

ENGAGING NORTH COAST COMMUNITIES IN RED ABALONE RESTORATION: A FEASIBILITY STUDY



Photo: Aquarium of the Pacific

WHAT HAPPENED TO RED ABALONE IN NORTHERN CALIFORNIA?

Red abalone are the largest of the abalone species in the world, reaching up to 12.3 inches in shell length and living up to approximately 50 years in age. Traditionally, abalone have been harvested for subsistence, utility, and ceremonial adornment, and abalone

diving is a significant aspect of community heritage and identity. After a long history of being fished up and down the California coast, many abalone populations collapsed in the late 20th century. In an effort to restore abalone numbers, regulators prohibited fishing for all abalone species in 1997. Initially, Northern California was exempt to this rule because it remained home to a thriving and sustainable recreational red abalone fishery. However, due to a collection of recent events, that changed. A disease that wiped out the local urchin predator, the sunflower sea star, led to an overpopulation of purple urchins, and a subsequent lack of kelp on which abalone feed. Without abundant kelp, the red abalone population crashed and the recreational fishery closed in 2018 with no reopening predicted in the near future.

WHY DOES IT MATTER?

ENVIRONMENT

Red abalone play a crucial role in marine ecosystems, especially in kelp forests. They are primary grazers that help control algae growth on rocky reefs, which in turn helps maintain kelp diversity and indirectly supports a wide range of marine life. In Northern California, kelp forests have declined 80 percent since the 1980s. The rise in ocean temperatures has reduced kelp abundance and purple urchins are outcompeting abalone for what little kelp remains. Purple urchin populations are 60 times greater than normal while abalone are experiencing reproductive failure. The recovery of red abalone populations is essential to stabilizing kelp forests.

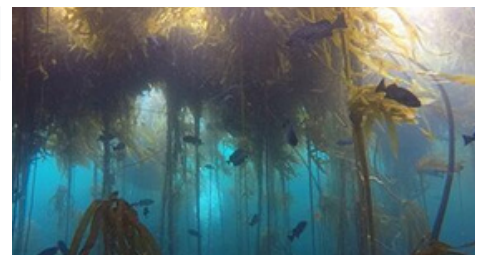


Photo: Steve Lonhart, NOAA MBNMS



Photo: The Nature Conservancy

CULTURE & COMMUNITIES

For thousands of years, the Indigenous Peoples of California have relied on abalone as part of their diet and in ceremonies, jewelry, and trading. The 1800s saw Chinese and Japanese American immigrants start the commercial fishery, and most recently, the creation of a thriving tourism industry catering to recreational divers, with many making annual vacations to campgrounds to dive, compete, and consume abalone until the fisheries' total closure.

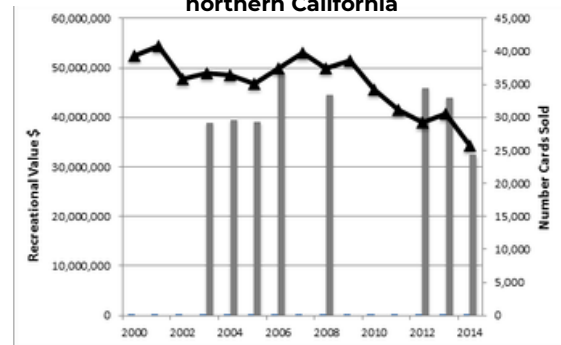
ECONOMIC IMPACT

Red abalone used to be a thriving fishery. The abalone recreational fishery generated approximately \$24 to \$44 million per year in economic benefits in 2013. Recreational fishermen once brought in an estimated \$15 million in direct spending and \$22 million in overall impact, with an estimated overall tax revenue of approximately \$1.1 million in Mendocino and \$236,000 in Sonoma. Restoring the red abalone fishery and other species has the potential to create and sustain a total of 260 jobs in Mendocino and 57 jobs in Sonoma, when considering both direct and indirect employment.



Photo: K. Joe

Recreational value of the red abalone fishery in northern California



Years with data on the number of trips extrapolating the per-trip value from 2013 to the other years (2003, 2004, 2005, 2006, 2008, 2012, 2014) shown using the height of the bars. The second Y axis shows the total number of abalone report cards sold per year from 2000-2014 shown using the solid triangles. Reid et al, California Fish and Game 102(3):119-130; 2016

WHAT CAN BE DONE?

The recreational red abalone fishery in Northern California closed in 2018, and decades earlier elsewhere in the state, to allow stocks to naturally replenish over time. However, since then, nowhere in the state has seen significant recovery of red abalone populations. One potential approach to fast-track red abalone recovery is through habitat and wildlife restoration, which is being done for several other species of abalone in California already. This is mainly achieved in two ways:

RESTORE KELP FOREST HABITAT

- Kelp is a vital food source for red abalone growth and survival.
- Sea urchins have exploded in number, creating greater competition for kelp as a food source.
- Restoring kelp forests improves food availability and reduces competition, benefiting abalone growth.

INCREASE RED ABALONE POPULATIONS

- Wild red abalone populations are low in number and may likely not recover naturally.
- Abalone can be raised in aquatic farms and released into the wild, to help reach a self-sustaining population.
- Similar efforts are underway with white seabass in Southern California through the Ocean Resources Enhancement & Hatchery Program.

FEASIBILITY

Restoring the red abalone fishery in Northern California needs to be a collaborative effort. We envision building strong partnerships with scientists, divers, Tribes, and the broader community in Mendocino and Sonoma counties. To be successful, the program will need consistent long-term funding, abalone/kelp culture facilities with an advanced seawater system, trained staff, and volunteers. The first step to understand what is possible for community-driven North Coast red abalone restoration is a feasibility study that includes community perspectives.

WE WANT TO HEAR FROM YOU!

