

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



Title: Eelgrass in Greenland- Mapping of distribution and vulnerability in relation to seabed material extraction
Speaker: Dr. David Blockley
Biography: <i>Dr. Blockley provides advice to the government regulators and conducts research related to marine impacts from mining and hydrocarbons exploration. Additional research includes impacts of sea level changes on subtidal benthic ecosystems, monitoring long term biological indicators of climate change and ecotoxicology.</i>
What is the Purpose of your Talk? Environmental impacts, monitoring and assessment for impacts of shallow coastal mining on marine vegetation.
Abstract: Eelgrass is the only flowering plant that grows in the sea around Greenland. In the fjord near the capital, Nuuk, eelgrass forms geographically isolated populations of plants in the inner- most and warmest fjord arms. Eelgrass meadows have an important function as habitats and food sources for a wide range of organisms, and thus can support a rich animal and plant life on an otherwise species poor sandy bottom. However, the distribution and growth of eelgrass in Greenlandic fjords is limited by the low sea temperatures and so the quantitative importance is not as great as in more temperate environments. Nonetheless, eelgrass is categorized as "vulnerable" on the Greenlandic endangered species list and is at risk from anthropogenic disturbance. One of the most notable risks to eelgrass meadows in Greenland is from the seabed extraction of sand and gravel via ships equipped with a suction pipe lowered onto the seabed. A slurry of water and materials are pumped from the seabed up into the ship, with excess water and fine material continuously discharged over the side. This process can leave holes up to 10 m deep and about 30 m in diameter and can result in the absorption of organisms and destabilization of the seabed. The discharge water containing fine sediments forms a plume which makes the water opaque, reducing light penetration, potentially limiting growth of marine plants. Eventual settlement of the plume may also smother bottom dwelling organisms. Mapping of the distribution of eelgrass was carried out at the sites where a permit for dredging had been applied for and where there was also an expectation of eelgrass occurrence. To assess the actual distribution of eelgrass in the relevant locations, a handheld underwater video camera was used to record the seabed and the presence of eelgrass. At all the sites studied, in Kobbefjord and in Ameralik Fjord, the occurrence of eelgrass was confirmed in sand habitats adjacent to current or potential dredging activity. To ensure the protection of eelgrass, it is recommended that dredging be carried out only with a safety distance of 500 meters from identified eelgrass meadows to protect plants from physical damage or impacts from increased silt. Future work would further refine and map the distribution of eelgrass in relation to all dredging activity. There is also a need for monitoring programmes to determine temporal trends in distribution and to understand any impacts from ongoing dredging activity.