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New & Emerging Environmental Science Initiatives:

Focus on marine mammal, bird, and deepwater habitat studies

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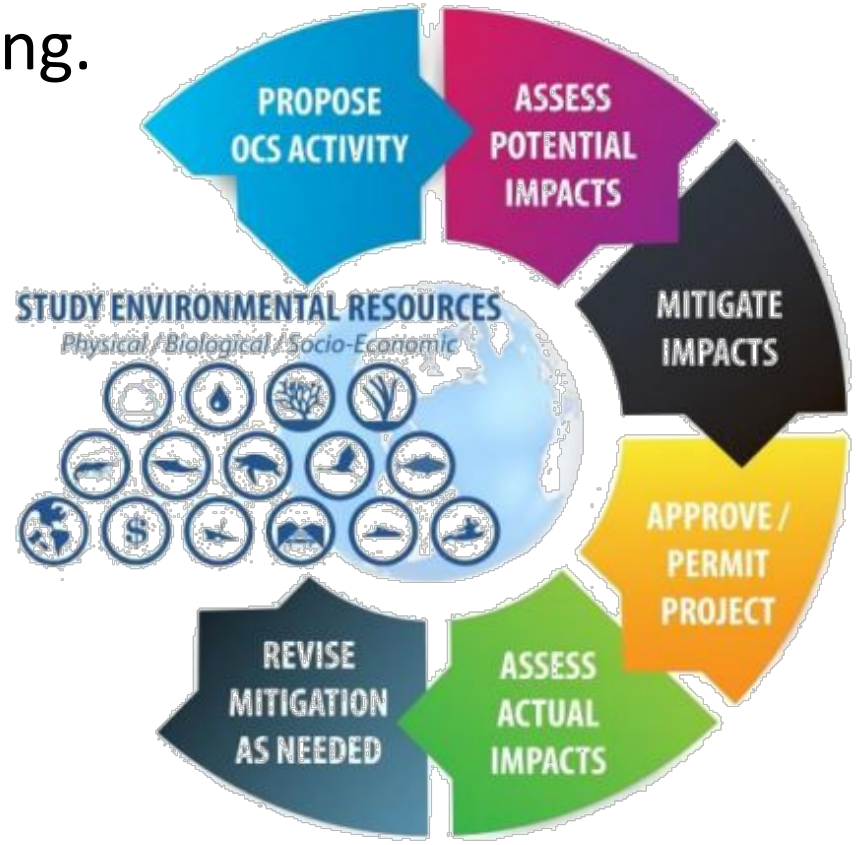
IEPR Commissioner Workshop on Offshore Wind

