

## POTENTIAL ENVIRONMENTAL IMPACTS OF FLOATING OFFSHORE WIND IN CALIFORNIA'S FEDERAL LEASE AREAS

# Impacts to Whales and Other Marine Mammals



**THE CALIFORNIA CURRENT** ecosystem is home to a great diversity and abundance of marine mammals, including whales, dolphins, seals, and sea lions. Offshore wind energy development could affect marine mammals in a variety of ways, including physical interactions with associated vessel traffic, entanglement, displacement from foraging or migratory habitat, and impacts associated with port activities and redevelopment. (See also Fact Sheet 2. Impacts to Marine Mammals from Pre-Construction Surveys and Fact Sheet 6. Impacts from Noise).



HUMPBAC WHALE

## Research Shows

- **A recent study assessed the relative vulnerability of 42 different marine mammals and sea turtles to human activity (including offshore wind) along the U.S. West Coast. Results suggest that species that use areas farthest offshore, which corresponds to the federal lease areas, are likely the least relatively vulnerable, with some exceptions.**<sup>1,2</sup> Exceptions might include deep water species like beaked whales, which use continental shelf habitat near the lease areas, and are likely among the most sensitive species.<sup>2</sup>
- **Floating offshore wind turbines and farms may displace or alter how marine mammals use habitats around wind farms, however, more research is needed to understand the full implications (negative or positive), underscoring the importance of careful monitoring.**<sup>3,4</sup> For example, changes to migration routes or feeding areas might expend organisms' energy reserves and affect their ability to survive and reproduce; however, other potential effects could be positive as structures may attract marine mammal prey species (e.g. fish).<sup>5,6</sup>
- **Marine mammals that use nearshore or bay environments (e.g. seals or sea lions) may be impacted by increased service and construction vessel traffic, port construction, or other changes to port activities,**<sup>3-5</sup> **especially in Humboldt Bay** where significant port redevelopment is proposed.<sup>7</sup>
- Injury and mortality can occur if marine mammals become directly entangled in inter-array cables or moorings (primary entanglement), become entangled in derelict fishing gear or other marine debris caught on cables or moorings (secondary entanglement), or when an organism is already entangled in an item that then becomes entangled on the structures (tertiary entanglement).<sup>3,5</sup>
- **The overall risk of primary entanglement of marine mammals is thought to be low even for**

## RESEARCH SHOWS CONTINUED

**large whales because mooring lines and cables are taut and large diameter and because marine mammals can likely detect them.**<sup>8</sup> For example, compared to fishing gear, which is a major entanglement risk for whales,<sup>9</sup> offshore wind mooring systems typically use much larger diameter ropes and chains (between ~100 and 240 millimeters compared to only 1-7 millimeters for fishing gear).<sup>8,10</sup> **Some studies suggest that secondary entanglement may pose a greater risk to marine mammals than primary entanglement, with risk increasing when there is more biofouling** (the build-up of plants, algae, small organisms) **around platforms or lines, but more research is needed.**<sup>3,8,11</sup>

- Ship strikes of marine mammals is a concern on the West Coast (especially for larger whales<sup>12</sup>) and floating offshore wind energy is expected to increase vessel traffic. Vessel traffic associated with floating offshore wind is expected to increase less than its fixed-bottom counterpart<sup>3</sup> and mitigation measures have been tested in California.<sup>12,13</sup>
- **A recent modeling study found that the development of the large-scale offshore wind farms in California could theoretically alter upwelling** (a wind-driven process that delivers important nutrients to the coast) **near wind farms by reducing sea surface winds.**<sup>14</sup> **While the study also found that overall net upwelling was unchanged<sup>14</sup>, this area is poorly understood and a concern** for the high-upwelling California coastal ecosystem and the marine mammal species that depend on it.
- On the East Coast, where an increase in strandings, injury, and death of humpback whales have garnered significant public interest, **a recent study found no evidence that fixed-bottom offshore wind development on the Eastern Seaboard played a role in whale strandings or injury. Instead, the study found that existing (non-offshore wind) vessel corridors, shifting prey resources, and associated mortal strikes are the clear source of recent mortalities.**<sup>15</sup>

## References

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