Recreating Rainforests of the Deep, One Reef at a Time

A small group of divers in India's Andaman Islands is building artificial reefs with a novel solar-powered system to help coral grow faster.

ReefWatch Divers

Under the azure waters of the Andaman Sea, sturgeon, parrot fish and stingrays swim past a strange new structure close to a coral reef formation. Above, a small solar panel bobs on the water's surface. This is an artificial reef built by Indian environmental charity ReefWatch. The founders of this tiny non-profit outfit are passionate about the conservation of the magnificent coral atolls in India's Andaman and Nicobar Islands, training local divers to collect naturally broken coral fragments and implant them on to an artificial metal reef. There is, they soon realised, one basic problem with building new coral reefs: "Coral reefs grow between 0.5-7 cm per year," says Nayantara Jain, Executive Director of the programme. "At this rate, it will take artificial reefs decades to flourish."

Classroom on the beach

So ReefWatch implemented a simple, radical strategy to enable coral to grow faster. "We hook our artificial metal reefs to a small floating solar panel," explains Jain. The mild electric current generated by the floating solar panel helps speed up coral growth by seven to twelve times by enabling faster accretion of calcium carbonate. And the electric current leaves the coral with more of an energy budget that it can use to survive warmer temperature spells and coral disease. Jain and her small team, which includes three local youth, predict these artificial reefs could have a far-reaching impact. Just before the lockdown, the team developed a new solar panel design to make coral accretion even more efficient. With the old accretion system, coral would start re-growing within three months. "Now, perhaps it will grow faster," Jain says. The team also creates diverse natural habitats under each artificial reef using rocks, shells and aquatic plants. "Consequently, we see an immediate uptick in marine life as soon as the artificial reef is set up," she says.

Artificial Reef

In the long term, ReefWatch plans to develop a replicable model for coral reef regeneration which involves local stakeholders. Some of their work involves education: through workshops in schools, colleges and elsewhere, they are spreading awareness about how coral reefs protect the fragile local ecology and bulwark these islands against tsunamis and high tides. "We're also employing local divers to salvage broken coral and maintain our new reefs," she says. "Hopefully, this will encourage them and others in their community to look after their habitat." Jain plans to make the project volunteer tourism-driven and hopes to entice divers and beach enthusiasts to spend some time in these picturesque islands and help build artificial reefs. "If protecting their biodiversity could generate higher tourism revenues," she says, "the programme could eventually be taken over by the local community entirely, leaving us free to replicate this project elsewhere."

A local girl on her first dive

ReefWatch has built nine reefs so far, all positioned near natural coral formations. In time, these will mature, merge and support diversity of marine life. Each reef costs around US$2,000 and requires regular maintenance in the first few years of its installation. On World Oceans Day in June 2020, ReefWatch launched the first edition of its Adopt A Reef programme, inviting people to sponsor part of an artificial reef for US$470 per year. Within six weeks, all their existing reefs found sponsors. “The government has now allowed us to work in other areas in the Andaman Islands,” says Jain. “We want to build more reefs now…”

Images Credit: ReefWatch Marine Conservation
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