

## ECOLOGY OF LIVE BENTHIC FORAMINIFERA FROM THE WHITTARD CANYON (NE ATLANTIC)

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Living (Rose Bengal stained) benthic foraminifera were investigated at 18 deep-sea stations sampled in the Whittard Canyon area (NE Atlantic). The stations were positioned along 4 bathymetric transects ranging from 300 to 3000 m depth: two along the main canyon axes (Western and Eastern branches) and two along adjacent open slopes (Western and Eastern slopes). The aim of this study was to assess changes of foraminiferal standing stock, diversity and microhabitat in relation to the physico-chemical conditions prevailing at and below the sediment-water interface. Minimal oxygen penetration depths and maximal diffusive oxygen uptake were recorded at upper canyon stations suggesting a higher mineralisation rate in the canyon heads. It is confirmed by high phytopigment concentrations measured in the sediment of the upper canyon axes. Foraminiferal abundance is positively correlated with (1) species richness, (2) diffusive oxygen uptake and (3) phytopigment concentration in the sediment. It suggests the key role of organic matter fluxes on the foraminiferal communities (standing stock and diversity). Foraminiferal abundance is generally higher along the canyon axis compared to open-slope sites at comparable water depths. It confirms a preferential transport of organic detritus into the canyons. The species composition varies (1) with water depth along all of the four transects and (2) between canyon branches and adjacent slopes. Higher abundances of agglutinated taxa such as *Reophax* spp., *Eggerella bradyi*, *Ammobaculites agglutinans* are observed at the open slope stations, whereas calcareous species dominate the canyon branches. This faunal difference may be related to food scarcity on the slopes, and suggests that the dominant calcareous taxa are strongly favoured by a higher supply of labile food particles. The silty/sandy intercalations at many of the deeper canyon stations may have been rapidly deposited by fairly recent gravity flows. At station 51WB (3002 m), the faunal characteristics (strong dominance, shallow infaunal microhabitats) suggest that the foraminiferal community is in an early state of ecosystem colonisation after these recent sedimentation events, which would have supplied the important amounts of phytopigments.

Keywords: benthic foraminifera, NE Atlantic, Ecology, Canyon, Open slope