

WDFW Ecologically Important Areas
Marine Spatial Planning Project
Science Panel Webinar
Nov 25, 2014

Mapping Important Ecological Areas Webinar Outline

1. Brief Overview and Introduction to Mapping Approach
2. Review of Data Layers compiled for use in mapping
3. Introduction to GIS Overlay models for combining into EA score

Project Motivation

- The Marine Spatial Plan requires an Ecosystem Assessment , including identification of key ecological areas. This is one way of mapping those.
- The Marine Spatial Plan is also focused on the potential of new uses in the ocean and how they might affect ecology, existing uses, etc.

Project Purposes – Two Phases

1. Use available spatial data on fish and wildlife to identify ecologically important areas in the WA marine spatial planning study area (now to early Feb).
2. Demonstration trade-off analysis between alternative energy development scenarios and the ecologically important areas (Feb. to June)

WDFW's Project Team

Wildlife Program Science Division

- John Pierce, *Division Manager*
- Scott Pearson
- Andy Duff

Marine Fish Science and Science Divisions

- Theresa Tsou
- Andy Weiss
- Dale Gombert

Habitat Program Science Division

- Tim Quinn, *Division Manager*
- George Wilhere

Region 6

- Michele Culver, *Region 6 Director*
- Corey Niles, *Coastal Marine Policy Lead*
- Jessi Doerpinghaus, *Coastal Marine Policy Analyst*

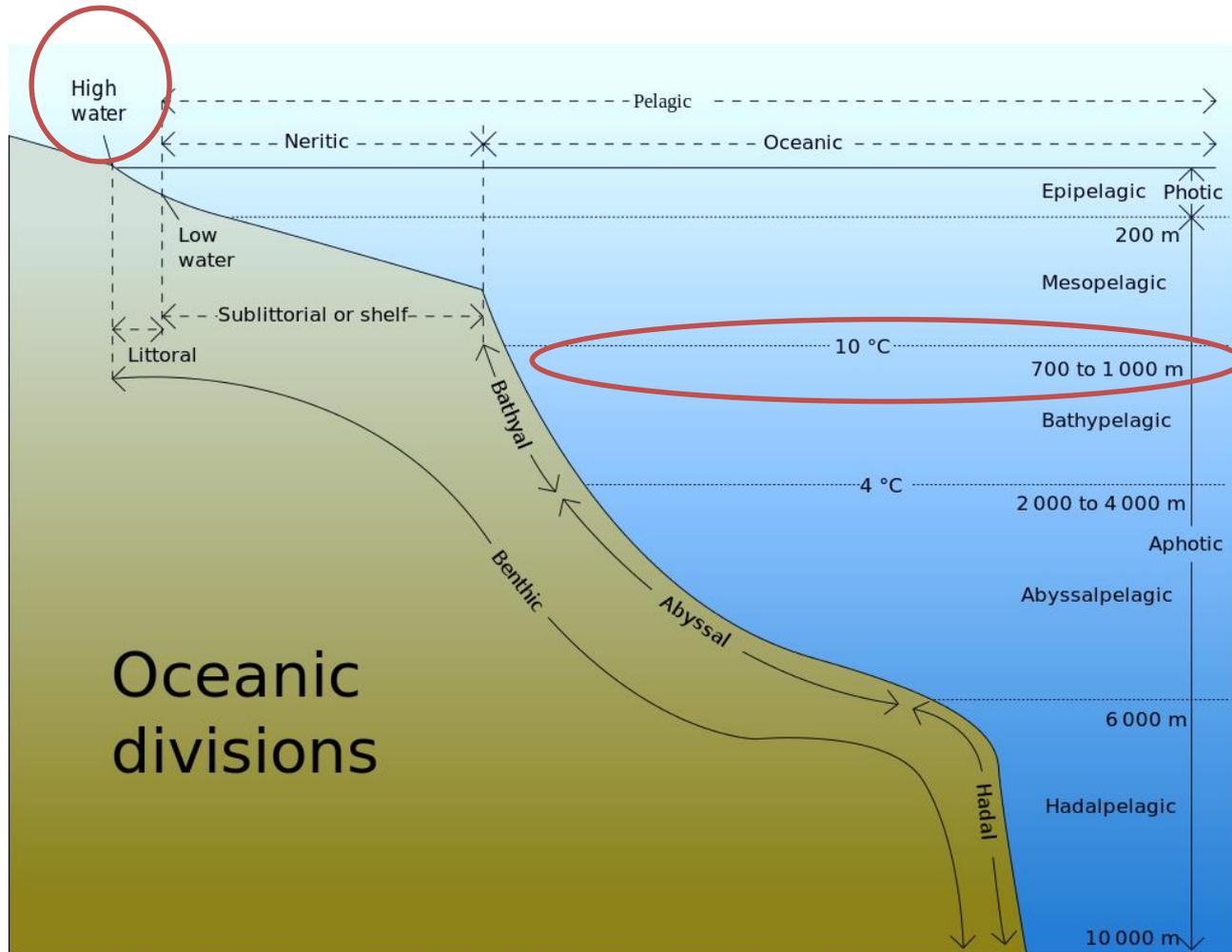
Simplified Project Timeline

Phase I – Identify and map ecological important areas.

- Science Panel and Technical Co-Manager Review on data layers and overlay methods before Thanksgiving
- Produce draft maps ready for Science Panel and Technical Co-Manager review by January.
- Present maps to Tribal Policy in January, and WCMAC in February

Then onto Phase II ... End June 30, 2015.

