DEEP-WATER OYSTER CLIFFS AT LA CHAPELLE CONTINENTAL SLOPE

(ARMORICAN MARGIN)

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Within the framework of the EC projects FP6 IP HERMES and FP5 RTN EURODOM, as well as the
ESF Euromargins project MoundForce, Ghent University organised a joint geophysical and biological
research cruise to the La Chapelle continental slope with R/V Belgica from 13 to 20 June 2006. This area
was targeted for its reported cold-water coral finds (Le Danois, 1948), rugged topography and
hydrodynamics in a setting linking the shelf seas to the deep marine realm. The area was first surveyed
using R/V Belgica's multibeam echosounder, imaging canyon heads and thalweg channels between
prominent spurs where corals had been reported. High-resolution seismic sparker lines provided a
textual context and linked into the existing seismic stratigraphy (Bourillet et al., 2003). Here, we present
preliminary results of the La Chapelle area, including the geological and biological ROV GENESIS image
analysis which revealed a hidden ecosystem of deep-water oyster banks down to 700 m.

The ROV GENESIS dives were mainly concentrated along NW-SE ridges alongside the eastern
slope of a newly mapped and yet unnamed spur. The hence called “Ostrea Spur” has a main NE-SW
orientation in water depths from 150 to 1100 m. The slopes of the spur are intersected by a ‘herringbone’
like pattern of WNW-ESE orientated gullies on the western slope and NNW-SSE orientated gullies on the
eastern slope.

The 2 successful dives along the “Ostrea” Spur revealed a sandy to muddy bioturbated seabed,
curious bedforms and erosion exposing consolidated carbonate-like sedimentary sequences. These are often
cut by vertical step-like escarpments or cliffs up to 10 m high. Ripple marks were also observed on the
ROV images, indicating the presence of strong bottom currents, possibly originating from internal tides
focused along the canyon axis (New, 1987; Pingree & Le Cann, 1989). At the base of the cliffs, fallen
blocks provided settlement sites for sessile organisms whilst the cliffs and protruding banks revealed dense
communities of giant oysters, forming a 3D assemblage with occasional cold-water corals (Lophelia
pertusa). Though deep-water ‘oyster banks’ of Neopyncodonte cochlear had already been reported in the
Bay of Biscay based on dredges, the larger and deeper Neopycnodonte observed during the ROV GENESIS
dives likely belongs to a new species, which have remained hidden to the human eye up to now.
Unfortunately the lack of living samples does not allow an exact, phylogenetic identification of the oysters
involved in the formation of dense and rich ‘hotspot’ communities on the eastern slope of the “Ostrea”
Spur.

features from the outer shelf to the deep-sea fans. Journal of Quaternary Science, 18 (3-4), 261-282.
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