



Restoration of Northern California Bull Kelp Forests

A Partnership-Based Approach

Report Summary



Photo: Patrick Webster/@underwaterpat

PROJECT OVERVIEW

Since 2014, more than 96% of bull kelp in Sonoma and Mendocino counties have been lost due to ecological and oceanographic stressors linked to climate change. The extensive loss of kelp has had catastrophic impacts on the kelp forest ecosystem and the socio-economic effects on important fisheries in Northern California. Due to the limited recovery over the last eight years and the explosion of kelp-eating native purple sea urchin populations, the protection and restoration of California's kelp forest have become a top priority for state resource managers.

From 2020-2021, Reef Check Foundation worked in partnership with the California Department of Fish and Wildlife, the California Ocean Protection Council, The Nature Conservancy, Noyo Center for Marine Science, and commercial fishermen in a collaborative, community-based approach to restoring the bull kelp forest ecosystems in Mendocino County. Funding was provided by the Ocean Protection Council. The project has been instrumental in informing the development of a restoration 'toolkit' as well as providing economic benefits to communities hit hardest by the loss of the kelp forest.

PROJECT AIM

The aim of the project was to identify whether or not commercial divers could be organized to reduce the urchin population to target densities and if their efforts would support kelp recovery.

KEY FINDINGS

- Commercial urchin divers removed 45,118 lbs of purple urchins from two restoration sites, from Summer 2020-Fall 2021.
- Reef Check divers in Noyo Bay documented a positive increase in kelp densities over 15 months at the restoration area, with bull kelp reaching 20% of the historical density. Little to no kelp growth was observed at the nearby control area.
- Similar patterns were observed at Albion Cove, but due to limited data, the results are not reflected in this summary report. For more information, refer to the full report.

Graphs modified from Ward et al.

Noyo Kelp Restoration



Control Site

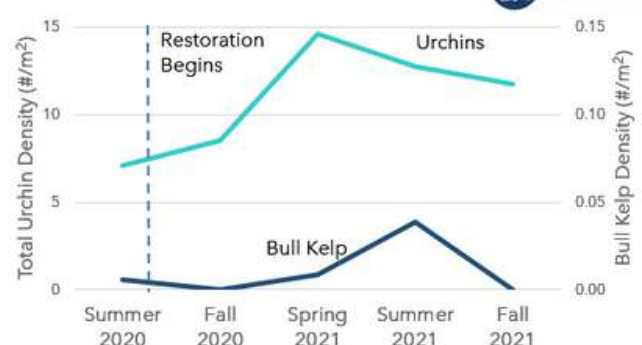
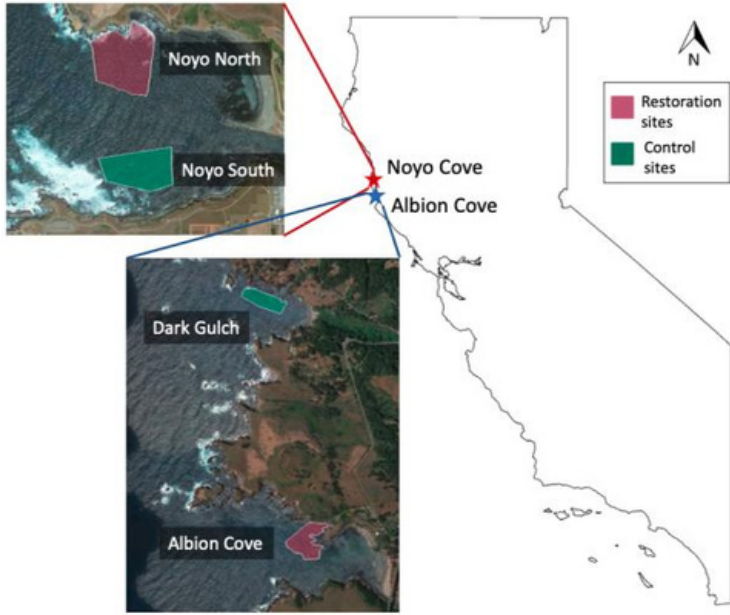




Photo Credits (left and right): Reef Check Foundation/ Tristin Anoush McHugh



MONITORING

Restoration occurred in two sites— Noyo Bay beginning in August 2020 and Albion Cove in July 2021. The Reef Check staff and volunteers conducted seasonal ecological surveys to monitor the progress of the restoration.



Photo Credit: Reef Check Foundation/ Tristin Anoush McHugh

THIS PROJECT SUPPORTS REEF CHECK'S VISION FOR THRIVING REEFS THAT ARE CARED FOR BY COMMUNITIES AND ARE SUSTAINED FOR GENERATIONS TO COME.

NEXT STEPS

- The project has been instrumental in informing the development of a restoration 'toolkit' as well as providing economic benefits to communities hit hardest by the loss of the kelp forest.
- Ongoing research and collaboration are essential to assess the success of the restoration outcome. Continued monitoring spanning ecologically relevant timescales (>2 years) is needed to achieve and document restoration success.
- Reef Check continues to monitor the testing of kelp forest restoration tools such as hand-harvesting, urchin trapping, and kelp enhancement strategies, with support and partnership from The Nature Conservancy and California resource managers.

THANK YOU TO ALL THE PARTNERS, COMMERCIAL DIVERS, AND COMMUNITY VOLUNTEERS THAT SUPPORTED THIS PROJECT!



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