The Planning Area—High Tide Line to 700 fathoms— Covers Several Ocean Zones



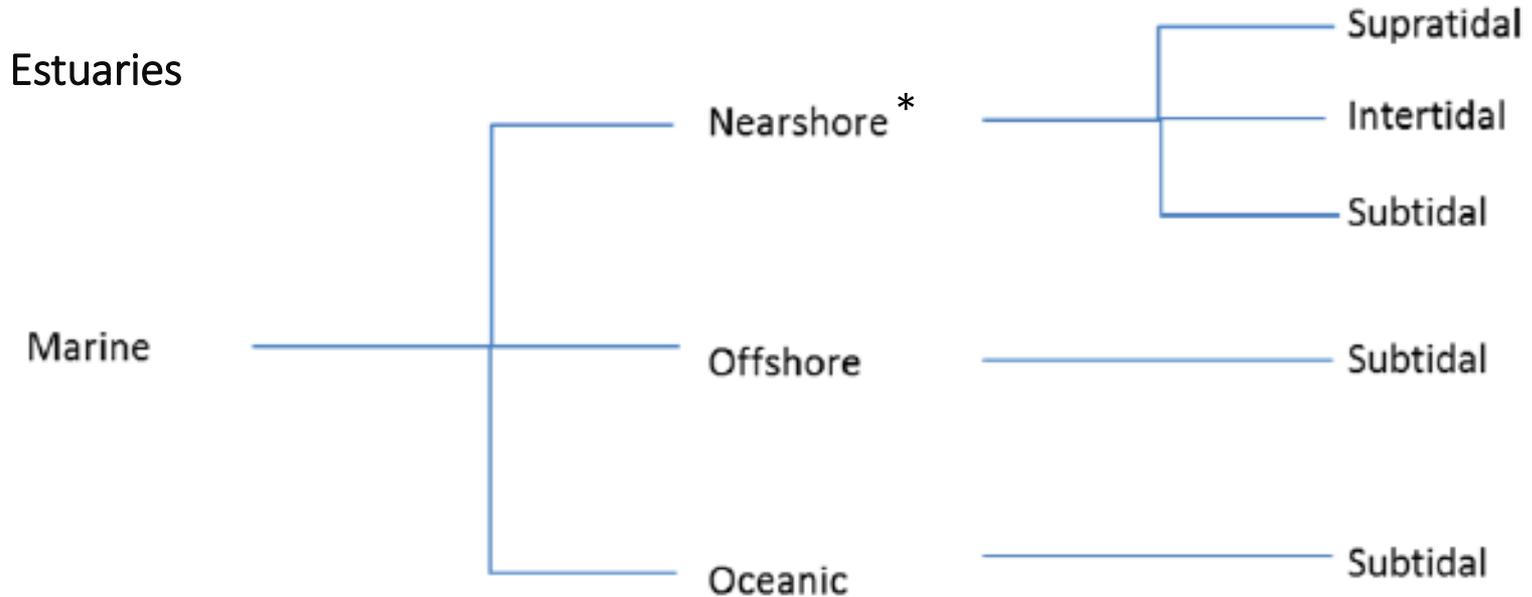
700 fm
=
~1,280 m

Oceanic
divisions

http://en.wikipedia.org/wiki/Image:Oceanic_divisions.png

NOAA's CMECS Categories

Definitions

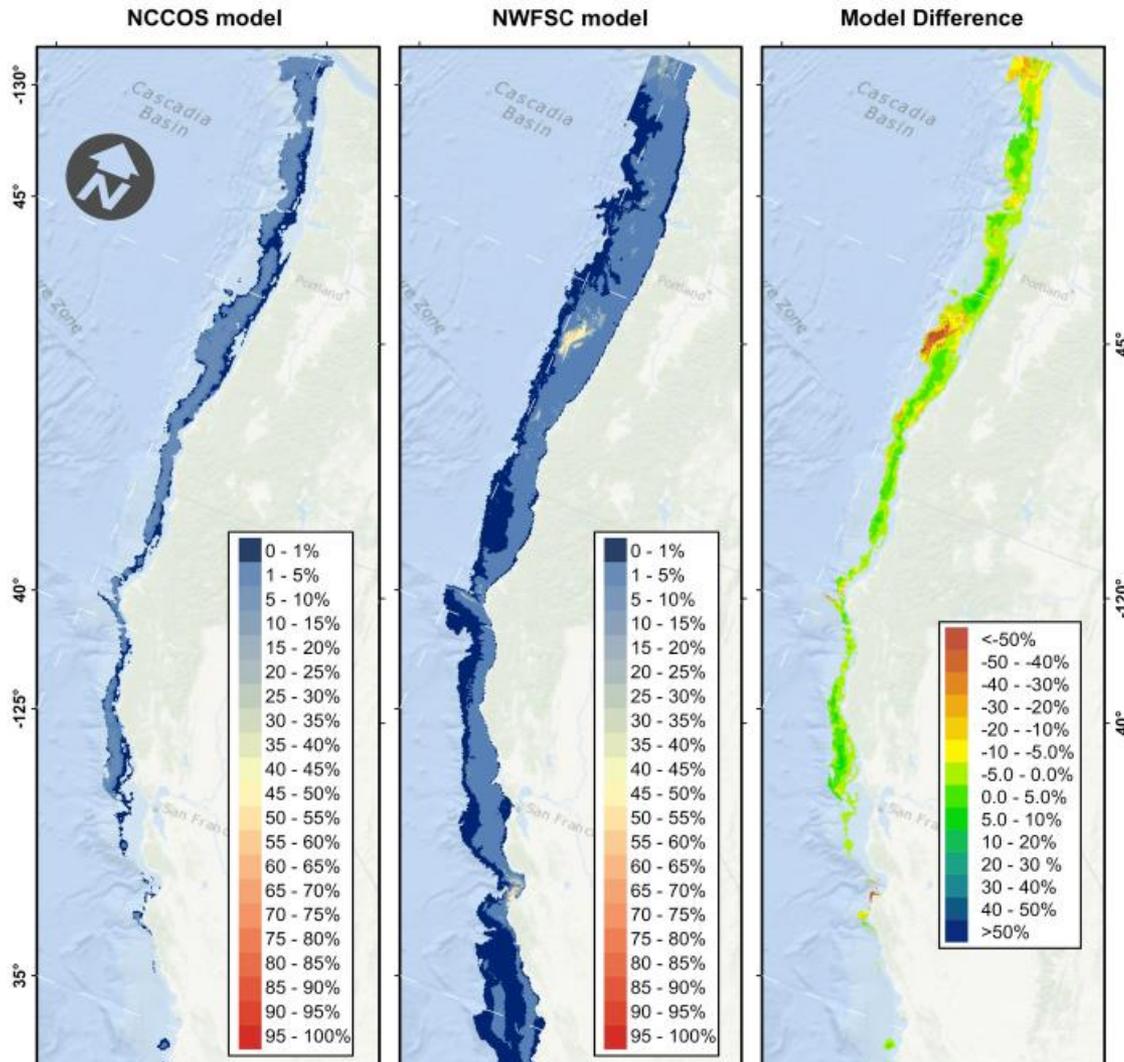


* Includes offshore islands

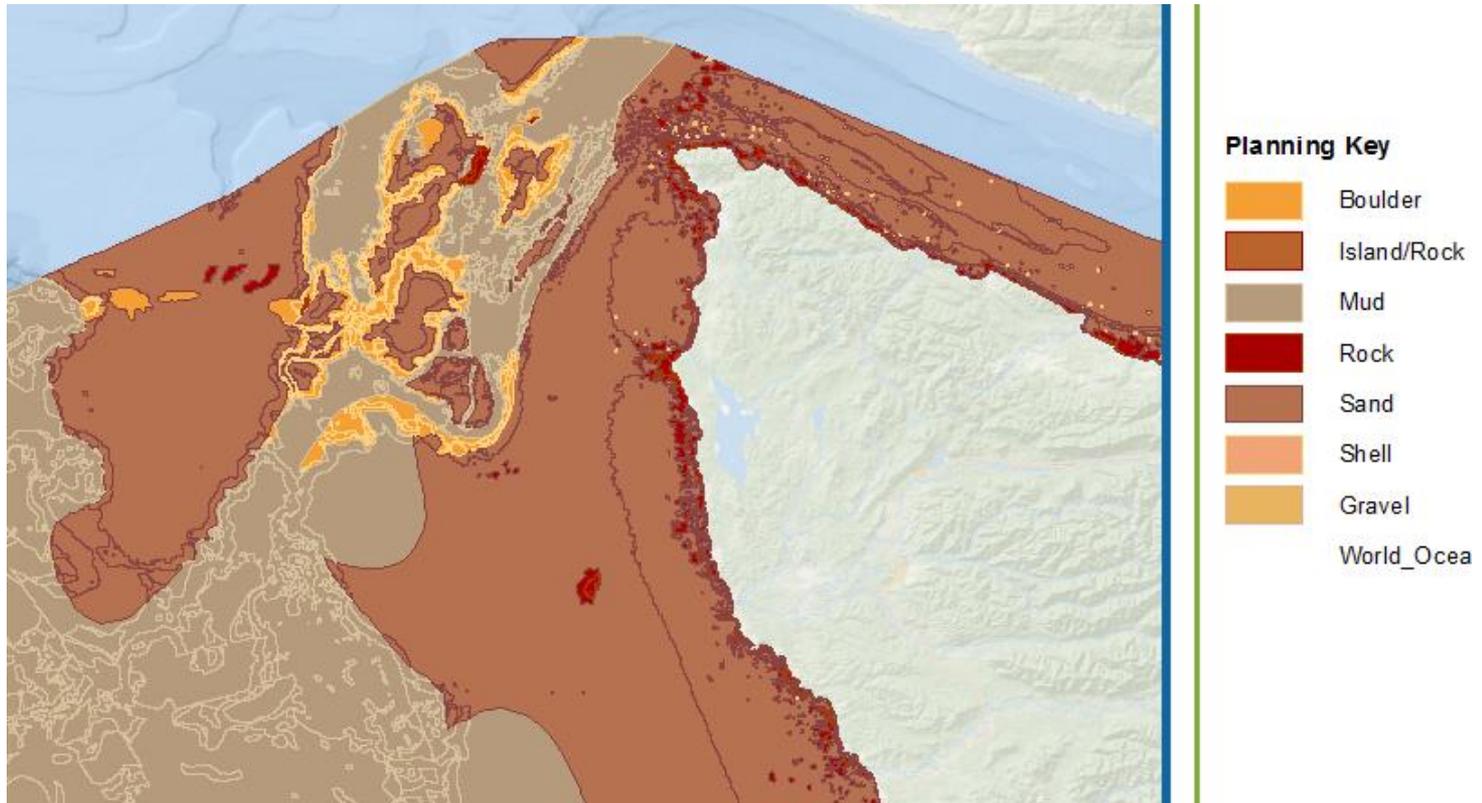
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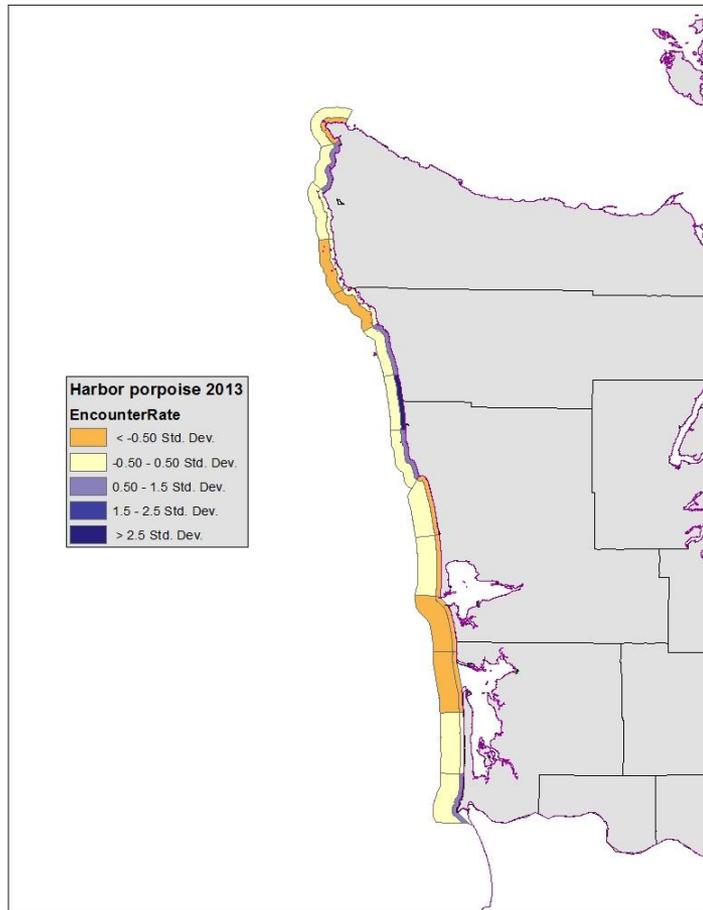
Yelloweye (*Sebastes ruberrimus*)



