

NOAA National Marine Fisheries Service (NMFS)

West Coast Offshore Wind Energy Strategic Science Plan

For PFMC MPC meeting 4/18/24

Northwest Fisheries Science Center (NWFSC)

Southwest Fisheries Science Center (SWFSC)

West Coast Regional Office (WCR)



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NOAA Fisheries' Role in OWE

Environmental Review & Regulatory Processes

- Marine Mammal Protection Act
- Endangered Species Act
- Magnuson-Stevens Act (Essential Fish Habitat)
- Fish and Wildlife Coordination Act
- National Environmental Policy Act

Science support during environmental review

Science to understand impacts



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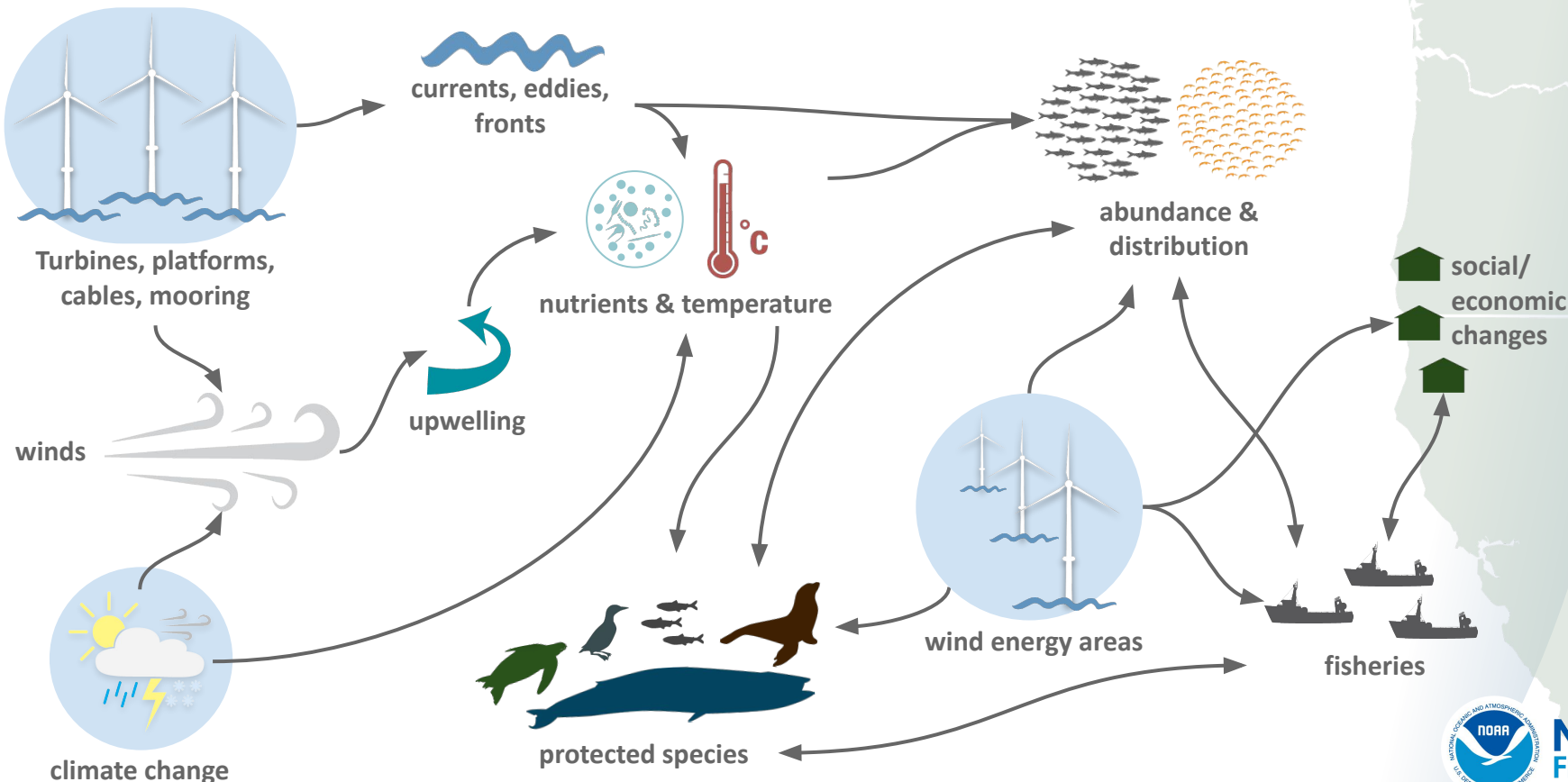
Intent of OWE Strategic Science Plan

