

NOAA National Marine Fisheries Service (NMFS)

West Coast Offshore Wind Energy Strategic Science Plan

OR Roadmap

Jan 9, 2025

Northwest Fisheries Science Center (NWFSC)
Southwest Fisheries Science Center (SWFSC)
West Coast Regional Office (WCR)



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Introductions

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Fisheries Habitat



Protected Species



Management & Stock Assessments:

500 Fish Stocks & Stock Complexes

120 Marine Mammal Species

163 Threatened & Endangered Species

NOAA Fisheries' Role in OWE

Environmental Review & Regulatory Processes

- Marine Mammal Protection Act (MMPA)
- Endangered Species Act (ESA)
- Magnuson-Stevens Act (MSA) (Essential Fish Habitat)
- National Environmental Policy Act (NEPA)

Science support during environmental review

Science to understand impacts



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Intent of our OWE Strategic Science Plan

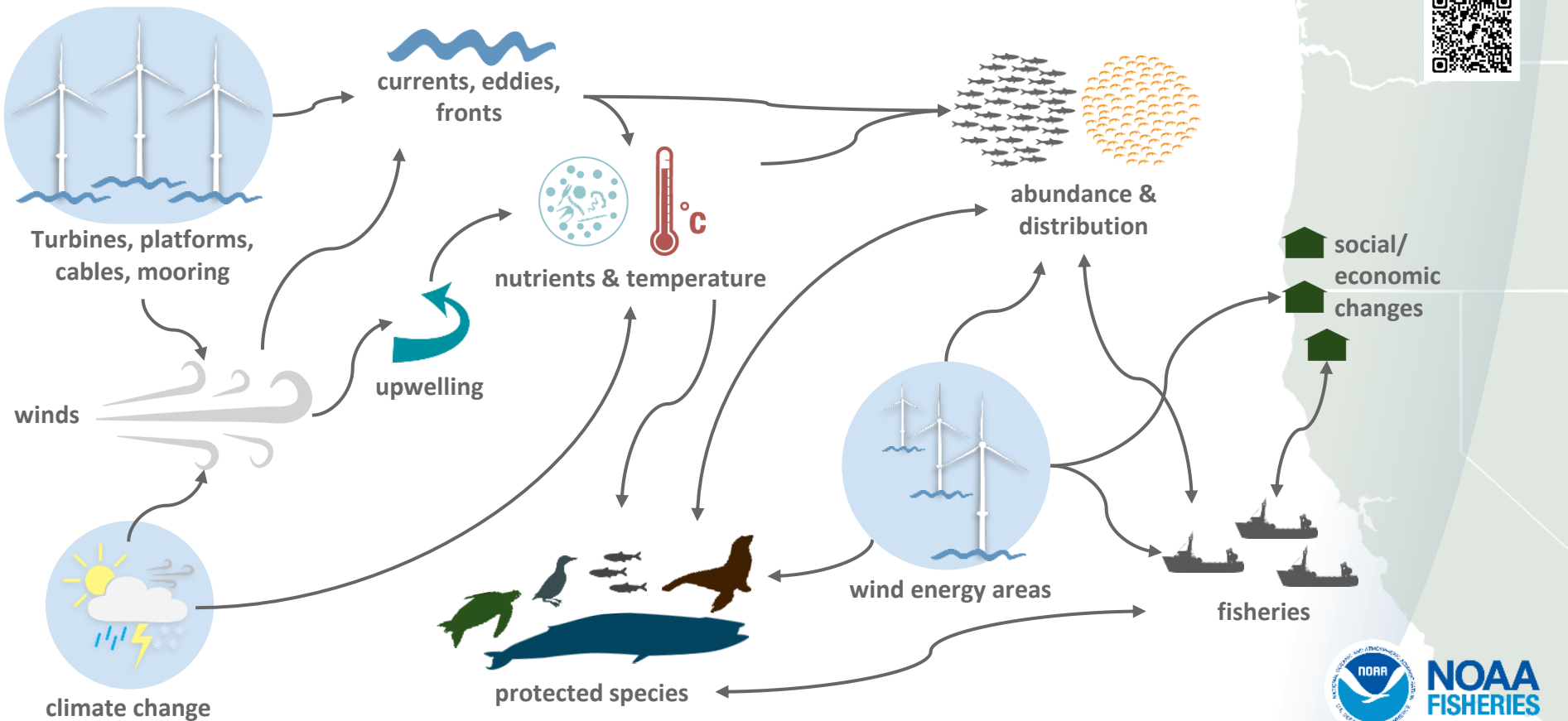


- Guide the Northwest and Southwest Fisheries Science Centers in addressing the scientific information needed to fulfill NMFS' regulatory role in OWE development
- Understand potential impacts on NMFS trust resources
- Support development of strategies to mitigate impacts



