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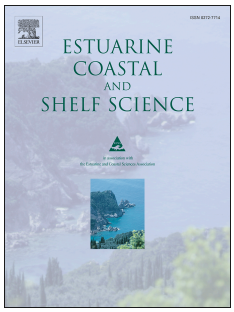

Mapping and classifying the seabed of the West Greenland continental shelf

S. Gougeon, K.M. Kemp, M.E. Blicher, C. Yesson

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Author names and affiliations: S. Gougeon[a], K.M. Kemp[a], M.E. Blicher[b], C. Yesson[a*]

[a] Institute of Zoology, Regent's Park, London NW14RY, UK, [b] Greenland Institute of Natural Resources, Box 570, Kivioq 2, 3900 Nuuk, Greenland

* **Email address:** chris.yesson@ioz.ac.uk

* **Tel number:** 020 7449 6267, **Fax number:** 020 7586 2870

Abstract

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

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