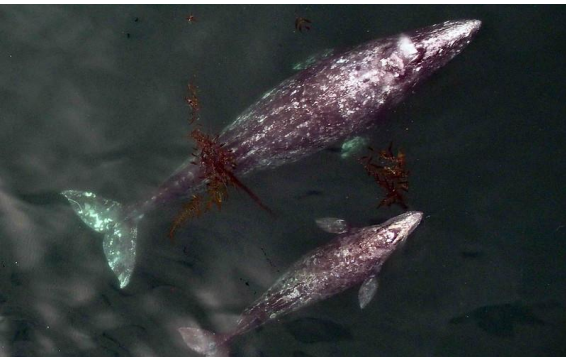
- Guide the Northwest and Southwest Fisheries Science Centers in addressing the scientific information needed to fulfill NMFS' regulatory role in OWE development
- Understand potential impacts on NMFS trust resources
- Support development of strategies to mitigate impacts



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Ecosystem considerations from sea to shore





Focus Areas

- 1 - Habitat impacts
- 2 - Physiological and physical effects
- 3 - Species abundance and distribution
- 4 - Socio-economic impacts
- 5 - Ecosystem and climate interactions
- 6 - NMFS' scientific surveys

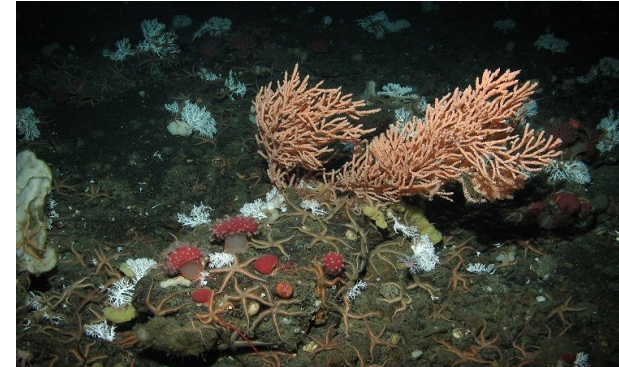
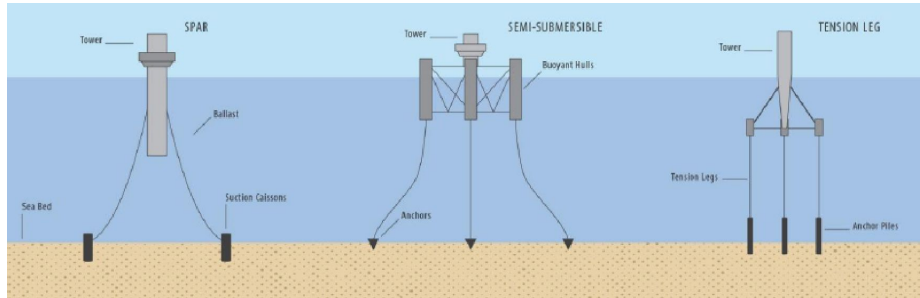
Research priorities identified for each



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1 - Habitat Impacts

- Create **atlases of habitats**
- Potential impacts on **atmospheric wind fields** and related ecosystem processes
- Quantify the **risk** to biogenic habitats (e.g., corals and sponges)
- Determine whether the **addition of artificial structure** alters the suitability of pelagic or benthic habitats