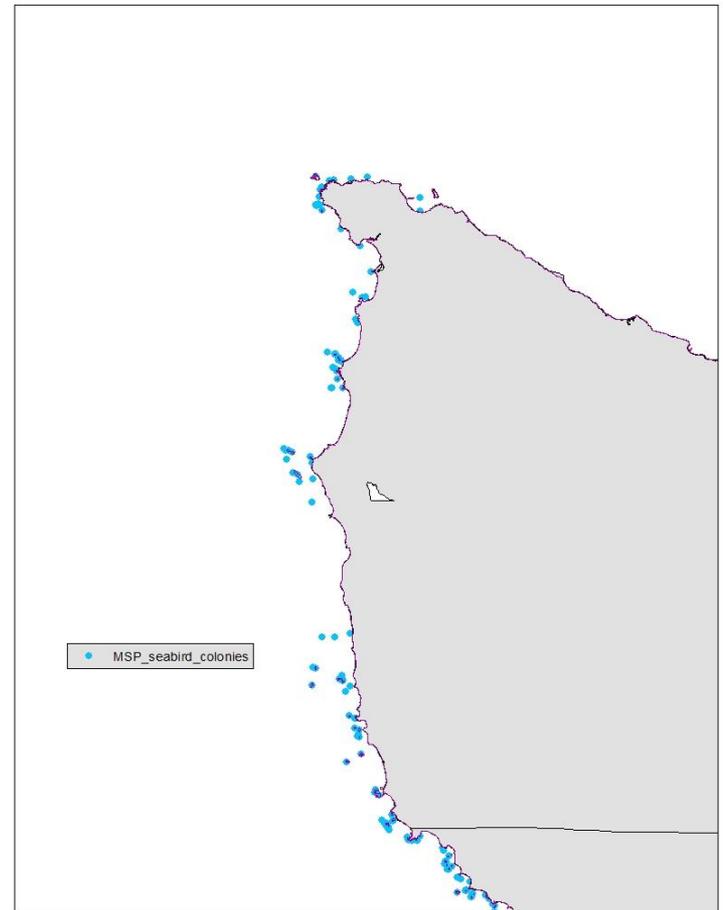
Example of MSP Portal data - Substrate



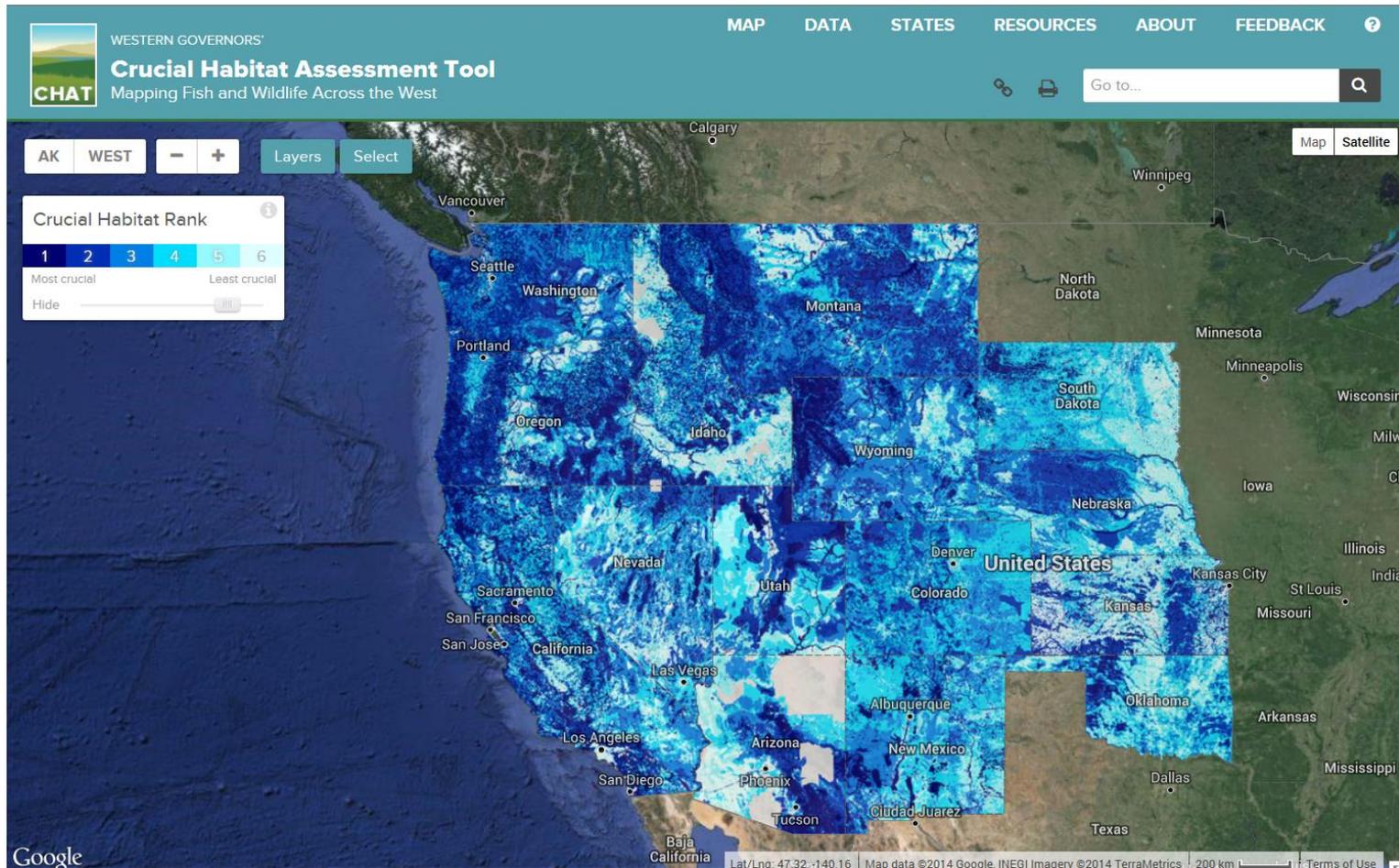
Harbor Porpoise Encounter Rates



Seabird Colony Locations



Western Governor Association Crucial Habitat Assessment Tool



<http://www.westgovchat.org/>

Data Sources for Washington Crucial Habitat:

- Terrestrial crucial habitat:
 - Species of concern
 - WDFW PHS; Heritage
 - GAP models
 - Conservation Framework
 - WHCWG Focal Species Connectivity
 - Landscape Integrity
 - Large Intact Blocks
 - Connectivity Zones
 - Ecological Systems
 - SERI Game:
 - WDFW PHS
- Aquatic crucial habitat:
 - Species of concern:
 - WDFW PHS, Heritage
 - Ecoregional Assessments
 - Freshwater Integrity
 - Cumulative Disturbance Index
 - Riparian Threats Assessment
 - SERI Fish/Shellfish
 - PHS
 - Future additions:
 - Non-Native Sport fish
 - Marine Near-shore

SERI = Species of Economic or Recreational Importance

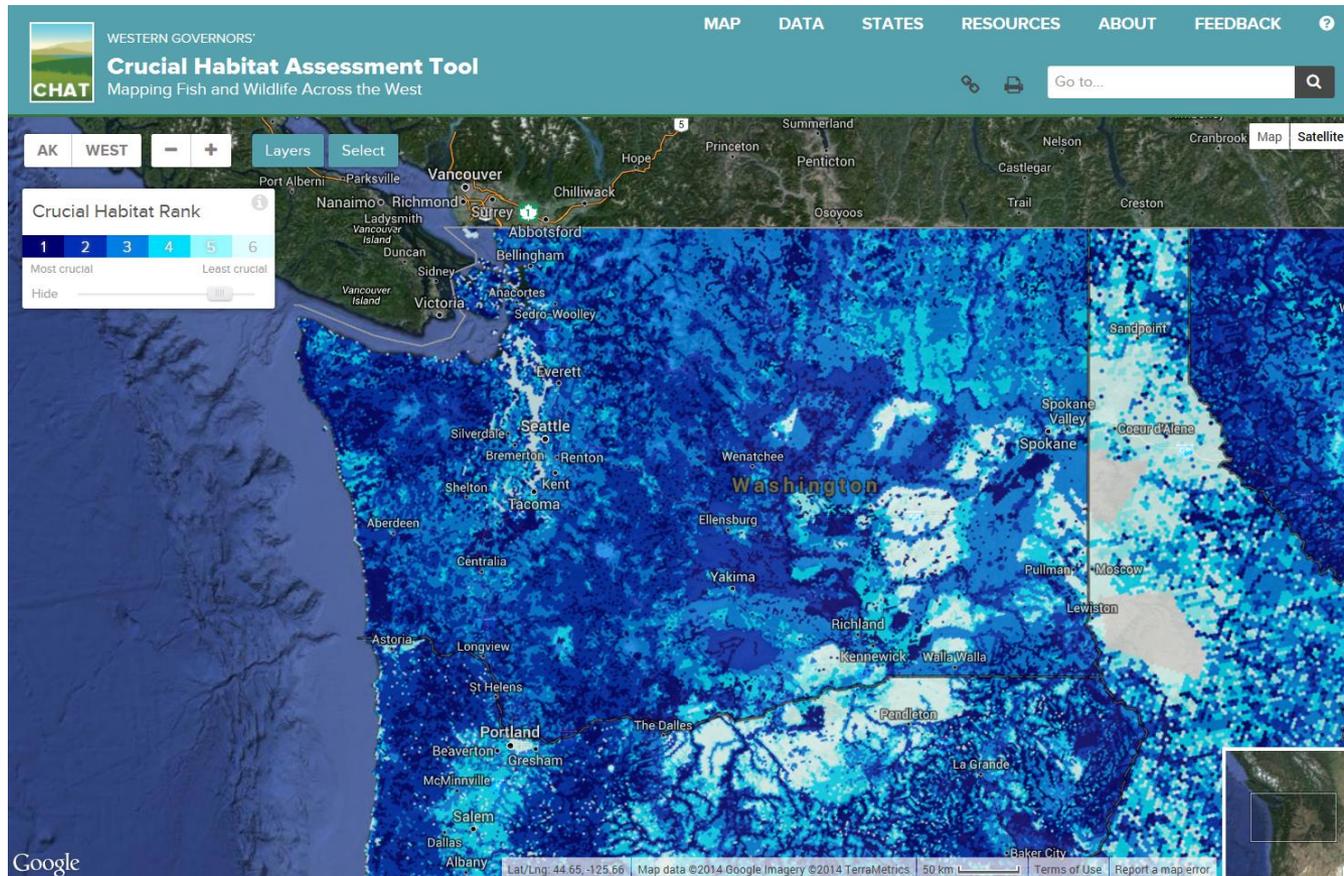
Summary of draft Washington Prioritization of Terrestrial Crucial Habitat:

Priority Level	Species / Habitats of Concern	Species of Econ & Rec Importance	Terrestrial Habitats / Ecological Integrity
1	Level 1 PHS (Priority Species) and Heritage Confirmed locations: Federal ESA T/E status; Global G1, G2 status, Animal and Plant Species		Level 1 PHS Priority Habitats and Heritage Vegetation Confirmed locations. Global G1, G2 status. For example, includes dune, prairie and shrub-steppe habitat patches
2	Level 2 Confirmed PHS and Heritage Locations : Federal and State candidate and Sensitive species , other S1, S2 heritage sites		Level 2 Priority Habitats and Heritage Vegetation Confirmed Locations. Federal and State candidate and Sensitive, other S1, S2 heritage sites. For example, includes patches of juniper, oak and prairie habitat from PHS database
3	Level 3 PHS and Heritage Confirmed locations: Other PHS species G3, S3. Level 2 Modeled locations: Sage-Grouse Priority Areas for Conservation Zones	Level 1 PHS Game Habitats and Concentration Areas	Presence of at least 1 Ecol System ranked G1 or G2. Level 3 Priority Habitats, for example, includes patches of aspen, cave, cliff, talus, and shrub-steppe from PHS database. Large Intact Blocks greater than 1000 Ha and with best (top 33%) integrity
4	Modeled locations: ReGap SGCN richness (sp counts 10+), Sage-Grouse Recovery Zones	Level 2 PHS Game Habitats and Concentration Areas	Large Intact Blocks < 10,000 Ha or > 50,000 ha and Integrity < Best 33% . Connectivity Zones: ICZ score 1. At least 2 of 3 criteria (length, centrality Integrity) has highest score
5	Modeled locations: ReGap SGCN richness (sp counts 6-10)	Level 3 PHS Game Habitats and Concentration Areas	Large Intact Blocks > 10,000 and < 50,000 Ha and Integrity < Best 33%. Presence of at least 1 Ecol System ranked G3. Connectivity Zones: ICZ score 2. One of 3 criteria (length, centrality Integrity) has highest score, or all 3 criteria (length, centrality Integrity) have Level 2 score
6	None of the above values apply	None of the above values apply	None of the above values apply

Summary of draft Washington Prioritization of Aquatic Crucial Habitat:

Priority Level	Species / Habitats of Concern	Species of Econ & Rec Importance	Aquatic Habitats/ Ecological Integrity
1	E&T spawning in stream reach (spawning is always documented presence)		High Integrity Estuaries
2	E&T documented, presumed, transported, or artificial presence (stream reach); federal species of concern spawning (stream reach)	Other salmonids spawning in stream reach (spawning is always documented presence)	Moderate Integrity Estuaries
3	federal species of concern* documented or presumed presence; state candidate documented or presumed presence (HUC12) E&T spawning in catchment with CDI >= "moderate"	Other salmonids documented or presumed presence (stream reach); white sturgeon presence (stream reach)	Low Integrity Estuaries. PHS Wetland and Riparian habitats. National Wetland Inventory. Presence of excellent condition floodplain: R_mod in top quintile and at least 20% of catchment is valley bottom
4	E&T potential presence (stream reach) E&T documented, presumed, transported, or artificial presence (catchment); federal species of concern spawning (catchment); E&T spawning in catchment with CDI <= "high" E&T spawning in HUC12 with CDI >= "moderate"	Nonnative game fish presence (stream reach), other salmonids spawning in catchment	Presence of good condition floodplain: R_mod in top quintile and at least 20% of catchment is valley bottom
5	federal species of concern or candidate species potential presence (stream reach) E&T documented, presumed, transported, or artificial presence (HUC12); federal species of concern spawning (HUC12), E&T spawning in HUC12 with CDI <= "high"	Other salmonids potential presence (stream reach) other salmonids documented or presumed presence (catchment) other salmonid spawning in HUC12	Presence of fair condition floodplain: R_mod in middle quintile and at least 20% of catchment is valley bottom
6	None of the above values apply	None of the above values apply	None of the above values apply

Western Governor Association Crucial Habitat Assessment Tool



Data were aggregated into 1 sq. mile hexagons. Hexagons were attributed based on highest score across all data layers within hexagon

Prioritization of Washington Marine Ecologically Important Areas

Priority Level	Species / Habitats of Concern	Species of Econ & Rec Importance	Marine Habitats / Ecological Integrity
1			
2			
3			
4			
5			
6			

Prioritization of Marine Ecologically Important Areas – Possible Roll-up Models **

Model 1 (WGA-like), Priorities based on scale of:

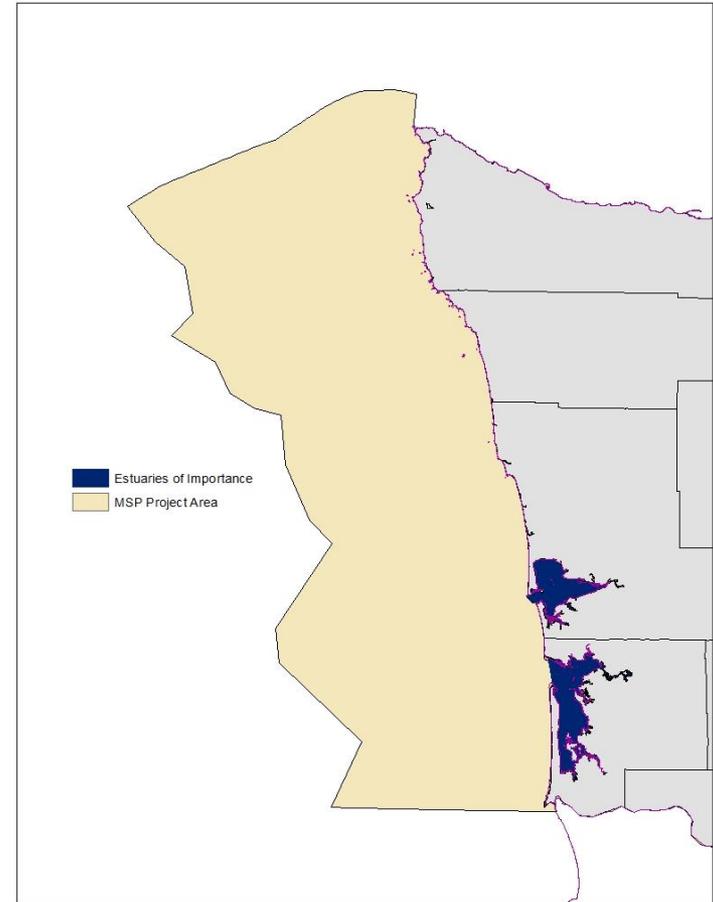
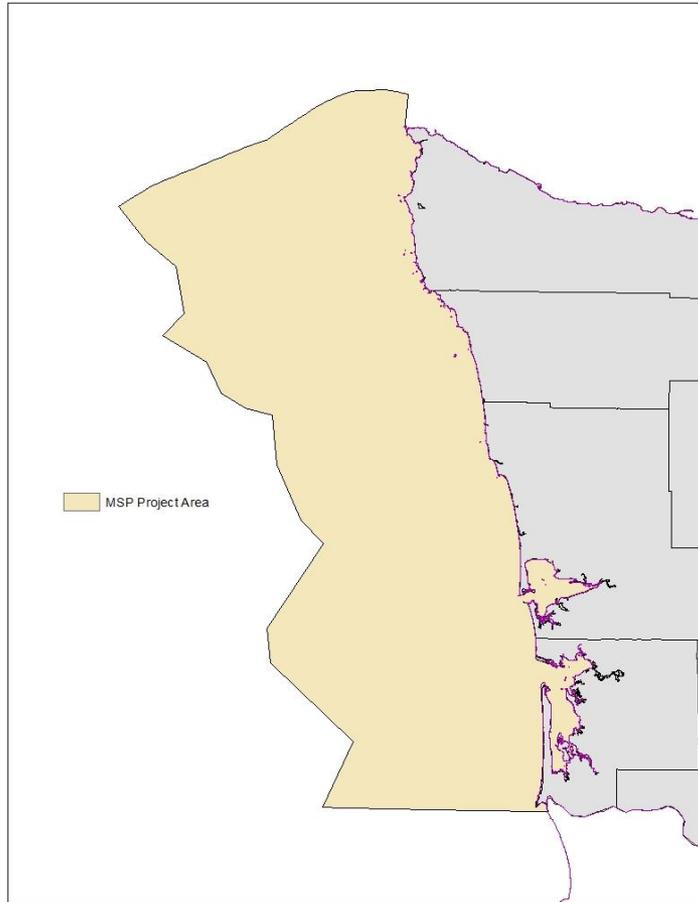
- Degree of sensitivity/vulnerability to human development (higher sensitivity ranks higher)
- Relative commercial / recreational importance
- Significant habitats or nutrient richness
- Level of certainty - areas with more “certainty/likelihood” would “rank” higher than areas with less certainty/likelihood
- Can mix ordinal and categorical data, apples and oranges

Model 2 (Resource Richness):

