Washington Coast Science Advisory Panel for Marine Spatial Planning

Meeting Summary: Discussion with WDFW Scientists on Identifying Ecologically Important Areas Off Washington's Coast

Sea Grant Washington

November 25, 2014

Executive Summary

Science Advisory Panel for Marine Spatial Plannng Attendees: Miles Logsdon (UW Oceanography), Si Simenstad (UW SAFS), Tim Essington (UW SAFS), Emilio Mayorga (UW Applied Physics), Helen Barry (DNR Nearshore habitat), Theresa Tsou (WDFW), Charles Menza (NOAA), George Kaminsky (ECY), Lee Cerveny (US Forest Service)

WDFW Attendees: Jesse Doepinghaus, John Pierce, Scott Pearson, Andy Duff, Andy Weiss, Tim Quinn, George Wilhere, Michele Culver, Corey Niles

Other Attendees: Jennifer Hagen (Quileute Tribe), Joe Schumacker (Quinault Tribe), Rob Jones (Northwest Indian Fisheries Commission), Mark Cedargreen (Washington Coastal Marine Advisory Council), Bridget Trosin (WSG), Penny Dalton (WSG), Libby Whiting (DNR),

Role of Science Advisory Panel:

The science panel serves as an independent entity in the Marine Spatial Planning process that provides science-based review of data and project information for the plan. Members of the science panel include experts from federal and state governments and academic institutions. The panel is convened by Washington Sea Grant, in consultation with the State Ocean Caucus and the Washington Coastal Marine Advisory Council (WCMAC).

Project Motivation and Role of WDFW:

This marine spatial plan requires an ecosystem assessment, which includes identifying important ecological areas. The marine spatial plan is focused on planning for new uses in the ocean including marine renewable energy, dredging and dredge disposal, aquaculture, mining and bio- extraction. The main use of identifying ecologically important areas will be to guide potential energy development or other types of uses in order to minimize overlap/impacts on ecologically important areas. Washington Department of Fish and Wildlife (WDFW) is leading this effort while coordinating discussions with the Science Advisory Panel, WCMAC and working with tribal co-managers.

Takeaways:

For science panel:

1. Please review what data layers we have included on the spreadsheet and what should we add.
2. Please give feedback on the method for arriving at the importance scores: *sensitivity + certainty.*
3. Please give feedback on the two overlay models they are using to combine data, especially Model 1, which was more thoroughly discussed.
4. If you have information that would help delineate within estuaries, please send it to John.

5. WDFW would like data that serves as a surrogate for other values. Any data that serves that purpose should especially be sent over if it isn't already being used.
6. Send link of Pacific Northwest Coast Ecoregional Assessment

For WDFW:

1. Add value to a grid cell based off its uniqueness
2. Potentially may want to include estuaries based on functionality, not on size. Estuaries may be small but in strategic locations. To do so flag outflow of the major rivers and just by their presence flag them as important.
3. Clarifying the assumptions made in defining what is Ecologically Important
4. Try to differentiate within estuaries.
5. Assemble a list of criteria that you are using for establishing your data sets and the stuff that you know you should have but that you didn't. That way it will be transparent what gaps in ecological function exist.
6. On the issue of missing life history information: Another model used habitat and depth proxies to develop different life history information. Potentially look into that method.
7. Asking specific questions of the data based on the specific stressor at hand would help all begin to assess the model. See Massachusetts OCEAN plan for example.
8. Could you add a temporal aspect to these data layers?
9. Can we look at relative abundance or areas that are a priority to be restored?
10. Consider challenges and data quality considerations of meshing hexagon model with ocean data and public involvement that are mapped in grid cells
11. Explaining six categories, maybe change to seven categories which creates a neutral one?

Expanded Meeting Summary

Introduction to Mapping Approach

WDFW presented their proposed methods and provided examples of other projects where the methods have been successfully implemented. A spreadsheet of the data sets was provided as a meeting material. WDFW began by describing the two phases of the project and the timeline.

