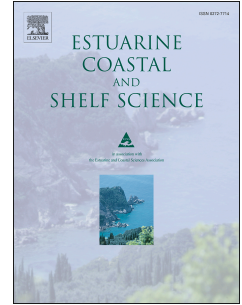


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Mapping and classifying the seabed of the West Greenland continental shelf

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### 7 **Abstract**

8 Marine benthic habitats support a diversity of marine organisms that are both economically and intrinsically  
9 valuable. Our knowledge of the distribution of these habitats is largely incomplete, particularly in deeper  
10 water and at higher latitudes. The western continental shelf of Greenland is one example of a deep (up to  
11 500m) Arctic region with limited information available. This study uses an adaptation of the EUNIS seabed  
12 classification scheme to document benthic habitats in the region of the West Greenland shrimp trawl fishery  
13 from 60°N to 72°N in depths of 61-725m. More than 2000 images collected at 224 stations between 2011-  
14 2015 were grouped into 7 habitat classes. A classification model was developed using environmental proxies  
15 to make habitat predictions for the entire western shelf (200-500m below 72°N). The spatial distribution of  
16 habitats correlates with temperature and latitude. Muddy sediments appear in northern and colder areas  
17 whereas sandy and rocky areas dominate in the south. Southern regions are also warmer and have stronger  
18 currents. The Mud habitat is the most widespread, covering around a third of the study area. There is a  
19 general pattern that deep channels and basins are dominated by muddy sediments, many of which are fed  
20 by glacial sedimentation and outlets from fjords, while shallow banks and shelf have a mix of more complex  
21 habitats. This first habitat classification map of the West Greenland shelf will be a useful tool for researchers,  
22 management and conservationists.

23 **Key words:** benthic habitats; habitat modelling; vulnerable marine habitats; deep sea; trawling  
24 impact; sea bed imaging

25

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