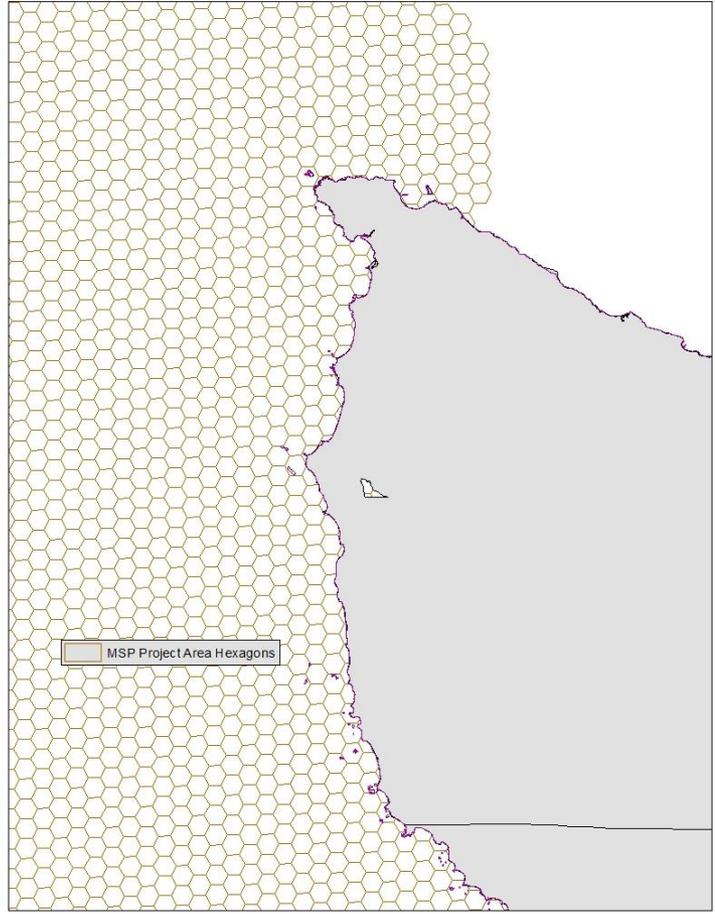
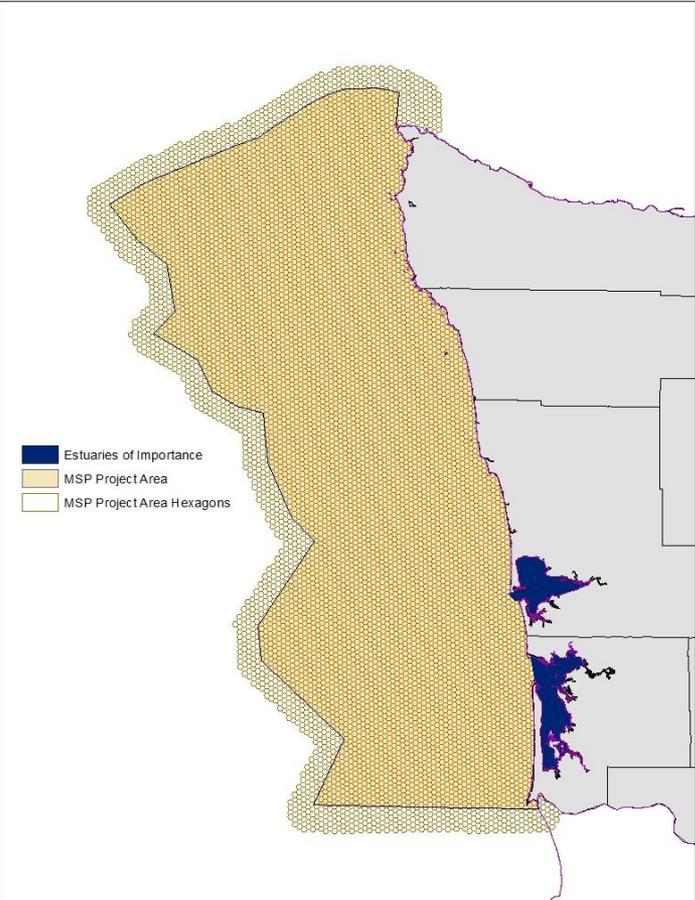
- Areas with above average values (e.g. mean sum across all layers) would rank high. Areas with below average values would rank low.
- Individual layers could be weighted as more or less importance.
- Layers would be weighted and summed within each analysis unit. Requires assumptions of ordinal data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

** Aggregate into 1 sq mile hexagons; Both models could be used depending on differences in data types

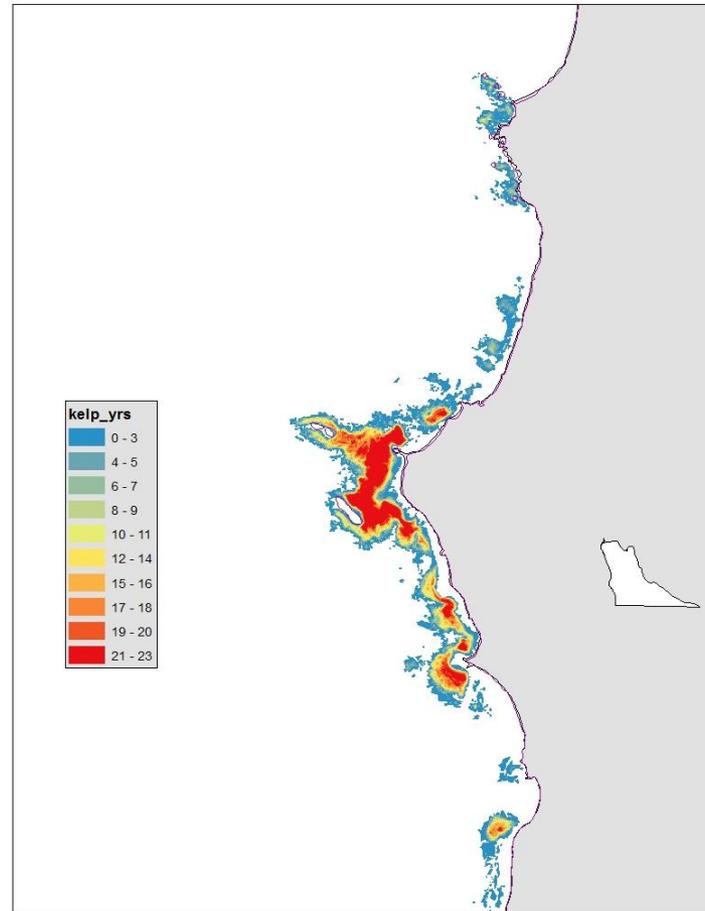
Washington Marine Spatial Planning Project Area



