

## **“Community-Based Restoration and Monitoring: The Southern California Regional Kelp Restoration Project”**

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In the Northern Hemisphere, underwater forests of giant kelp, *Macrocystis pyrifera*, occur exclusively along the coast of California and the northern reaches of Baja California. Kelp forests create a uniquely productive marine habitat for over 800 species and greatly enrich our lives through their economic, aesthetic and intrinsic value. However, in southern California, combined effects from decades of both natural and anthropogenic disturbances resulted in a net decline in the abundance of kelp forests and the diversity they support. In 2001, the California Coastkeeper Alliance (CCKA), through a partnership with NOAA Fisheries' Community-Based Restoration Program, launched a regional-scale project to restore kelp forests to depleted reefs in southern California, where kelp was previously abundant. The Southern California Regional Kelp Restoration Project (SCRKRP) differs importantly from previous kelp restoration efforts in that it places a primary emphasis upon community participation.

The California Coastkeeper Alliance is a coalition of six nonprofit, environmental Keeper organizations dedicated to protecting and restoring coastal habitats along the Southern California Bight and in Baja California. Coastkeeper biologists organize volunteer scuba divers into restoration teams, trained to replant, monitor and maintain kelp forests in their local coastal communities. Portable eco-Kart aquaria placed in science classrooms throughout southern California give students an opportunity to study and grow kelp while directly participating in conservation.

The development of a peer-reviewed, “volunteer-friendly” restoration and monitoring protocol was fundamental to implementing the project and facilitating community participation. Studies conducted by our organization and 30 years of research by others showed the most effective kelp restoration approach to be multi-faceted. The SCRKRP combines outplanting of laboratory-reared juvenile kelp, seeding barren reefs with *Macrocystis* spores, relocating grazing sea urchins and transplanting drift kelp. Juvenile kelp is cultivated, with assistance from volunteers at the CCKA Regional Kelp Mariculture Laboratory, centrally located in the Port of Los Angeles at the Southern California Marine Institute, and by students in classroom eco-Karts. Monitoring of restoration and reference sites provides baseline data and is an essential part of evaluating the progress and success of this project. Working alongside Coastkeeper biologists, trained volunteers conduct surveys of fish, invertebrate and algal abundance and diversity to identify changes in *Macrocystis* populations and kelp forest community composition.

The hallmark of the Southern California Regional Kelp Restoration Project is its high level of community participation, involving students, volunteers, scientific advisors and governmental and foundation support. Community-based restoration and monitoring provides the resources needed to carry out this large-scale regional project and promotes environmental stewardship among participants.