San Francisco, CA| October 3, 2019

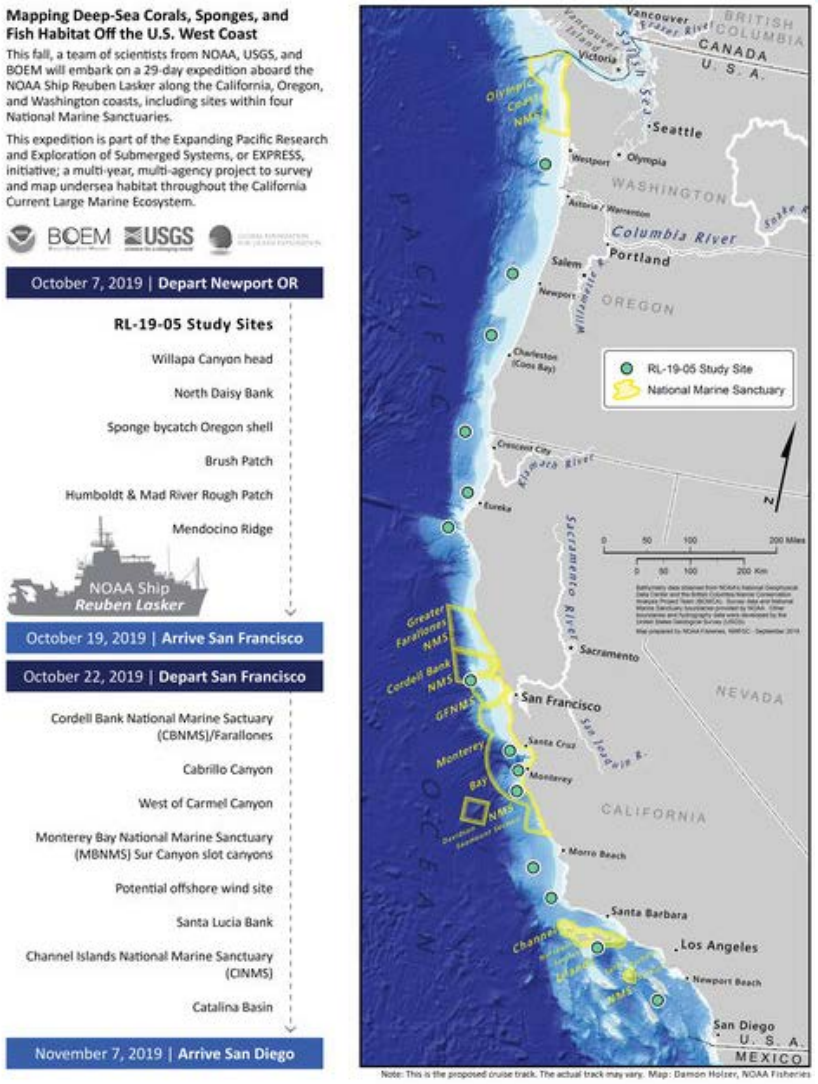
What information does BOEM need?

BOEM's Environmental Studies Program is the primary mechanism through which BOEM funds studies to provide objective scientific information to inform agency decision-making.

