Mitigation and Monitoring of Underwater Noise
Sound is a primary means of communication, foraging, navigating and predator avoidance for marine mammals and other marine species.

Various cetacean species have been shown to alter vocalization frequencies or their behavior in the presence of ship noise and other anthropogenic activities.

Consequences/cost of noise exposure (behavioral, hearing damage, systemic or reproductive impacts) are unknown – especially on the population level.

Cumulative impacts remain a concern.
Harassment from Sound Exposure
Marine Mammal Protection Action (MMPA) Definitions

**Level A Harassment**
- has the *potential to injure* a marine mammal or marine mammal stock in the wild (ear injury)
- current focus of mitigation measures

**Level B Harassment**
- has the *potential to disturb* a marine mammal by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild
Zones of Influence for Sound Based on Current Guidance

- **Zone of Audibility**
- **Zone of Responsiveness**
- **Injury Zone**

- More animals will show a response
- Fewer animals will show a response
Noise-producing activities associated with the development of offshore wind facilities

- HRG
- Vessels
- Construction: Drilling and Pile Driving
- Operation & Maintenance
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OBJECTIVES

• Identify effective and practicable mitigations to minimize or avoid potentially harmful acoustic impacts from noise-producing activities

• Understand how to mitigate and monitor acoustic from both day and night activities

• How to assess effectiveness of mitigation techniques

• Discuss standard data protocols, management, and data sharing of data