

for all components of the recreational fishery.

(3) Blue Crab Stock Assessment Analyses

a. Stock assessment of blue crab in Chesapeake Bay has been hampered by inadequate fishery data. Because of this shortcoming, previous assessments/analyses were conducted using less data intensive techniques. Based on activities in part funded through this program in recent years, there is a need and a capability to more formally assess the status of this important resource. Proposals addressing this priority should expect for the final report to undergo a stock assessment review similar to that utilized by the NMFS - Northeast Science Center's SAW/SARC process.

b. Managing a fishery as complicated as the blue crab is difficult and with the blue crab maintaining its dominance in Chesapeake Bay fisheries, it is critical to understand/determine whether management approaches introduced by the Bay states are beneficial to the fishery or if there are potentially other alternatives. There is also a need to compare the management approaches across the states to explore the bi-state management of the resource.

c. Design and develop an integrated Baywide blue crab mark and recapture study that will provide information on growth, natural mortality, fishing mortality, size selectivity, catchability, reporting rates and the distribution of harvest among the fisheries. Results should be informative with respect to the reproductive frequency of female crabs, and longevity.

(4) Improvement or implementation of the collection of fishery-dependent data within Chesapeake Bay. Projects can involve either the commercial and/or recreational components of the fishery. Projects should focus on collecting biological data (size, sex, age, diet), and catch and effort data from Baywide harvests of significant finfish and shellfish fisheries to provide accurate, statistically representative information on the spatial and temporal characteristics of the harvest. Proposals may involve designs for port-sampling of landings, or on-board analysis of the catch, analysis of intercepts and telephone surveys. Proposals that document information on by-catch and discard mortality would be relevant and are encouraged.

The proposals should recognize current efforts to collect biological data from Bay fisheries and attempt to define the optimal, regional (Maryland, Potomac River Fisheries Commission, and Virginia jurisdictions) sampling program.

(5) Improvement and/or implementation of Chesapeake Bay fisheries database tools (including oracle database systems and web-based public access) for the various fishery-dependent and fishery-independent data currently and historically available in Chesapeake Bay. This activity should not be limited to only gaining access to current or historically available data to make it more accessible, but also to mining this data to develop indices of relative abundance where applicable. Proposals are encouraged to coordinate with the Atlantic Coastal Cooperative Statistics Program (ACCSP) and/or the Northeast Area Monitoring Assessment Program (NEAMAP) activities.

(B) *Multispecies Management and Research* - The Chesapeake Bay is a complex and dynamic ecosystem that supports many fisheries that are economically important both regionally and nationally. To date, these resources have been managed on a single species basis. While the single species approach has served us well, the existence of both biological and technical (by-catch) interactions in most Chesapeake Bay fisheries point to the need to move toward a wider, multispecies perspective. This viewpoint was wholeheartedly endorsed at a workshop of regional, national and international scientists held to address the potential utility of multispecies approaches to fisheries management in the Chesapeake Bay (STAC Publication 98-002, [www.chesapeake.org](http://www.chesapeake.org)). The ultimate objective of this research and monitoring is to lead to the development of an ecosystem plan for Chesapeake Bay fisheries, within which the rational exploitation of individual species can be determined.

Consideration for funding will be given to applications that address the following multispecies management and research priorities for the Chesapeake Bay. Priorities are not listed in any implied order:

(1) Fishery-independent Surveys. Plan, develop and conduct coordinated Baywide surveys to regularly estimate species abundances, trends and biological characteristics (e.g., age/size structure, recruitments, growth and mortality rates, food habitats) for economically and ecologically important key species. Proposals within this task should:

a. Review and assess existing fishery independent sampling programs conducted by regional agencies to evaluate their potential applicability to the Chesapeake Bay. This may include evaluation of the use of fixed and random sampling protocols, with or

without stratification, and the sampling characteristics of different gear types.

b. Develop and initiate a Baywide, coordinated, fishery-independent survey that may include multiple gear, such as benthic and midwater trawling, and hydroacoustics to characterize the status and trends in the abundance, distribution and characteristics of key Chesapeake Bay finfish and shellfish.

(2) Retrospective Analyses. Document and quantify multispecies interactions among economically and ecologically important finfish and shellfish within the Chesapeake Bay. The proposed work should lead to the identification of the 'strong' interactions within the Chesapeake Bay fisheries system. Work may involve analysis of commercial and recreational catch and effort data, the analysis of the patterns of diets and energy flows within the fisheries system, or multivariate analyses of abundance relationships within the fisheries system and their relationship to environmental and habitat characteristics.

(3) Multispecies Assessment / Ecosystem Modeling. Apply and assess alternative multispecies fisheries models to the Chesapeake Bay fisheries systems. The submitted proposal should detail the development of a multispecies or ecosystem model focusing on core Chesapeake Bay species. Examples of possible approaches include, but are not limited to: multispecies biomass dynamic, multispecies yield per recruit, multispecies virtual population analysis, multispecies bioenergetics, spatial-physical predator-prey, trophic production and ecosystem simulation models. Model approaches should seek to predict constraints and patterns in the fisheries production of the Chesapeake Bay system.

(4) In an ecosystem-based approach to fisheries management, it is important to understand and develop reference points related to the total removals of the system to fully appreciate the impact those fishery removals have on food webs. All sources of removals to quantify the level of total removals to the Chesapeake Bay system should be identified and thresholds and sustainable levels of removals should be identified. This threshold should be an upper limit on the biomass of fish and shellfish that can be removed from Chesapeake Bay annually. Sustainable or target levels of removals should also be identified.

(C) *Fisheries Ecosystem Plan (FEP) Research and Implementation* - The NOAA Chesapeake Bay Office has initiated development of an FEP for Chesapeake Bay. An FEP is an umbrella document containing information on the