

SHALLOW MARINE CAVES AS MESOCOSMS OF THE DEEP-SEA: THE "3PP CAVE" EXAMPLE

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Shallow marine caves share ecological features with the deep sea: darkness, oligotrophy, reduced water circulation. Significant faunistic ties exist between caves and the deep sea. However, a unique cave from the French Mediterranean presents yet another similarity. Due to its descending floor, the cave traps cold and dense water in its inner parts. As a result, the temperature of the cave remains stable and low (ca. 13-15°C, i.e. the Mediterranean deep-sea temperature) throughout the year. Known to scientists since the early 1990's, the cave has provided many surprises: a population of deep-sea hexactinellid sponges, carnivorous sponges, and several other deep-sea taxa. The 3PP cave also acts as a shelter from the warming of the Mediterranean, for some stenothermal species. Cave temperature, and the main biotic features (sponges, mysids) are monitored through time. This natural mesocosm of the deep Mediterranean, accessible by divers (25 m), has been the focus of recent efforts coordinated by the DEEPSETS RMP (MARBEF), focusing on the cave floor. Harpacticoid copepods and nematodes show striking similarities (quantitatively and qualitatively) with meiofaunal patterns of abyssal deep-sea sediment.

Session 1.10. Patterns and drivers in the distribution of marine biodiversity: in homage to John Gray

Chairs: Paul Somerfield and Richard Warwick

MACROECOLOGICAL PATTERNS IN DIVERSITY OF MARINE BENTHIC CILIATES: DO MICROBS HAVE MACROECOLOGY?

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The data on occurrences of over 1300 species of marine benthic ciliates compiled from more than 220 sources are used for studying world-wide distribution and diversity of the group. No clear geographical correlates are found in faunistic composition, especially on genera or families levels. Regional endemism is much lower than for macroorganisms. Regional-scale diversity depends neither on total area nor coastline length and does not show any latitudinal gradients. At the same time, it highly correlates with investigation effort expended in the region and (negatively) with average salinity. Local-scale diversity does not correlate with regional diversity and does not show any latitudinal trends. Moreover, region-averaged local diversity values demonstrate striking world-wide resemblance (120-140 species per site). By contrast, the point diversity (average number of species per station) turns to be positively related with absolute latitude, while the beta-diversity demonstrates the opposite trend. We suggest that marine benthic ciliates demonstrate many macroecological patterns that consistently contradict the regularities commonly obtained for macroorganisms. Thus, even if ciliates have macroecology, it is very specific and quite differs from those for macroorganisms.

THE DIVERSITY OF HARPACTICOIDA (COPEPODA) UNDER AND AWAY FROM A FISH FARM

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Fish farming is one of the anthropogenic drivers of change of meiofauna communities worldwide. The meiofauna and in particular harpacticoid copepod diversity were studied along 2 transects within a 100 m distance from the fish farm in the shallow Bay of Piran (North Adriatic) during 2 seasons. Most of the variance between the samples at the higher taxa level was due to changes in kinorhynch and harpacticoid copepod abundances. Copepod abundance increased away from cage and a shift in species composition was detected. Under cages *Bulbamphiascus* n. sp. 1 accounted for the majority of the abundance in spring and summer. This dominant genus was represented by high numbers of CV copepodites under the cage. In control samples (100 m from cage) the species richness was significantly higher. Other species (e.g. *Stenhelia* sp) showed an increased abundance away from cages. The distribution of individual biomass of copepod communities tended to larger copepods under

cage. The present study focuses not only on structural diversity (species number), but also on functional diversity (species identity) and its importance for ecosystem functioning of a muddy bottom.

THE IMPACTS OF THE DEMERSAL HAKE TRAWL FISHERY ON BENTHIC BIODIVERSITY IN SOUTHERN AFRICA
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The South African commercial trawl fishery originated in the early 1900s and targets the highly sought-after gadoid hake species *Merluccius capensis* and *M. paradoxus* in a near continuous band between 300 and 800 m depth from the west to the south-east coasts of South Africa. The transboundary nature of the hake stocks between South Africa and Namibia, where an equally large hake fishery exists, has encouraged joint research and management cooperation between the two countries, for the demersal trawl fishery. The hake fishery is the largest and most lucrative of South Africa's fisheries and was awarded the environmentally sustainable Marine Stewardship Council certification in 2004. The impact of trawling on the benthic environment has however been identified as a major risk to the sustainability of this fishery. The fishery is currently under review for re-certification of this award and requires investigation of potential benthic impacts. Elsewhere studies have shown that demersal fishing gear can impact significantly on benthic biodiversity, however, such effects have never been examined in southern Africa. The aim of this study is to quantify the impacts of the demersal trawl fishery on abundance, biomass and diversity of benthic macrofauna and epifauna in soft bottom habitats along the southern Benguela region. Benthic macrofauna and epifauna were sampled in areas of light vs. intense fishing activity (note: no trawl grounds in this region are afforded any protection from fishing activities hence the necessity to compare light vs. intensely fished areas) at four sites and analysed for significant differences using multivariate techniques (PRIMER). Environmental variables (depth, salinity, temperature, sediment type and organic content) were evaluated, with no significant differences between light vs. intensely trawled areas resulting at each of the four sites. Results strongly indicate that the disturbance induced by demersal fishing contributes towards changes in benthic macrofauna and epifauna community compositions. Whilst no significant differences in diversity indices are evident in macrofauna communities, the species present in heavily trawled areas are significantly different from those in lightly trawled areas. The epifauna communities appear to be severely impacted by trawl-induced disturbance. The implications of these results, and future studies of ecosystem functioning, are discussed.

Session 1.11. The taxonomic component of marine biodiversity

Chairs: Geoff Boxshall; Christos Arvanitidis

MORPHOMETRIC ANALYSIS OF THE GENUS TERSCHELLINGIA DE MAN, 1888 (NEMATODA, LINHOMOEIDAE) WITH DISCUSSION OF THE DIAGNOSTIC FEATURES AND IDENTIFICATION KEY TO THE SPECIES

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The cosmopolitan genus *Terschellingia* (Nematoda, Linhomoeidae) is a problematic taxon. Its species show high morphological plasticity, possess few diagnostic characters and identification keys are lacking. A revision of the genus was carried out based on data from the literature and from light and electronic microscopy. The diagnosis of genus was emended. Of the current 37 nominal species, 15 are considered as valid species based on characters related to amphidial fovea, cephalic and cervical setae, shape of oesophageal bulb, spicular apparatus and tail shape. Tabular and pictorial keys were provided based on these characters. The sympatric species: *T. communis*, *T. goubaultae*, and *T. longicaudata* were redescribed based on recently collected Cuban specimens. They showed relatively large differences in body size in comparison with the holotypes, suggesting variation due to local environment. The highest intraspecific variation pertains for the cosmopolitan species *T. longicaudata*, suggesting that morphological plasticity enhanced adaptation to environmental conditions. The notable taxonomic inflation within the genus (13 inquirenda species, 9 junior synonyms), probably also present in other highly speciose genera of marine nematodes, leads to overestimation of the alpha-diversity.

GREEN NON-MOTILE PICOPLANKTON, PHYLOGENY, PIGMENTS AND FINE-STRUCTURE.

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