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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 to fisheries and fishing communities
- 5 - Ecosystem and climate interactions
- 6 - NMFS' scientific surveys

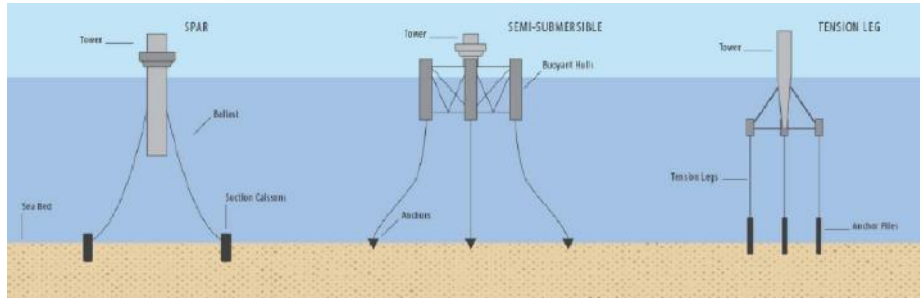
Research priorities identified for each



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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

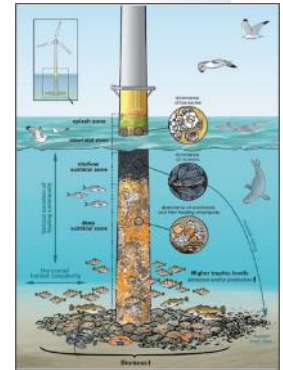


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2 - Physiological and Physical Effects

Potential effects from:

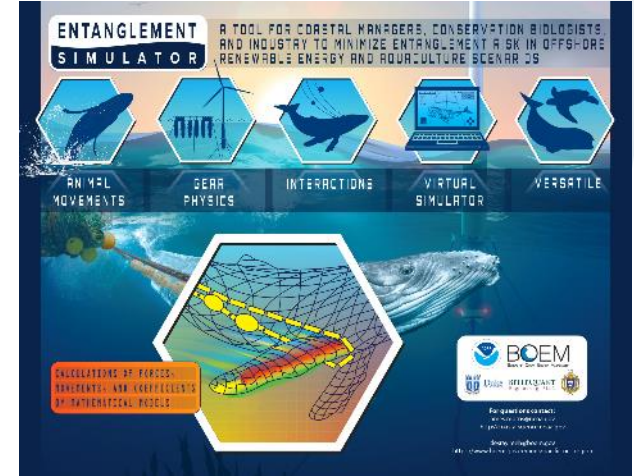
- Noise
- Electromagnetic fields (EMF)
- Infrastructure to act as fish aggregating devices (FADs), haulout structures for pinnipeds, and substrate for invertebrates.
- Physical interactions between migrating species and infrastructure and vessel traffic



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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