Two Phases:

1. Use spatial data to identify and map ecologically important areas.
2. Demonstration of trade-off analysis between alternative energy development scenarios and ecologically important areas.

Timeline:

1. Identify and map ecologically important areas.
    a. Science Panel and technical co-managers review the data layers and overlay methods is going on simultaneously and will be done before Thanksgiving.
    b. WDFW is hoping to take the work products and produce draft maps for the science panel and technical co-manager for review by January. These map products are dynamic and will be updated with new information.
    c. Present maps to Tribal Policy in January and WCMAC in February
2. Phase II (Ends June 30, 2015)

WDFW discussed two models that will likely be used in the Ecologically Important Areas project. Model 1 was discussed in detail during the meeting.

Model 1: Uses same methods as the Western Governor Association Crucial Habitat Assessment Tool

In the Western Governor Association Crucial Habitat Assessment Tool both terrestrial and aquatic habitats were included and data sources were extremely diverse. In this case the data was aggregated into 1 square mile hexagons. This model uses a categorical approach using factors to assign priority level based on 1) sensitivity (endangered, threatened) and 2) information certainty that resource (species) is in a particular hexagon. The highest value rule was applied, meaning that the hexagon was attributed with the highest value for any value in that hexagon. This is the framework that is being proposed for the ecologically important areas project for marine spatial planning. Key aspects of Model 1:

- Degree of sensitivity/vulnerability to human development (higher sensitivity ranks higher)

- Relative commercial / recreational importance
- Significant habitats or nutrient richness
- Level of certainty - areas with more "certainty/likelihood" would "rank" higher than areas with less certainty/likelihood. Is it a prediction?
- Can mix ordinal and categorical data, apples and oranges, since putting it into categories

Model 2: This model addresses resource richness.
This model would prevent nearshore information (relatively data rich) from dominating offshore information (relatively data poor). WDFW may use this approach for offshore areas. Key aspects of Model 2:

- Areas with above average values (e.g. mean sum across all layers) would rank high. Areas with below average values would rank low.
- Individual layers could be weighted as more or less importance.
- Layers would be weighted and summed within each analysis unit. Requires assumptions of ordinal data relationship, apples to apples data comparison required.

Topics of Discussion

Estuaries

WDFW explained that the major estuaries will be mapped and assigned a high rank in the ecologically important areas project.

Science Panel (SP): What is the size limitation of the estuaries you are considering? What does major estuary mean?

WDFW: How should we rank estuaries? Low, medium, high?

SP: You potentially may want to include estuaries based on functionality, not on size. Estuaries may be small but in strategic locations.

WDFW: We can flag the outflow of the major rivers and just by their presence, flag them as important.

SP: Are you going to differentiate within the estuaries?

WDFW: No, but you can return to that individual hexagon to look at a particular area within the estuary more closely.

SP: Is blocking out the whole estuary of hexagons useful from a planning perspective?

WDFW: For our next meeting we could provide more specific information in the estuaries to improve planning use. If the science panel has information that would help delineate within the estuaries, please provide that to our team.

How Scorings Will Be Used in Planning Process

A science panel member asked how the scorings will be used in the planning process. For example, if two areas both ranked of high importance it would be helpful to know why they were highly ranked.

WDFW: This will occur in phase 2 of the project. The output of the maps would be used in the early planning stages to identify areas for potential new uses. All of the underlying data associated with an area will be available. You will be able to click on a hexagon and see the data underneath it.

Approaches to Representing Various Data Types

Kelp Example

WDFW provided an example of kelp data to illustrate how the data would be ranked. The kelp data set contains 23 years of surveys with each year attributed as the presense of kelp. There are core areas where kelp occurs every year and peripheral areas where they fluctuate. Kelp is binned into three ranks. 1= more than 50 %, 2= 25%-50%, and 3= less than 25% of years.

SP: This data set represents only 3 species of canopy kelp and there are 22 species present. There is much more kelp out there. This question is important since the data is supposed to serve as a surrogate for other values.

