Assessing the impact of the pile-driven signal on the selected marine species from Indian waters

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Rising anthropogenic activities in the ocean have caused underwater noise pollution, which affects marine habitats in many ways. The present study assessed the impact of impulsive signals generated by a piling station on a few selected marine fishes in the Arabian Sea. A modelling approach has been employed to simulate the propagation of pile-driven signals in the low-frequency band. The present study found that pile driving had a significant impact on the hearing thresholds of selected marine fishes. The impact area of pile driving, estimated through the acoustic transmission loss model, was found to vary with environmental conditions and frequency. The study emphasises the need to establish mitigation techniques to lessen the impact of noise pollution on the maritime ecosystem.

Keywords: Acoustic propagation modelling, environmental impact assessment, hearing threshold of marine species, pile-driven impulsive signals, underwater noise pollution.

and meteorological conditions play a pivotal role in acoustic signal variability[12], there is a need to address regional habitat contamination due to various impulsive signals. The present study assesses the impact of pile-driven signals on marine ecosystems and aims to comprehend the vulnerability of regional marine species to noise pollution in the Eastern Arabian Sea. It also discusses the shift in the hearing threshold of marine species in their normal habitat conditions and their spectral variations. Shallow water piling, especially near ports due to many industrial activities, affects the habitat adversely, and the species move towards deeper depths. Hence, a deeper depth station is considered with a very well-defined source level[13]. The present study addressed the range-dependent propagation of the pile-driven signals and the horizontal extent of the impact area with an acoustic model. This model computation concludes that the impulsive signals leave residues on the hearing capability of the selected fishes found in this part of the Indian Seas.

Location and data