



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2002MD10B

**Title:** A study of Chesapeake Bay oysters: genes, markers and conservation -Summer Research Assistantship

**Project Type:** Research

**Focus Categories:** Ecology, Conservation, Methods

**Keywords:** oysters, disease, genes, markers, conservation

**Start Date:** 06/01/2003

**End Date:** 10/01/2003

**Federal Funds:** \$3800.00

**Matching Funds:** \$7640.00

**Congressional District:** 5th Congressional District Maryland

**Principal Investigators:** Davis, Allen (U. Maryland); Kearney, Philip

**Abstract:** Chesapeake Bay oyster populations, devastated by a combination of overfishing, loss of habitat, and disease, are the focus of intensive restoration efforts. Disease resistant strains of *Crassostrea virginica*, the eastern oyster, have been bred and are now being released on artificial oyster reefs. The hope of these efforts is that DEBY and CROSBreed, two strains that resist infection, will promote recruitment of young oysters in and around the experimental reefs, will pass the genes conferring disease resistance to other generations, and will therefore help oyster populations recover to larger sizes. In addition to genes for disease resistance, the DEBY and CROSBreed oysters will contribute molecular markers to the next generation that are indicative of their strain's history (Brown et al 2000). The two strains, having been inbred for several generations in order to bring about their protection from disease, can now be identified by patterns in their genome that are rare or absent in "wild" (non-introduced) Chesapeake oysters. These molecular markers will be used in order to track the reproductive success of the DEBY and CROSBreed oysters; the number of offspring that the strains contribute to the next generation and the distance that their offspring move through the Bay are two parameters that will be tracked using markers. While supported by the Maryland Water Resources fellowship, I plan to continue my Ph.D. research by collecting young oysters from several sites along the Little Choptank River (LCR).

I plan then to analyze the background levels of genetic variation in wild oysters and to gauge the reproductive success of disease resistant oysters at and near the reefs where they were introduced. Furthermore, I will analyze the extent to which the markers are appropriate for these analyses by testing their selective neutrality.

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