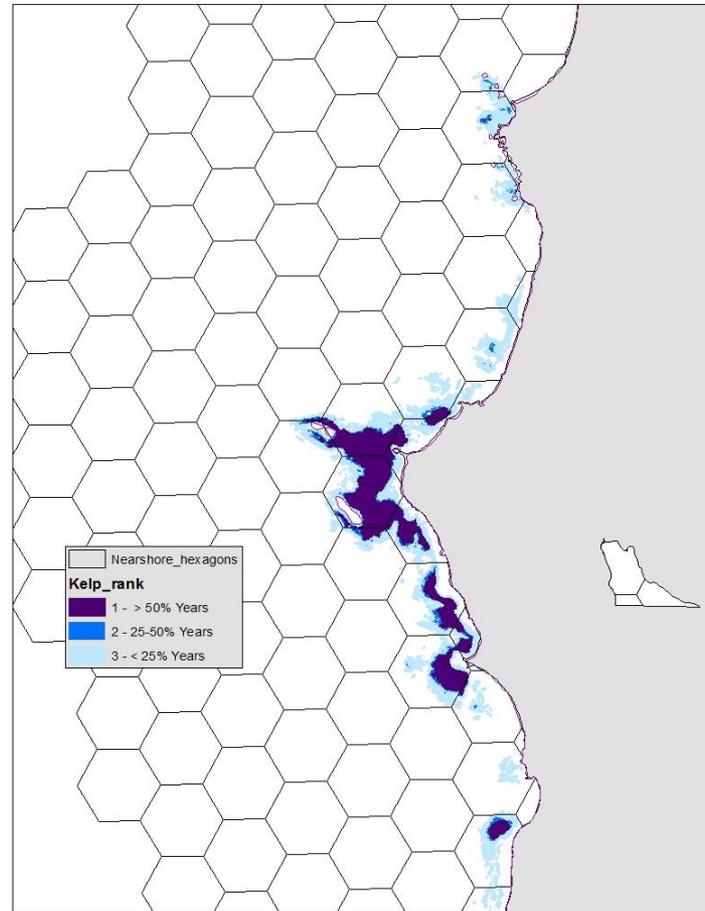
Analysis Unit = 1 Sq Mile Hexagons



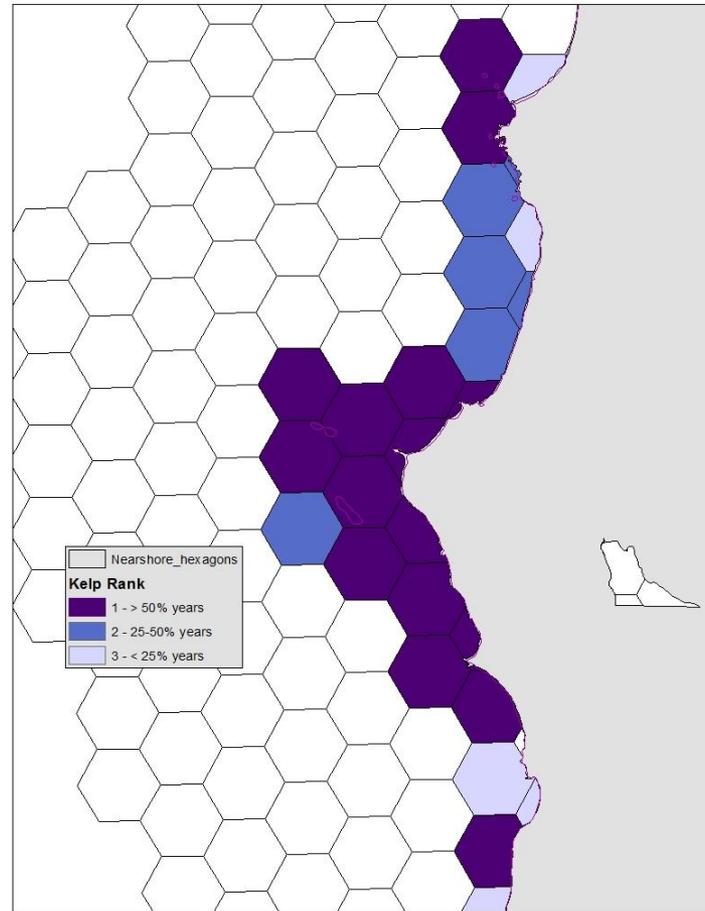
23 Years of Kelp Aerial Surveys



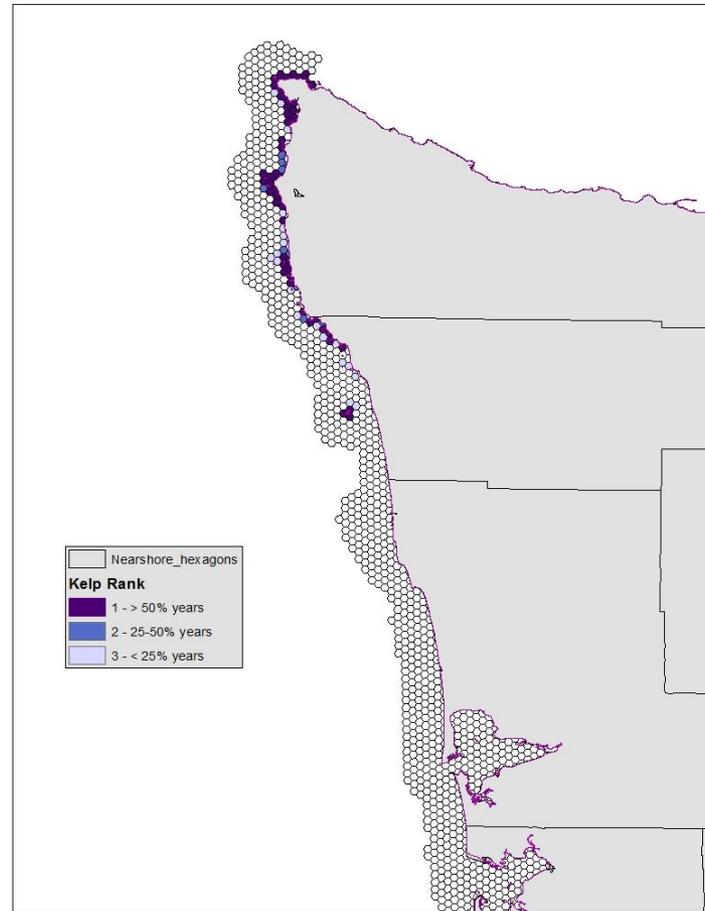
“Bin” Kelp Persistence Data into 3 Ranks



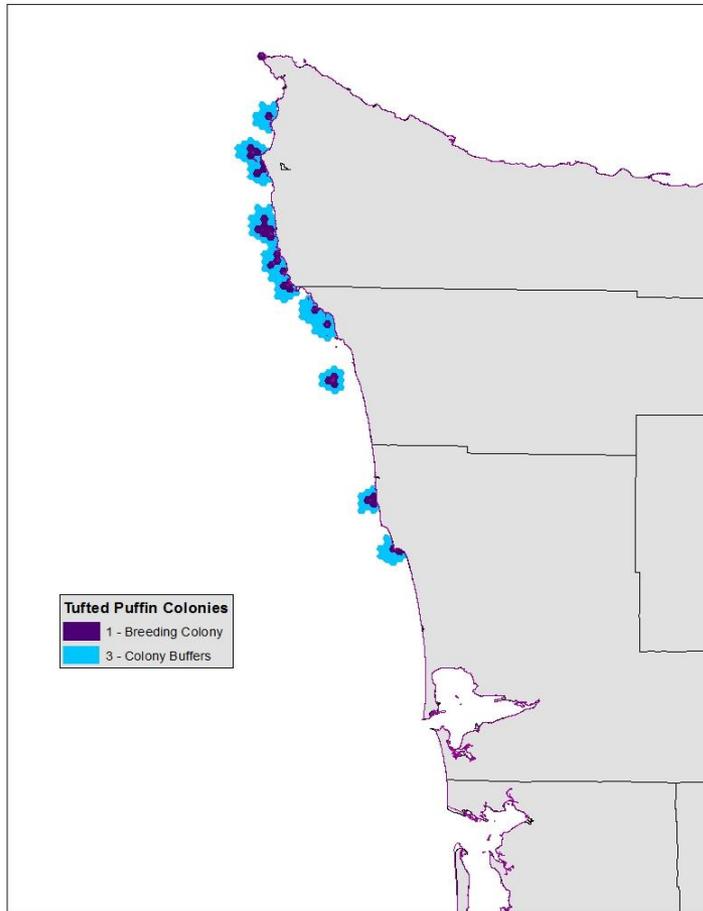
Attribute Standard Hexagons, Rank based on Persistence of Kelp in Area over Time