1. Effects of Impacting Activities
2. Affected Resources
3. Monitoring
4. Cumulative Impacts
5. Compliance

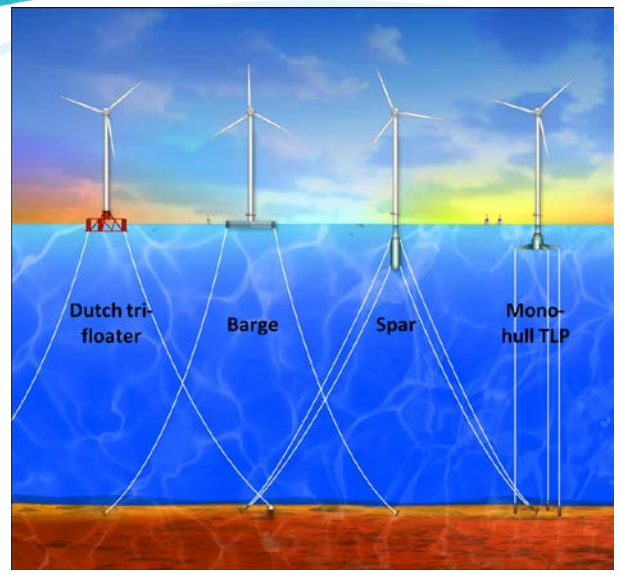


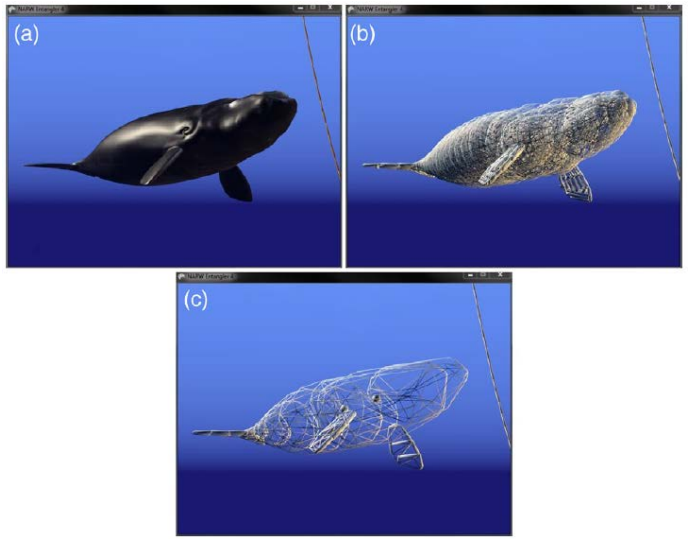
Deepwater Habitat Information



- Need – Identify and characterize sensitive deepwater biological communities (e.g., deepwater corals, cold seeps)
- Why?
  - Provide regional context in advance of potential renewable energy leasing activity
  - Wise use of living marine resources
  - Coastal/submerged hazard mapping and assessment
- How?
  - 22 expeditions to date – largely focused on high-resolution multibeam mapping; ground-truthing effort increasing
  - 29-day NOAA Ship *Lasker* expedition begins 10/7/2019
  - www.oceanexplorer.noaa.gov

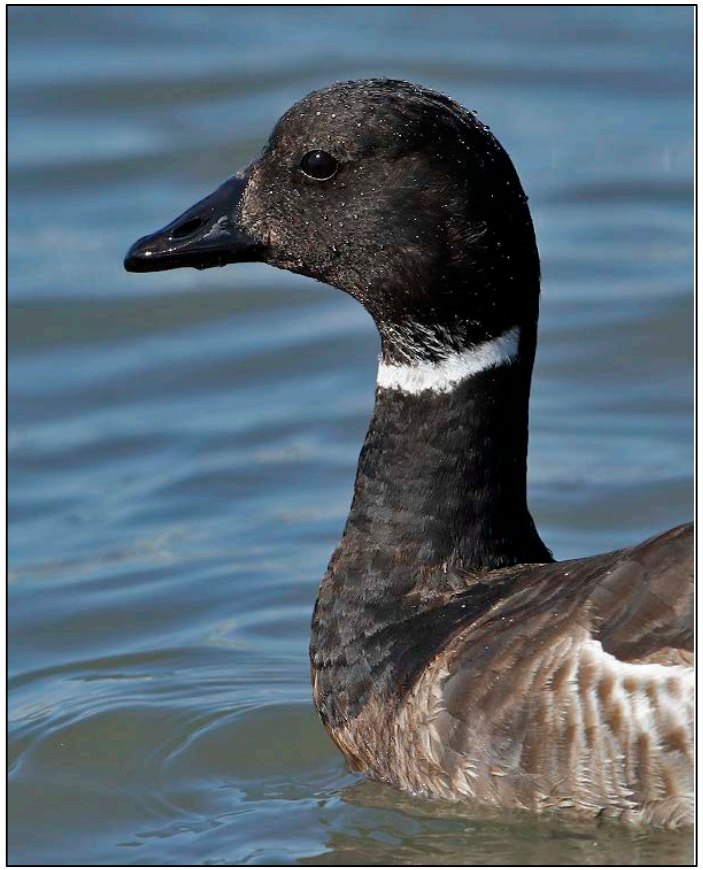
Computer Simulations to Assess Entanglement Risk





- Need - Assess entanglement risk of whale and sea turtles with floating turbine mooring systems and associated derelict fishing gear
- How?
  - Develop morphologically accurate whale (fin, humpback) and leatherback sea turtle digital models
  - Construct digital model of floating turbines mooring systems and associated derelict fishing gear
  - Simulate dynamics of interactions (e.g., behaviors)
- Who?
  - NOAA and BOEM partnership enabled by complementary aquaculture work
  - 2023 estimated completion

