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Decision Support Model to Decision Support Model for the Management of Ballast Water in the Delaware Bay and Other Port Ecosystems.

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Summary of Presentation

The introduction of invasive marine species into new environments via vectors such as ships' ballast water has been identified as one of the four greatest threats to the world's oceans. In response, the IMO adopted the Ballast Water Convention (BWC) and called for the use of "suitable decision-making tools" to analyze ballast water management protocols. The BWC will require the attainment of discharge performance standards between 2009 and 2016; individual States can set more stringent performance standards, and, based on IMO risk assessment guidelines, may exempt a ship taking a voyage between specified locations. Significant attention thus will be directed toward identifying risky trade routes and vessel types; suite of technologies to be employed on a vessel of a particular class that follows a specific route to achieve the specified discharge standard; the least cost solution for that vessel; and cost-effectiveness of the present standard and/or alternative standard(s). A nonlinear ballast water discharge compliance and policy support optimization model that evaluates the potential for technology-policy alternatives to mitigate introductions of aquatic organisms from ballast water has been developed by the Ballast Water Research Team of the College of Marine Studies, University of Delaware. During our presentation this model will be reviewed and the progress on its application to a specific port ecosystem, the Delaware Bay, will be presented.

The objectives of our study are to offer decision-makers a tool to better understand the complexities of the problem, account for uncertainties, and support the best management actions possible at present and future time. More specifically we intend to overcome the difficulties related to the scarcity, and often inexistency of data, by using best estimates to arrive at general but useful analysis that may answer fundamental questions related to the successful management of ballast water, such as: "Are the current standards and policies effective, feasible, and enforceable? And if they aren't, which alternatives could be developed?"

The policy relevance of this study lies in the fact that it will provide a suitable decision-making tool to analyze ballast water management protocols, as the 2004 IMO resolution calls for. Decision frameworks make clear the shared objectives, the key tradeoffs, the uncertainties, and any other factors influencing the decisions to be made. Through the development of this framework we expect to contribute to the harmonization of conflicting global, regional, and national interests, and regulations, as well as to arrive at a balance between environmental protection and trade interests.