Source: westcoastgroundfish.com

4 - Socio-economic impacts to fisheries and fishing communities



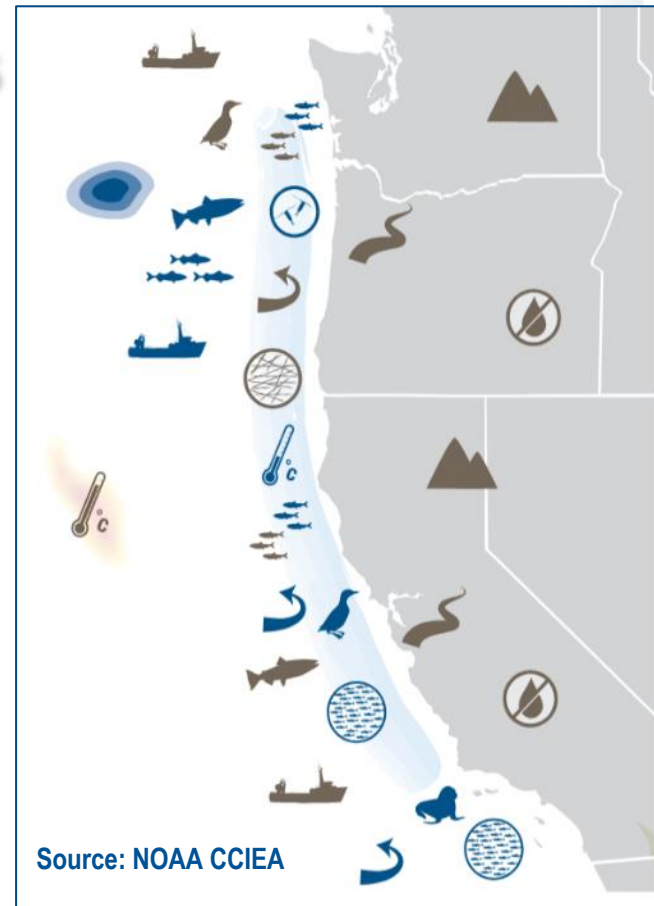
- Create **fishing footprint** atlases.
- Assess fishing **effort redistribution**
- Improve fisheries **economic impact modeling** tools and **community vulnerability** indices
- Understand how **port infrastructure** development will affect different types of fishing activities.
- Evaluate strategies 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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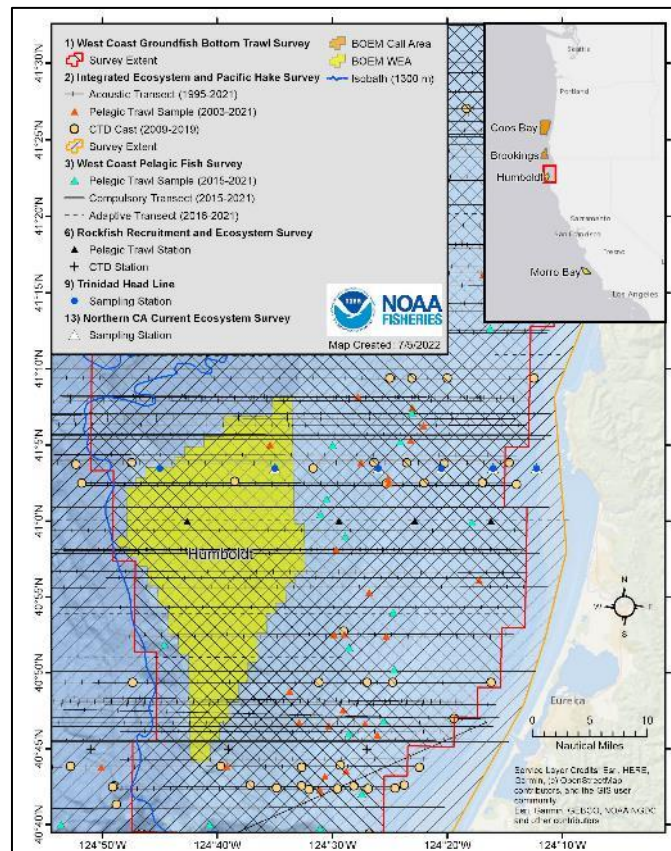
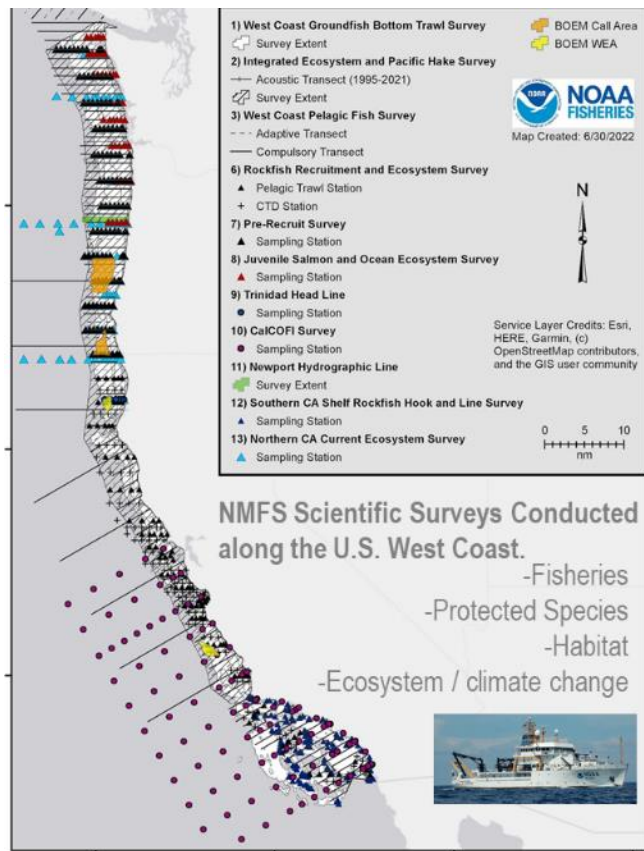
5 - Ecosystem and Climate Interactions

