A Cost Benefit Analysis of the Introduction of *Crassostrea ariakensis* and the Restoration of *Crassostrea virginica* in the Chesapeake Bay

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Problem Statement

Watermen in the Chesapeake Bay have been recording record low harvests of *Crassostrea virginica* (also known as the Eastern oyster) for the past five years; with a steady decline in landings over the past two to three decades. The decline in *C. virginica* is connected to a number of factors, including: (1) overfishing, (2) diseases caused by protozoan parasites- MSX (*Haplosporidium nelsoni*) and Dermo (*Perkinsus marinus*), (3) increased sediment and nutrient loads, and (4) climatic conditions (i.e. drought). In response to the current situation, a number of alternatives have been implemented at the State level; however, these actions have not caused an increase in the Bay's oyster population. Due to this lack of response, it has been posited that stronger actions may be required. The most "risky" of these options is the possible introduction of a nonnative oyster, *Crassostrea ariakensis*- an oyster native to the Western Pacific and found along the U.S. west coast.

The United States Army Corps of Engineers (USACE), in conjunction with the states of Maryland (Maryland Department of Natural Resources) and Virginia (Virginia Institute for Marine Science), is in the process of conducting an Environmental Impact Statement to review the possible effects of introducing *C. ariakensis*. According to the EIS, the Proposed Action (main alternative under review), is to introduce the nonnative oyster *C. ariakensis* into State sanctuaries (no harvest) and harvest reserves (harvest is allowed after five years, or maturity of oyster population) while also continuing with the present restoration efforts for *C. virginica*. The EIS process began in late 2004, with a Draft EIS expected in January-February of 2006.

Policy Research Objectives

The goal of this research is to determine if the Proposed Action, listed within the above mentioned EIS, is a beneficial solution to the current oyster issues facing the Chesapeake Bay. Due to the timing of this study, it is believed that any results may be used to inform the policy-makers and resource managers as to the costs and benefits associated with this project, leading to a least-costly solution for the Bay.

Tools and Techniques

A cost benefit analysis will be employed for this study to determine if the benefits of the proposed action outweigh the costs. Several steps in this process will include: (1) determining the costs and benefits, (2) measuring the items in each category- monetizing all possible items, and (3) calculating the net present value of the project. The counterfactual in this case will be the present state of the oysters, with possibly using a zero figure for the harvest level given the present state of decline.

Proposed/Current Research

Currently, this research has reviewed the EIS process as well as constructed a framework for approaching steps 1 and 2 in the CBA process listed above. The future research will be focused on: (1) completing step 1, (2) measuring/ monetizing items, (3) finalizing the CBA, (4) determining what, if any, further analysis is necessary.

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Last Updated: December 9, 2005