. Advocates say the reef restoration work, focused on the region's fast-growing but threatened staghorn and elkhorn coral species, can boost rates of recovery and improve the outlook for coral. (AP Photo/Puntacana Ecological Foundation, Victor Manuel Galvan)

Helping the various restoration efforts, some regional governments are taking action to protect key species on the reefs. Belize, which boasts the largest barrier reef in the Western Hemisphere, has established bans on harvesting parrotfish, a colorful herbivore that grazes on the algae and seaweed that smothers coral.

By contrast, parrotfish are now the most popular catch in heavily-overfished Jamaica, sold at the side of the road and in supermarkets and restaurants.

Increasing sea surface temperatures have led to a dramatic rise in coral bleaching incidents in which the stressed organisms expel the colorful algae living in their tissues, leaving a whitish color. Up to 90 percent of corals in parts of the eastern Caribbean suffered bleaching in 2005, and more than half died.

But on Jamaica's north coast, Dacosta says he is gradually seeing some balance restored to the Oracabessa Bay fish sanctuary where he works to transplant coral fragments and scoop up snails and worms from reefs. He says bigger fish and algae-grazing black sea urchins are seen more frequently.

"I tell you," Dacosta said. "We should have started this a long time ago."

More information: Seascape Caribbean: www.facebook.com/pages/Seascap … ribbean/346524898685

The Nature Conservancy's Caribbean programs: www.nature.org/ourinitiatives/ … /caribbean/index.htm

Puntacana Ecological Foundation: www.puntacana.org/