

## **Science Advisory Council**

Meeting Summary – Sixth Meeting

April 13, 2009

100 Cambridge St, Boston

### **Science Advisory Council members present for the meeting:**

Priscilla Brooks, Conservation Law Foundation

Todd Callaghan, MA Office of Coastal Zone Management

Anamarija Frankic, Environmental, Earth and Ocean Sciences, UMass Boston

Kathryn Ford, Massachusetts Division of Marine Fisheries

Scott Krauss, New England Aquarium

### **Not Present:**

Carlton Hunt, Batelle

Frank Muller-Karger, School of Marine Science and Technology, UMass  
Dartmouth

Bill Schwab, US Geological Survey, Woods Hole

David Terkla, UMass Boston

Jack Looney, UMass Boston

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### **Meeting Summary**

John Weber opened the meeting at 2:00 PM by thanking the Council members present for their participation. He introduced the purpose of the meeting, which was to present to the Council the revised methodology used in developing the Ecological Valuation Index (EVI), continue discussions and examine preliminary results presented in digitized maps.

John Weber then announced the upcoming Ocean Advisory Commission meetings scheduled on May 2 and May 6 in Woods Hole and Boston respectively. He urged the Council and interested public to participate in these meetings, given the importance of the issues to be discussed in preparation of the first draft of the ocean plan. He explained that the purpose of these workshops is threefold:

- to present preliminary screening of ocean data based on goals and strategies
- to identify and discuss compatibilities/incompatibilities, and
- to discuss conceptual management measures.

John then informed the Council the next Council meeting scheduled for mid-May will focus on the science plan. He reminded the Council to send comments on the draft outline of the science plan that had been mailed earlier.

Finally, John explained that at the end of this process, the Council may wish to prepare a final product summarizing their work as part of the development of the ocean plan. He suggested that if they wish, the Council members could start thinking about the preparation of such a document, which may be in the form of a letter.

### **Ecological Valuation Index**

In his introduction of the meeting, John described the current status of discussion regarding the Ecological Valuation Index (EVI). He briefly reviewed the comments and recommendations made by the Science Advisory Council during the meeting on March 30 and explained how the work group was addressing these comments in their revision of the EVI methodology.

The Council had recommended that the EVI should be characterized by more precise criteria. Consequently, the work group revised the criteria and clarified their titles and definitions. The Council also had commented that the criterion “Rarity” needed to be further elaborated to reflect a geographical as well as a species connotation. In short, the term “rarity” is meant to represent spatial distribution.

### **Discussion**

Question: Did you decide against including population trends? *Answer: Correct. For those species for which we had enough data, a quantitative approach was taken. On the other hand, for those species with limited data, a qualitative approach was taken. There were a large number of combinations, and population trends were too confusing to work into our binary system. We are interested in the fact that the winter flounder population is increasing, but we don't know how to incorporate that and account for periodic and/or historical trends..*

Question: How did you determine if the species has global or regional importance? Is it based on the percentage of the population in the region (both global and regional)? *Answer: We could not establish have a specific percentage cutoff for all the species. In most cases, the contribution of Massachusetts to the global population was considered.*

Comment: You could have a small population in MA, but it is very spread out. *Answer: Species that are important to the ecosystem and found outside of MA on a global level (i.e. cod, lobster, flounders, black sea bass, shellfish, etc.) were selected. Those species were included because the MA proportion is considered important on a global scale. All of these species are also fished on a commercial scale.*

Comment: Difficult to understand the global importance concept. Was this included because the EVI work group thinks a species in Massachusetts waters is important relative to the global population? *Answer: Different scoring systems which were not based on a binary scoring process were explored but none of those systems worked. For example, global importance was initially ranked as a “3” in order to give a higher EVI to those species, but that resulted in the “importance” criteria dominated the ranking. During the ensuing discussion, the Council member agreed that dominance by an individual criteria would be an issue and that a binary system is an acceptable method as long as it is strictly defined to prevent anomalies such as a commercially fished species having a higher EVI than an endangered species.*

Question: Humpback and fin whales are on the endangered species list. Why aren't they listed as global importance? We need to standardize the criteria across all species. The problem is: everyone thinks that the species they study is the most important species. This makes it difficult to fully rely on expert opinions. We just need criteria that are quantitative and consistent across the board. *Answer: The work group is aware of limitations and that the EVI needs to rely on quantitative judgment rather than best professional judgment, and that is one of our recommendations for the next six months.*

During the ensuing discussion, members of the EVI work group explained that the species data layers were selected using best professional judgment. The work group realized that a quantitative approach would be the ideal way to proceed but given the data limitations and the limited timeframe, this was difficult. The work group also explained that a threshold could be given provisionally for endangered species but that could not be applied to all species.

Comment: The population and global importance criteria may need to be re-evaluated across all species, asking the question: "If this population in MA disappeared tomorrow, would the species go extinct on a global level?"

The work group explained that one question that had been addressed is "Is it fair to have an EVI where commercial and endangered can be equally characterized?" The Council replied that a species which is important to the global population is important, even if it is not commercially fished, and advised steering clear of commercial value.