- 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



Source: NOAA CCIEA

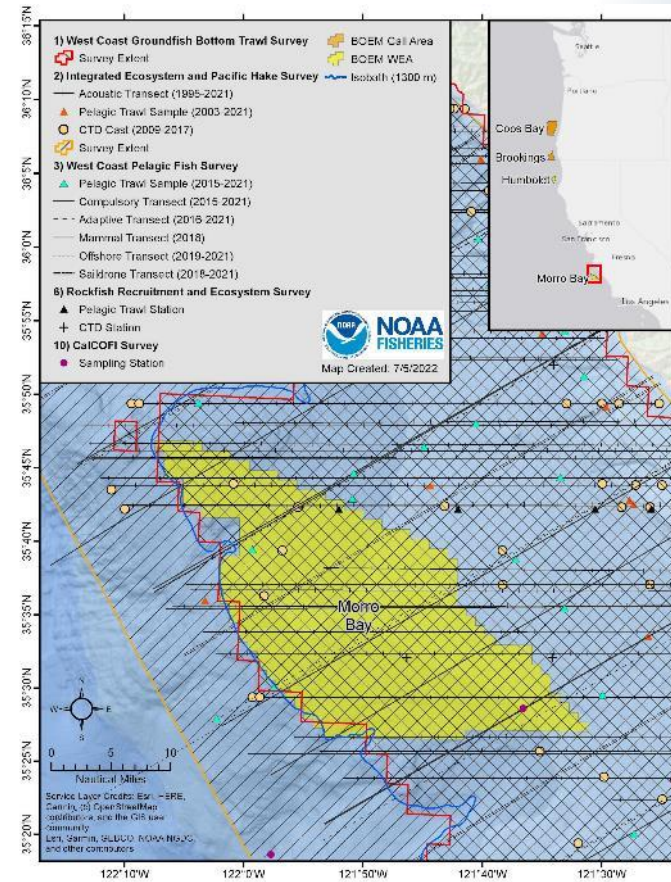
6 - Impacts to NMFS Scientific Surveys



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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



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Opportunities & Challenges

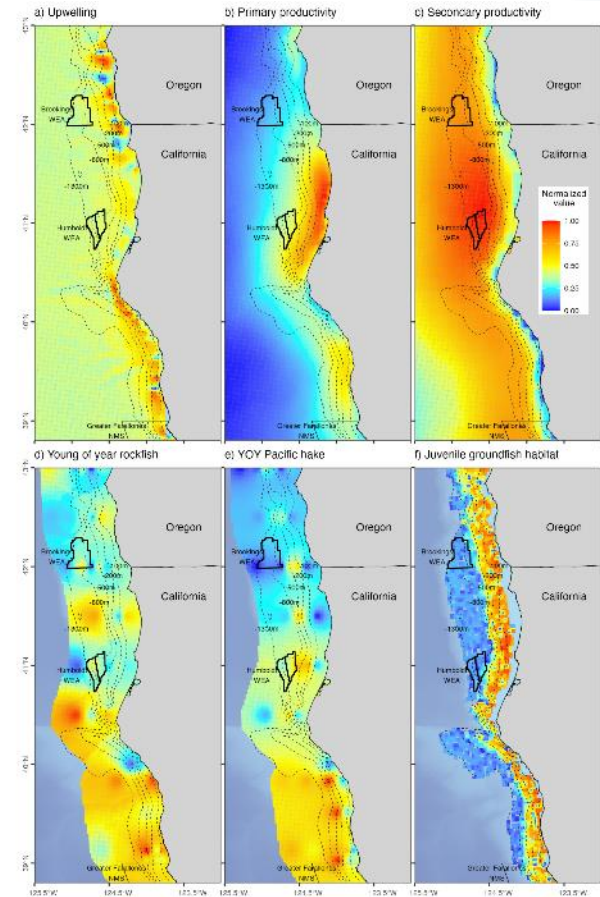
- Collaborations - building on existing partnerships and creating new collaborations
- Integrating regional data infrastructure across studies
- Characterizing baseline conditions
- Disentangling effects from climate change
- Co-use of platforms for fine-resolution, long-term monitoring
- Integration of novel monitoring methods
- Funding



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Examples of studies underway

- Atmospheric & ocean modeling w/ OWFs
- Species distribution modeling
 - Target species for groundfish and albacore fisheries
 - Highly migratory species and protected species
- Population and fisher behavior modeling coupled with loss of survey data effects on assessment and advice
- Alternative survey and platforms (eDNA, gliders, AUVs, etc.)
- Ecosystem indicators relevant to OSW (baseline conditions and siting considerations)



Thank you



**NMFS West Coast
OWE Strategic
Science Plan:**

