

**Arctic Mining: Environmental issues,  
mitigation and pollution control for  
marine and coastal mining-  
Workshop March 21, 22, 23, 2023**



<b>Title:</b> Narwhals and underwater noise; new knowledge
<b>Speaker:</b> Mads Peter Heide-Jørgensen
<b>Biography:</b> <i>MPHJ is a professor in marine biology at the Greenland Institute of Natural Resources and the University of Copenhagen. He has worked with North Atlantic marine mammals for &gt;40 yrs and has pioneered several novel techniques for collecting biologging data from marine mammals, including a variety of methods for satellite tracking whales. He is a permanent member of the Scientific Committee of North Atlantic Marine Mammal Commission.</i>
<b>What is the Purpose of your Talk?</b>
To present the latest experimental data as well as real-time information on effects of noise on narwhals
<b>Abstract:</b>
The effects of ship noise and small seismic air guns on narwhals has been studied in a controlled dose experimental setup in East Greenland. Narwhals proved to be extremely sensitive to disturbance, changing speed and swimming direction at distances of up to 24 km from moving vessels. Other behavioral responses included a reduction of feeding and cessation of deep dives. Physiological responses included marked cardiovascular, respiratory and locomotor reactions. Some of the reactions were triggered at distances larger than 40 km from the ship. There were no indications of narwhals being habituated on the short term after repeated exposures to ship noise. A large-scale effect of disturbance of narwhals have been observed in connection with increasing ship traffic over several years to and from the Mary River mine in coastal areas of northern Canada. The most serious observed effect was a massive displacement of narwhals out of Eclipse Sound and into Admiralty Inlet. It has been estimated that about 25.000 narwhals have emigrated from the Eclipse Sound population to the neighboring Admiralty Inlet, with no more than 2.000 narwhals left in 2021. There are no evidence suggesting that the displacement could have other causes like climate change or increased predation from killer whales.