Over Water Migration Movements of Black Brant



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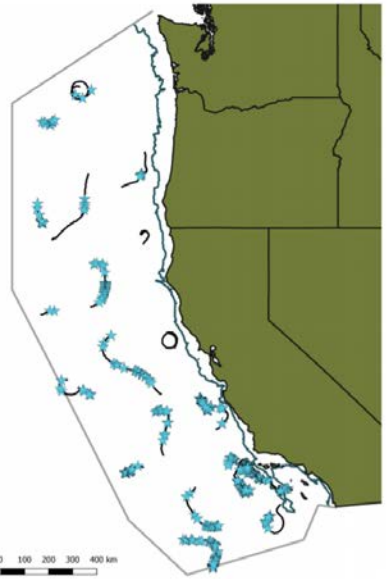
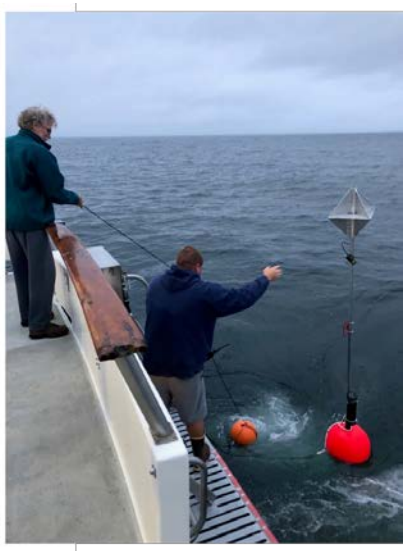
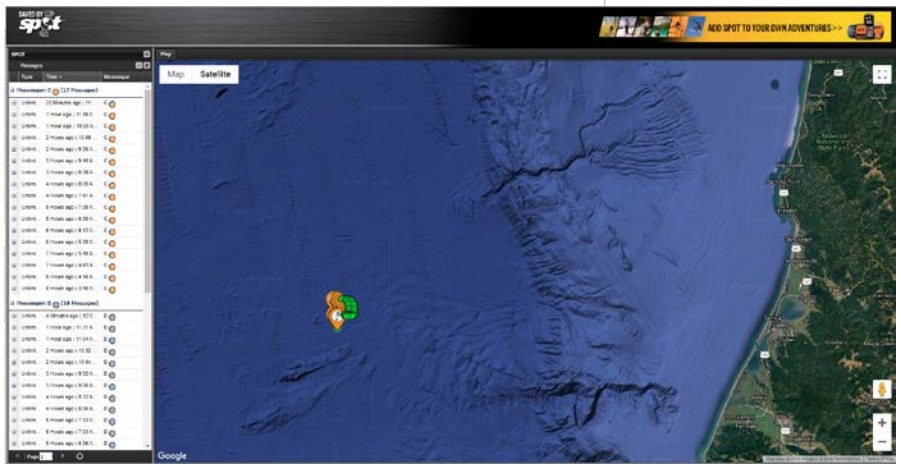
- Need - Identify oversea migratory routes of Black Brant from Alaska to the U.S. Pacific coast to understand pathways, timing, and flight altitude
- Why?
  - Stakeholder interest for Northern California Call Area
  - Game species valued by waterfowl hunters
  - Black Brant (Pacific race) has declined recently
  - Dependent on eel grass beds in coastal lagoons
  - Limited wintering areas include Humboldt and Morro Bays
- How?
  - Outfit 50 Black Brant per year for 3 years with GPS/GSM collars prior to their southbound migration
  - Build off ongoing FWS tagging projects in Alaska

ADRIFT: Passive Acoustic Drifting Buoys to study marine mammals and ocean noise







- Need – Better understand spatial and temporal distribution of cetacean species
- Why?
  - Address both localized and broad-scale habitat use
  - Fill spatial and temporal data gaps
- How?
  - Drifting passive acoustic monitoring: Drifting Acoustic Spar Buoy Recorders (DASBRs)
  - Intend to engage coastal communities and research organizations in buoy deployment/recovery
- Two phases:
  - Phase 1: Northern California to begin in Spring 2020
  - Phase 2: Expansion to entire California Current Ecosystem
- Need funding partners to enable Phase 2

BOEM
Bureau of Ocean Energy Management

Thank You. . .

https://www.boem.gov/Pacific-Studies/
https://www.boem.gov/Pacific-Region-Renewable-Energy/

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