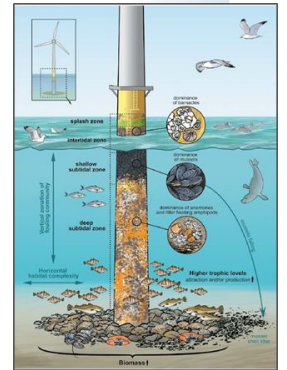
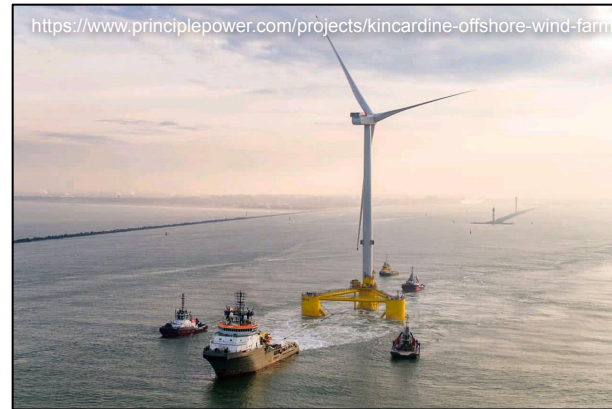


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2 - Physiological and Physical Effects

Potential effects from:

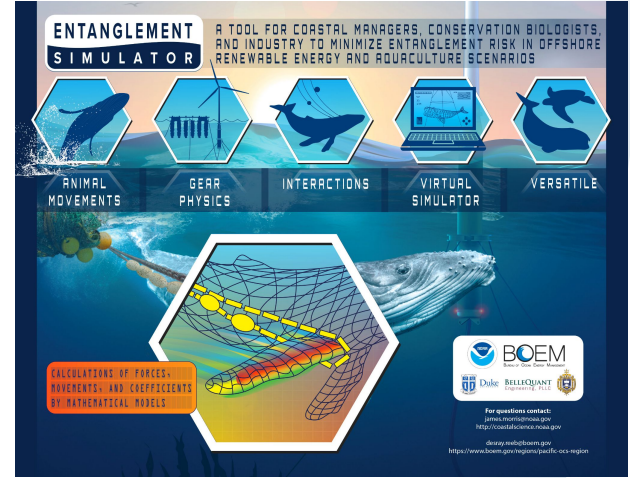
- Noise
- Electromagnetic fields (EMF)
- Infrastructure to act as fish aggregating devices (FADs), haulout structures for pinnipeds, and substrate for invertebrates.
- Physical interactions between migrating species and infrastructure and vessel traffic



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3 - Species Abundance and Distribution

- Entanglement mortality risk
- Migratory and movement patterns
- Spatial distribution and population dynamics
 - including fish and shellfish larvae
 - Effects of habitat modification
 - species aggregations, predators/prey, natural mortality, and productivity
- Potential to alter distribution, demographic structure, or abundance of fishing target stocks
- Population estimates and uncertainty in NMFS stock assessments



4 - Socio-economic impacts to fisheries and fishing communities



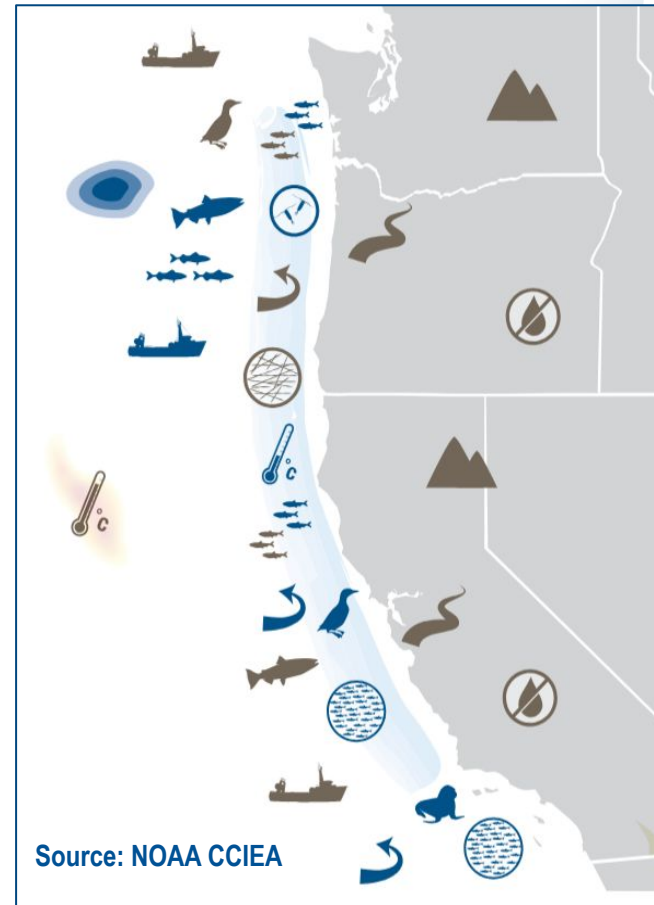
- Create **fishing footprint** atlases.
- Assess fishing **effort redistribution**
- Improve fisheries **economic impact modeling** tools and **community vulnerability** indices
- Understand how **port infrastructure** development will affect different types of fishing activities.
- Evaluate strategies that decrease impacts and assess the effectiveness of proposed **mitigation** efforts.
- Evaluate the potential for OWE development to affect the **cultural identity and fishing heritage** of fishing communities.
- Understand how changes in **stock assessment uncertainty** may affect fisheries management decisions
- Valuation of non-market **ecosystem services**