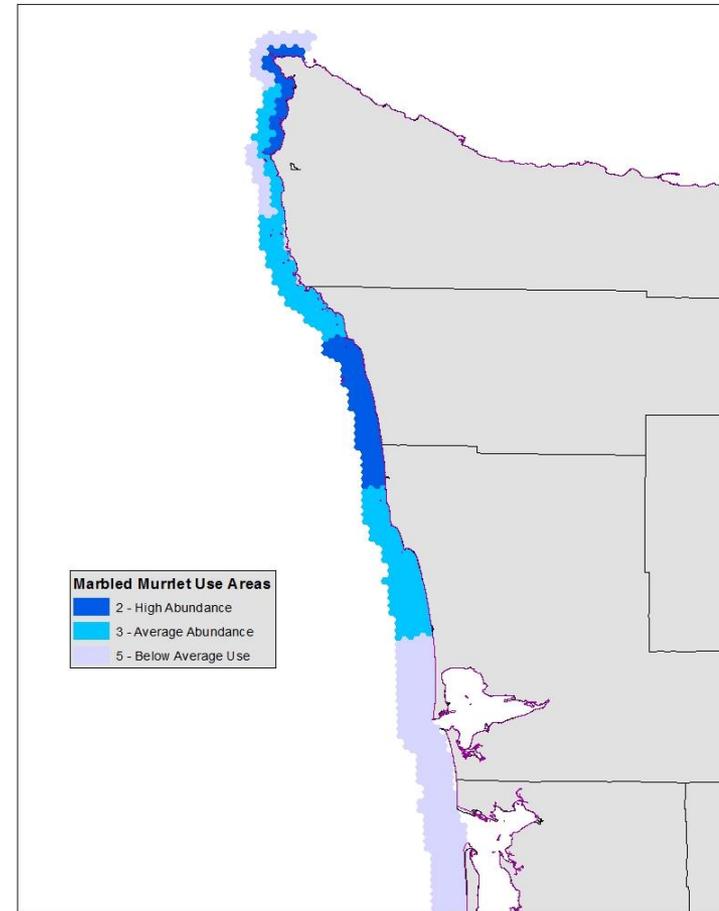
Coast-wide Kelp Priority Areas



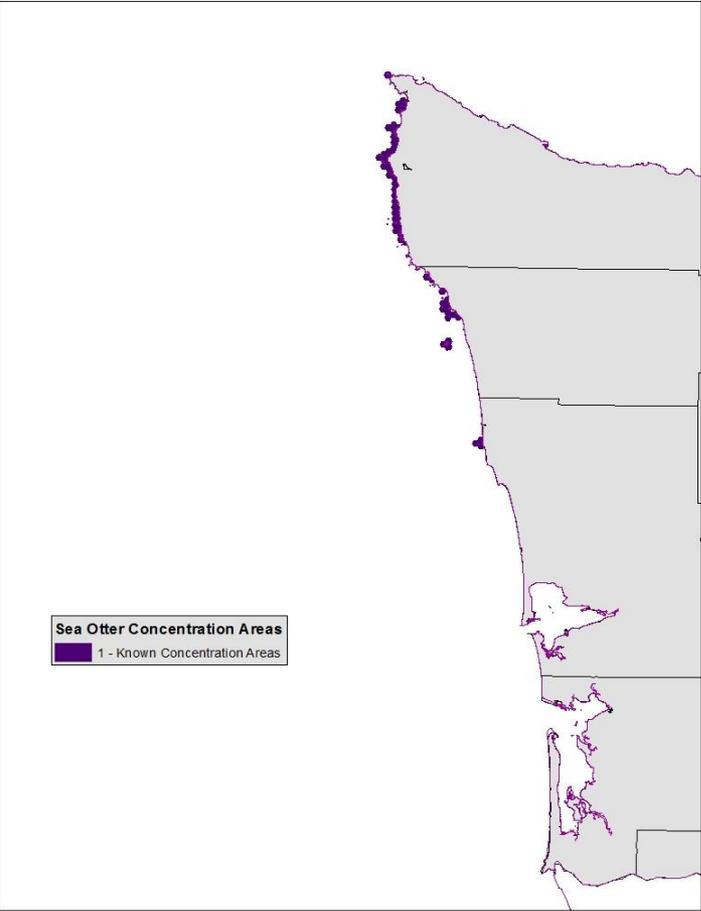
Tufted Puffin Colonies and Buffers



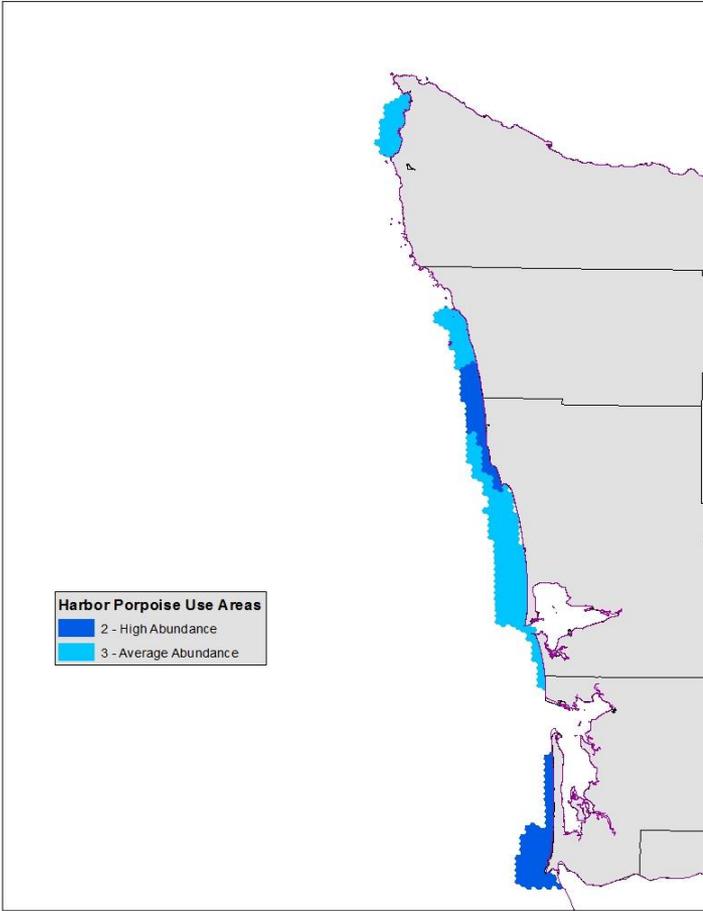
Marbled Murrelet Use Areas



Sea Otter Concentration Areas

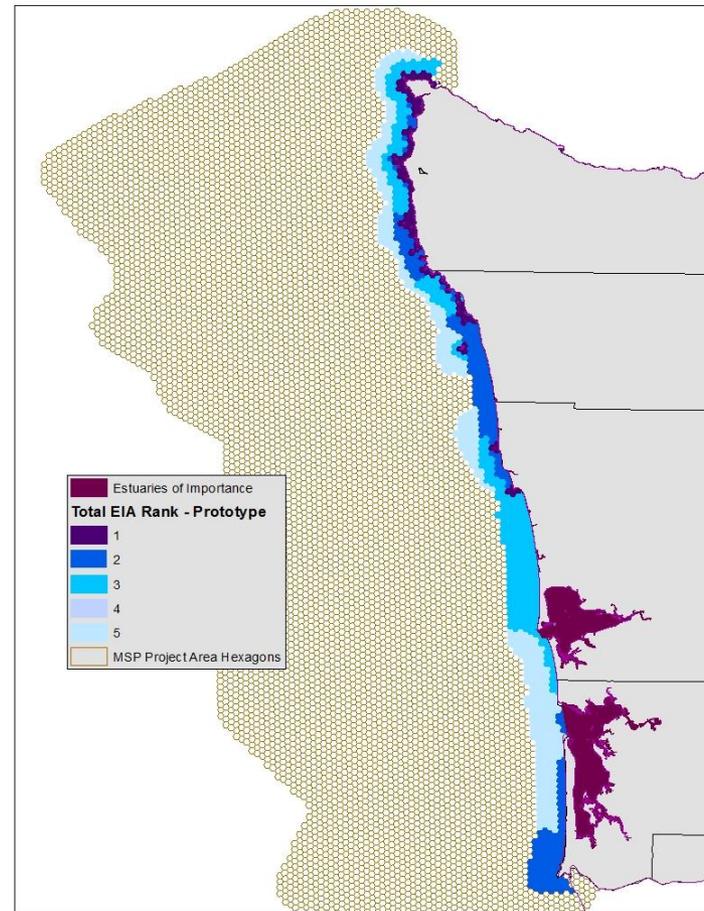


Harbor Porpoise Use Areas



Total Wildlife Nearshore EIA Prototype

8 Example Wildlife Layers



(WGA-Like Model)

WDFW's View on MSP Products

- There are many ways of doing this project but we do not see that there is one right way.
- None of the data sets we're using are perfect.
- We intend to document all the choices we make and emphasize the uncertainties involved with each data set.
- One aim of our project is to help identify data gaps in what we don't know about ecologically importance and communicate where we could invest in research to learn more. Yet how do we communicate this effectively?

Areas for Science Panel review

- Data layers to include or not to include.
- Methods for arriving at an “importance” score for each layer.
- Methods for combining “importance” scores across layers (Overlay Model).
- Other ...