

# Landscape-scale approaches show much promise for future coral reef restoration projects

William Precht, William Goodwin, and Ken Nedimyer

Although the specific goal of coral reef restoration is to restore the ecological functions of the reef ecosystem, most historic restoration projects in south Florida have concentrated on reconstructing the damaged underlying reef structure at injured sites with little emphasis on re-establishing benthic community attributes. Reef restoration consisted primarily of using concrete and/or limestone boulders to stabilize the damaged substrate. However, a landscape-scale approach to restoration is a holistic approach to ensure and accelerate reestablishment of biodiversity in damaged areas. A landscape approach can also ensure that stressors to the reef ecosystem are removed, or accounted for, and that critical species and ecological processes have been successfully introduced.



**Successful establishment of offshore coral reef nurseries have facilitated landscape restoration projects at damaged coral reef sites by providing numerous and healthy coral transplants. Transplanted corals accelerate establishment of biodiversity and ecological functions at restoration sites.**



**These cultured staghorn corals were transplanted to a restoration site in the upper Keys to ensure that critical species are successfully introduced to the restored reef.**

Transplanting corals at restoration sites has been historically limited by availability and health of coral transplants. However, new techniques in coral husbandry and aquaculture now allow the opportunity for transplantation of coral fragments on a landscape scale at restoration sites. Numerous pilot projects in the Florida Keys National Marine Sanctuary on culturing and transplanting *Acropora palmata* and *Acropora cervicornis*, listed as “threatened” under the Endangered Species Act, have yielded significant, positive results and these projects continue to grow in size and scope. In 2000, culturing of coral fragments at offshore sites was initiated with the hope of using coral transplants on a large scale to restore the tattered remains of the Keys’ once glorious reefs. By 2008, offshore coral nurseries had over 2000 corals ready to transplant at four coral restoration projects in the Upper Keys. Monitoring shows that transplanted corals are thriving and will accelerate full restoration of ecosystem functions. Combining lessons learned from past projects with new methods are forging new and exciting directions for successful coral reef restoration in south Florida.