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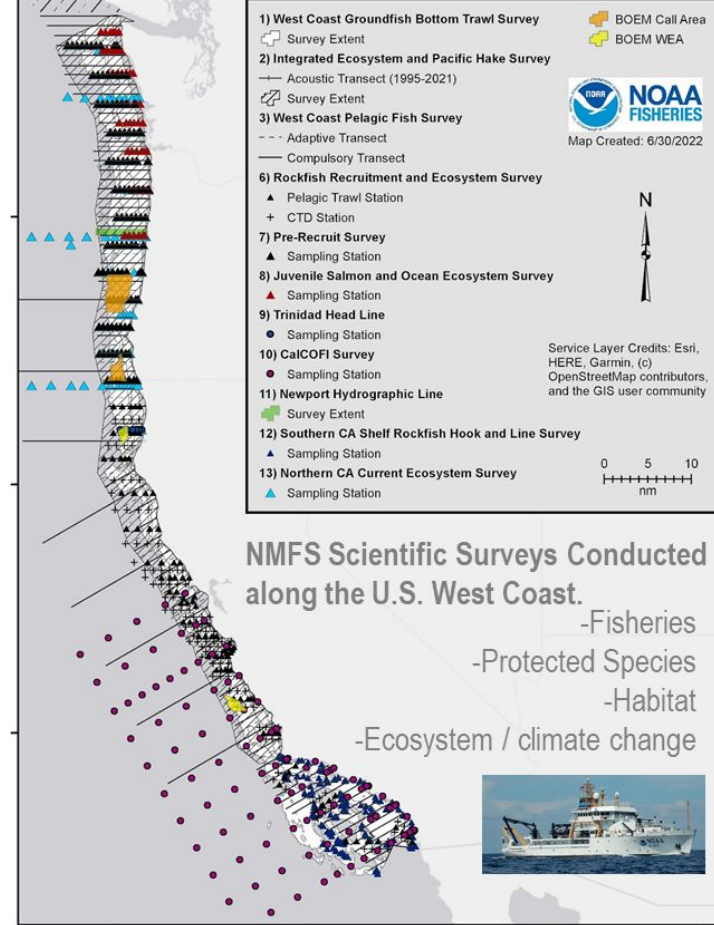
5 - Ecosystem and Climate Interactions

- Develop methods to identify **ecosystem changes**, **conceptual models**, and **ecosystem indicators**
- Identify and fill gaps in understanding **trophic interactions**
- Develop frameworks for quantifying **cumulative effects**
- Develop **risk assessment tools** that can quantify changes in ecosystem indicators and distinguish the effects due to OWE from effects of climate variability and change



6 - Impacts to NMFS' Scientific Surveys

- Evaluate and quantify impacts on surveys and scientific advice to management
- Develop new statistical designs, sampling protocols, and methods
- Design and carry out calibrations to integrate data
- Develop interim indices to partially bridge the gap



Challenges & Opportunities

- Integrating regional data infrastructure
- Characterizing baseline conditions
- Disentangling effects from climate change
- Co-use of platforms for fine-resolution, long-term monitoring
- Integration of novel monitoring methods



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Thanks for your attention

- We welcome your thoughts and hearing your research priorities
- We expect to share the plan document early summer
- This will be a living document that NOAA Fisheries will revisit periodically



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