Question: There are 45 species on this list. If we want to add new species, how do we incorporate them into this list? I think that the criteria need to be so detailed that we can easily add new species to the list. *Answer: We had to hand-pick certain species and explain why we picked the ones we did. But, I agree, our criteria should be robust enough so that we can easily incorporate new species.*

Question: How do valuable species of the ecosystem such as copepods and sand lance factor in: *Answer: We have tried to incorporate some abiotic information.*

John then explained that due to the limitations resulting from data quality, completeness and availability, a lot of work was based on best professional judgment. The EVI work group is already discussing ways of developing a more quantitative approach but given the limited timeframe, the group had to rely on best professional judgment. He explained that the planning team will identify explicitly the limitations, what role the EVI will play in the management process and be clear and cautious about how "lines on a map" are interpreted. The EVI is a first attempt to look at things in a different way than managers are used to. John Weber explained that management is usually conducted using a species-by-species approach and this will serve as a first attempt at an ecosystem perspective. The EVI is a tool used as a means to incorporate ecosystem health. The work group tried to do that with the information available and therefore has some validity and use from that perspective. However, he concluded that we all need to understand the limitations.

Question: What is the timeframe for the EVI? *Answer: Draft spatial representations of data need to be presented to the OAC on May 2<sup>nd</sup> and May 6<sup>th</sup>.*

Comment: We need to be upfront about the limited information that we have, and the research needs and this will help justify this process.

Question: Will the needs for the EVI be incorporated into the Science Plan? Or should that get built into the next few months? *Answer: It gets built into the Science Plan (i.e. future work).*

Comment: Right now, we should be focused on any existing fundamental flaws. We also need to go back and look at the scoring for bay scallops.

Question: How are you going to use the EVI? I assume it will be used during map development, and areas with high EVIs (combined with a number of other factors) will be protected. *Answer: As of now, simply by looking at the EVI results there are no areas that really show up as areas for protection or development. There is a lot of information that needs to go into determining these areas. The compatibility analysis will be important, and will be presented May 2<sup>nd</sup> and May 6<sup>th</sup>. There is no single dataset that has all the answers. We will have to put together some decision criteria.*

Comment: I would like to commend the state for taking the first step in this. This is very difficult. We have to remember that EVI is just one piece, but it is an important piece. I think this will be important to the conservation aspect of the plan.

John then referred to other comments and recommendations made by the Council during the March 30 meeting. In response to these comments, he explained that the definition of “shoals” was revised and are now defined using a combination of bathymetry and high tidal velocity. In addition, the tiering of data layers was also eliminated based on discussions and suggestions made by the Council. For example, now there is only one dataset for Roseate Terns.

Question: Have you done the exercise of looking at the planning area pixel by pixel and determining which species are present in each pixel? The EVI is currently not considering species richness or diversity. In terms of a hot spot, we could have thirty species in one place. It is important to acknowledge the number of species that are found in each area. *Answer: This has been considered.*

Kathryn Ford, Division of Marine Fisheries, briefly explained the process by which data layers for fish and shellfish species were selected and given an EVI. She explained that demersal fish were selected from the marine trawl survey and scored based on the criteria, asking a number of assessment questions that were also used for non-fish species.

The discussion which followed focused on the possibility of generating a data layer from the number of species in a grid cell to reflect (rudimentarily) “species richness”. It was suggested that an additional column for species diversity/richness should be added using frequency of occurrence for the species. The main concern involved the incomplete understanding of the ecosystem resulting from the incompleteness of data. Examining each grid cell for the number of species data layers it contains was deemed challenging for two main reasons:

- (1) the maximum number of species in any grid cell is 12
- (2) the way the ocean plan area is divided into strata for the trawl survey results in erroneous interpretations about the distribution of fish species – their distribution within a stratum may not be indicative of the exact location it inhabits

Members of the work group explained that one could catch, for example, ten blue crabs next to Martha's Vineyard, but it would also appear in the data next to Nantucket (because of the large strata). The Council suggested that recommendations should be made in the Science Plan how to address these issues as soon as possible.

Comment: The high EVI areas make sense based on where the Roseate Terns/Right Whales are.

Comment: I am not worried about the right whales, because we have information on them. I am worried about everything we don't have information on. We are going to have to make some recommendations. You don't want to make management decisions based on bad information.

Comment: Management decisions are going to be made. The plan is going to say that certain areas are suitable for protection and certain areas are suitable for development. However, the environmental review process will still be there.

Comment: We are taking a conservative approach to uses and development.

Question: What happens with areas that have no data? *Answer: We rank areas without data as a zero or one. We will tag those areas as no data.*

Question: Are the data so flawed that we cannot use them, or do we use the data knowing the limitations? This is what we need to consider. *Answer: We should develop a table of recommendations and include it in the Science Plan.*

John asked the Council for their general reaction to the EVI, keeping in mind the limitations of the EVI. The Council felt that as a result of the data limitations, the limitations of the EVI need to be acknowledged and explained and the process used to do the best we can at this time. In answer to his question "Are there fatal flaws in the EVI?" the Council felt that the process is not flawed but becomes challenging in areas that lack data.

In a nutshell, the Council felt that the concept was not flawed but that it is not perfect due to data limitations. It is the best we have at the moment and will form an important role for the identification of SSUs. In addition, it is the type of analysis that needs to be done.

### **Concluding note**

John Weber thanked the Council for their valuable contribution to the ecological valuation process. He asked the Council to send additional thoughts and comments on how to proceed with the EVI in the future to him. He informed the Council that the next meeting will be scheduled in about two weeks and that maps will be presented during that meeting.

The meeting adjourned at 4:00PM.