Innovative restoration techniques used to rebuild West Coast abalone populations

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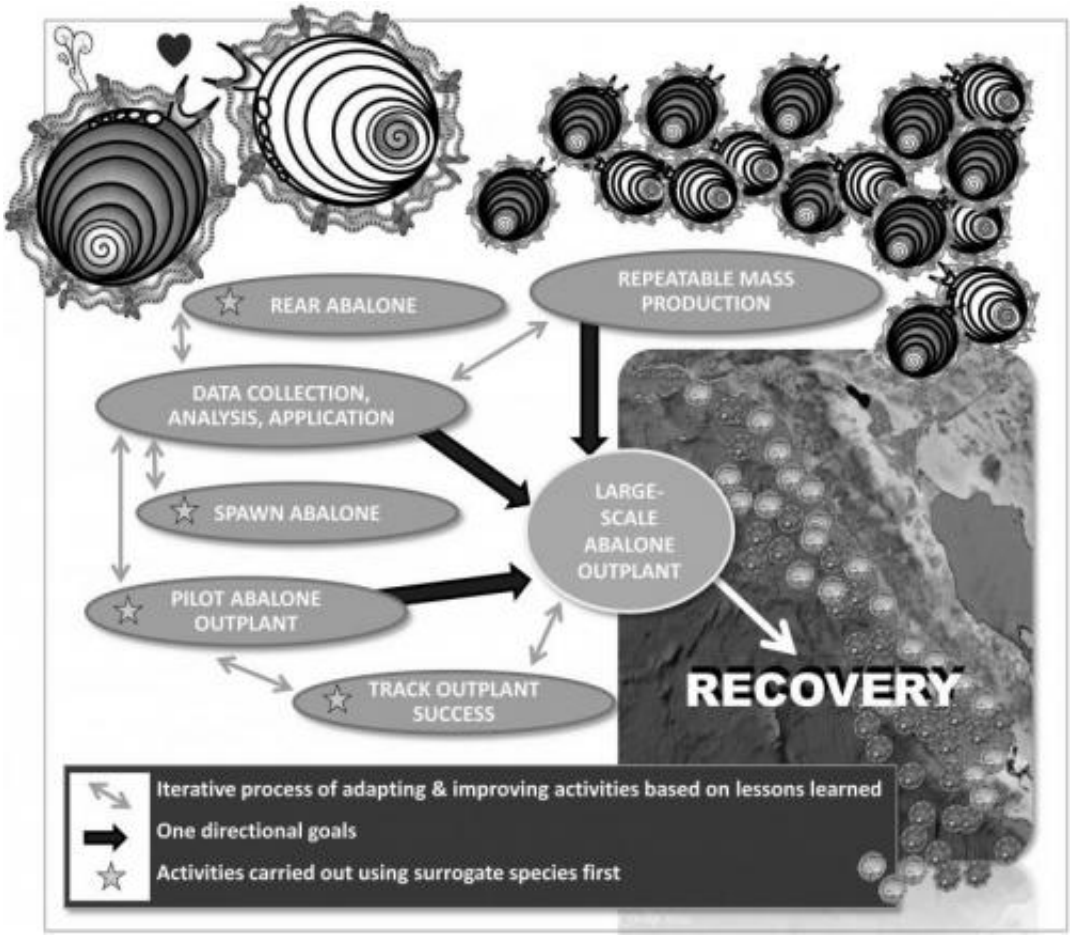
An edible delicacy prized for their shells, abalone populations historically supported West Coast fisheries and economies. In recent decades, however, their numbers have declined considerably—threatening the loss of a resource with significant ties to West Coast communities. To curb the decline and begin to rebuild

abalone populations, NOAA Fisheries is tapping into partnerships and innovative restoration techniques to swing the pendulum toward recovery.

Overfishing and disease contributed to the decline of all seven abalone species found along the West Coast, with two species endangered with extinction—white and black. White abalone, in particular, is likely extinct throughout much of its range because remaining males and females are not located in close enough proximity to reproduce successfully. As identified in the species' recovery plan, one of the keys to recovery is spawning white abalone in captivity, rearing the young, and "outplanting" the offspring into designated marine habitats.

This is precisely what NOAA Fisheries and partners are building the capacity to do. Spawning and rearing white abalone in a laboratory has been accomplished on a small scale by a partnership of aquaria, universities, and other entities coordinated by NOAA Fisheries and the Bodega Marine Laboratory at the University of California, Davis. These partners are now turning attention to producing sufficient numbers of white abalone to eventually outplant them to suitable rocky reef habitats off the coast of Southern California.



Methods and processes that are part of a successful abalone outplanting program. Credit: NOAA graphic.

There are risks associated with culturing abalone in a single facility that is far from important outplanting sites. To address these risks and increase the odds of successfully outplanting individuals, the Bodega Marine Laboratory is distributing fertilized white abalone eggs to partner facilities in Southern California for rearing abalone closer to coastal outplanting sites. Once outplanting methods are tested using surrogate species—like pinto, green, pink, and red abalone—these facilities will provide the individual animals used to restore white abalone populations in the wild.

"We're on the cusp of some major breakthroughs," said Melissa Neuman, Abalone Recovery Coordinator for NOAA Fisheries West Coast Region. "Research and partnerships are yielding innovative techniques that have the capability of not only restoring white abalone, but all abalone populations on the West Coast."

Researchers have made significant advancements developing spawning, rearing, and outplanting methods for pinto, green, and pink abalone, which are federally identified as Species of Concern. They have also made great progress with these techniques for red abalone, a species that isn't federally protected, but is managed and protected by the State of California.

"What we learn through the various culturing and outplanting methods for each species is very important," said Neuman. "Because once effective techniques have been developed for species that are not federally protected, they can be easily transferred to endangered abalone."

Rebuilding these populations contributes to restoring species that play valuable ecological and economic roles in coastal communities. Abalone behave as algal grazers in kelp forests, keeping other grazers, like sea urchins, in check. They serve as indicators of a healthy kelp forest ecosystem that supports a diversity of species. Additionally, abalone were once highly valued commodities, and lucrative commercial and recreational fisheries provided economic boons for local communities. As abalone populations begin to recover, renewed fishing opportunities may also be possible.

Though many of the threats that led to the abalone declines have been addressed, the species continue to face impacts from poaching, climate change, and oil spills. Fortunately, through successful collaboration and innovative science, we are making progress to rebuild these populations.

Through our collective efforts, we can address the challenges that arise and build on our current advancements to restore abalone populations across the West Coast.

Provided by NOAA National Marine Fisheries Service

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