

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

Impacts to Fish and Seafloor Habitats



THE SEAFLOOR provides important habitat for fish to feed, breed, and find shelter. Construction activities and interactions between floating offshore wind mooring components and the seafloor during operation can impact seafloor (benthic) habitats. The introduction of new hard structures can attract fish and invertebrates and can change the amount and variety of species present in the local environment.



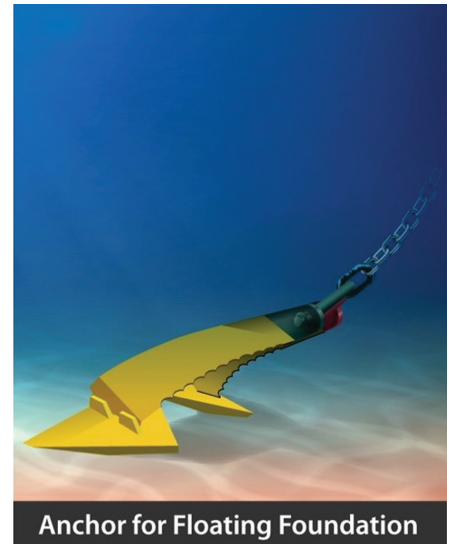
VERMILION ROCKFISH

Research Shows

- **Floating offshore wind farms will be attached to the seafloor with anchors rather than via pilings or a foundations required for fixed-bottom, so disturbances to the seafloor during construction are expected to be less.**

During construction, the cables that connect wind turbines to shore are usually buried in dug trenches on the seafloor unless a rocky seafloor requires coverings like concrete mattresses.¹ Trenching activities will resuspend seafloor sediments, may release chemical contaminants previously buried in the seafloor sediments,² and can cause damage to nearby benthic habitats.³ Seafloor communities normally recover from trenching activities in a few years.^{1,4}

- For some floating platform configurations, chains or mooring lines attached to floating turbines may scour the seabed around the anchor during rough weather.^{5,6}
- **Floating offshore wind may trigger the “artificial reef effect”, where introducing new hard structures underwater attracts many species, including fish and invertebrates.**⁴ This effect is potentially beneficial for some species and is sometimes pursued in other contexts as a conservation tool.⁷ However, the effects can be complex and could also potentially involve negative impacts to certain species,⁶ such as some species expending more energy searching



Anchor for Floating Foundation

Credit: DOE 2022¹

RESEARCH SHOWS CONTINUED

for prey.⁸ There is some potential for biofouling organisms' droppings to enrich the seafloor and cause shifts to seafloor communities, where species that have attached to hard structures shed shells or waste materials that serve as nutrients or habitat for species that could not grow there before.^{1,4}

- **Turbine structures like mooring lines and platforms at the surface and in the water may function as “fish aggregating devices”,** as many oceanic species are attracted to floating structures.⁷ The net impacts of this effect are unknown and it is important to note that the lease areas are a tiny fraction of the depth range habitat.⁷ Additionally, the lease areas may function as marine refuges for fish with changes to fishing efforts within their boundaries.⁹
- Studies of fish around fixed bottom offshore wind farms in Europe have had varied results. In some cases, there was no change to fish communities,¹⁰ while in others the population density of certain fish species increased,^{11,12} and a few studies found negative impacts to some fish species.^{13,14}
- **Overall, while more large-scale studies are needed to assess population-level impacts, the smaller footprint of floating offshore wind turbines both in the water column and on the seafloor is expected to lead to fewer impacts to fish populations compared to fixed bottom offshore wind farms.**⁶
- However, **seafloor habitats and fish species in bays and near to shore are expected to be impacted by port redevelopment and construction, especially in Humboldt Bay** where significant port changes are proposed.¹⁵

References

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