WDFW: WDFW would like data that serves as a surrogate for other values.

Single Species Example (Tuffed puffins, murrelets, sea otter etc.)

WDFW explained that individual species with special status or indicator status are highly ranked whereas other species are rolled into general diversity data. In this example the puffin colonies are highly ranked because of the high certainty in our data and they are an important species. The murrelet data is based on ocean surveys.

Methods

A discussion of methods developed out of a previous discussion on approaches to representing different data types.

SP: Are there a small set of widely recognized or common approaches to defining ecologically important areas? Is this approach that WDFW is using following a specific philosophy?

A follow-up question was posed by another science panel member.

SP: What constitutes the rules for identifying an ecologically important area? Are those rules all the same or are there priorities? Is this being guided by a community accepted approach for prioritization?

SP: The method being used here is generally accepted but is weak on accounting for values like coherency, connectivity, or other ecological factors.

Data Representation

SP: Why is WDFW using hexagons?

WDFW: We've chosen hexagons to match up with the terrestrial side and because of tessellation.

SP: In the ocean/marine world most models will not be working on a tessellation of a hexagon. If you are going to be resampling, why resample with hexagons? If you go into public participatory mapping and are going to engage people in this process, the use of hexagons will not jive with other people's methods. If anyone else wants to use this data layer in the future they will have to convert the data to a grid system and risk loosing data resolution and accuracy. When you explain the method you should use the resolution along the side of the hexagon for conceptualization.

Transparency of Methods

WDFW discussed that there were a number of ways to complete this project and that they wanted to have a transparent process that allows people to understand what was done and how the data layer was created.

A science panel member provided a suggestion to assemble a list of criteria that are being used to establish the data sets and also list the data that you should have but do not. That way people will know what gaps in ecological function exist.

Two questions were posed by the science panel:

SP: Have you given consideration to ecological importance of species and not just habitats? In evaluating a spatial grid, could you value a grid cell based off its uniqueness? Could that potentially be done with existing data?

WDFW responded that they are thinking about ecological importance of species and that they will look at uniqueness for the next meeting.

Review of Data

WDFW provided a list of potential data sets that will be used in the project. A science panel member asked " Are you planning to expand the modeling for various life history stages? Can the models for Dover sole be broken up into young of year? The other question could you expand that for crab? WDFW explained that the question remains whether or not catch data is going to be representative of ecological distribution? An example of where it would not work is the Pacific sardine. The state waters are closed to fishing so logbook data would not be the best in this example. A science panel member explained that in regards to life history of the ground fish model, anything that was caught was lumped. They do need additional life history information. Another model used habitat and depth proxies to develop different life history information. It could potentially be beneficial to look into that method.

Several members of the science panel and WDFW discussed stressors as a way to frame questions of data. An issue brought up by several members was that if a specific question can be asked of the data based on the stressor at hand they could begin to assess the model. For example, if the project was framed through the lens of ocean energy development they could begin to get more general guidance as to what priorities should be in identifying information needs. One science panel member suggested completing a compatibility matrix for stress and ecological values. This was done in the Massachusetts Ocean Plan and could be especially helpful in Stage 2 of the project.

A science panel member suggested looking at The Nature Conservancy Ecoregional Assessment where a similar planning process was done. It may be useful to compare what they did for nearshore and estuaries.

GIS Overlay Models for Combining into Ecologically Important Areas Score

WDFW provided a handout that gave examples of assigning categories to elements and explained how they arrived at each category using a ranking system 1-6. With this structure they are trying to ensure consistency and objectivity. The value of six is the catch all for none of the above apply. If an element is significant but uncertain this reduces the category it places into. This approach is still being formed. A science panel member suggested that it would be helpful to have a key that described how you arrive at each number. They also asked why a scale of 1-6 was chosen and suggested adding 7 categories so there was a neutral value available.

A science panel member posed the question " Can we look at relative abundance? What about areas that are at the edge/ degraded/ but they have value as a future target? The member stated that it is important to clarify what your guiding procedures are and be up front about that from the beginning.