

C. Bell, P.T. Raimondi, G. Bernardi, M. George, D. Lohse, S. Lonhart, C.M. Miner, J. D. Moore, S. Worden. 2006. An assessment of the impact of withering disease on the genetic structure of black abalone populations: implications for recovery and restoration

The black abalone (*Haliotis cracherodii*) has experienced mass mortalities along the coast of California since the mid-1980s and is now a candidate for protection under the USA Endangered Species Act. Mortality is due to infection by a pathogen that leads to a fatal wasting disease called “withering syndrome” (WS). Working with MARINe (Multi-Agency Rocky Intertidal Network) and PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans) monitoring groups we have documented the northward progression of WS along the California coast. Abalone populations are sampled at 22 sites from Point Conception to Bodega Bay. The last extant large and healthy populations exist in the Monterey Bay National Marine Sanctuary. Recent declines in the southern portion of the Sanctuary are cause for concern, but whether these declines are due to WS remains to be seen.

Ongoing monitoring has been coupled with molecular techniques to answer the following questions: **1) Does the genetic structure of healthy populations differ from that of diseased ones? 2) To what degree is this difference attributable to “normal” geographic population genetic structure? 3) Does the genetic structure of populations differ before vs after the disease hits?**

Using non-lethal techniques, we collected tissue from abalone at seven sites (2005-2006) and used archived samples (CDFG) from seven sites (1995-1999) between Half Moon Bay and Santa Barbara. Comparisons were made using the molecular marker Mitochondrial Cytochrome Oxydase 1 (COI) (Hamm and Burton 2000).

Our preliminary findings have only recovered eight of the original twelve haplotypes previously found in samples from 1997-1998 (Hamm and Burton 2000). Work is continuing to elucidate the extent of loss in genetic variability due to WS mortalities. Together the spatial patterns of abalone population and genetic structure will inform management and restoration decision makers regarding this threatened and ecologically important species.