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hand, transitional waters of the Azores are located at the geomorphologically peculiar Fajãs of São Jorge Island, with a strong human influence on their margins, bed and communication with the sea. The knowledge of Azorean coastal waters quality based on the known quality parameters required by WFD is fragmentary and there is no temporal data series. Bibliography is dispersed and of variable quality. The present project aims at gathering temporal data to clarify the status of these water masses and to develop and test methodologies that will be used in future monitoring programmes.

P3.30

High-latitude species of marine amphipods are less adaptable to climate change than their temperate counterparts

Rastrick SPS, Whiteley NM

To further examine the adaptability of polar marine invertebrates to climate change, metabolic rates (MR) and thermal tolerances were determined in several species of ecologically important marine gammarid amphipods living at different latitudes (78-38°N). Comparisons were made between an Arctic species, *Gammarus setosus*, a cold-temperate species, *G. oceanicus*, and a warm-temperate species with Mediterranean ancestry, *G. locusta*. MRs, measured as rates of oxygen uptake, were taken at the habitat temperatures recorded at the time of capture and scaled to a standard wet mass of 1mg. Between species, MRs were significantly lower (Kruskal-Wallis  $P < 0.001$ ) in *G. setosus* and arctic populations of *G. oceanicus* than in *G. locusta*. Thermal tolerance and aerobic scope also decreased at higher latitudes. Arctic populations (78°N) of *G. oceanicus* had significantly (Kruskal-Wallis  $P < 0.05$ ) lower MRs than more temperate populations (58°N). In contrast, latitude had no effect on the MRs of *G. locusta*. When acclimated to a common temperature, more northerly populations of *G. locusta* exhibited an up-regulation of MR. This was not observed in *G. oceanicus* which exhibited greater temperature dependence. It appears that warm-temperate species compensate for temperature-related changes in MRs, whereas the Arctic/cool-temperate species do not. Such differences could be related to their ancestral origins and thermal histories, as well as latitudinal variations in the thermal-stability and total energy budget of the environment. This may lead to species-related differences in the ability to survive further environmental change.

P3.31

Does the oligogulonate-activated oxidative burst affect the defensive capacity of *Saccharina latissima*?

Rickert E, Weinberger F

We investigated the response of surface associated living bacteria after eliciting the brown alga *Saccharina latissima* with homooligomeric guluronic acid. This oligosaccharide is generated during enzymatic microbial attacks upon the alginic cell wall matrix of kelps and triggers an oxidative burst followed by a measurable release of hydrogen peroxide into the surrounding medium. Previous laboratory studies have shown for kelps that oligogulonate activates or induces defensive mechanisms against endophytic algae and epiphytic bacteria. It was reported that inhibition of the oxidative burst in *Macrocystis pyrifera* and *Laminaria digitata* directly resulted in a loss of the defensive

capacity against epiphytic bacteria. In our field study, in contrast, an induced oxidative burst in *S. latissima* did not significantly affect the number of associated living bacteria. Moreover, sporophytes treated and untreated with oligogulonate and exposed in the Baltic Sea at 16 psu developed similarly well, suggesting that *S. latissima* regulates the dispersion of epiphytic bacteria either through oligogulonate-induced gene expression or in another effective way. We also present additional laboratory experiments regarding the defence capacity of *S. latissima*.

P3.32

New additions to the Azorean algal flora with ecological observations on rhodoliths formations

Rosas-Alquicira EF, Couto RP, Neto AI, Riosmena-Rodríguez R

Nongeniculate coralline algae are abundant and ecologically important at the Azorean littoral. Despite their importance and abundance, they have been only sporadically investigated with a few papers reporting their presence in the archipelago. This study reports for the first time the occurrence in the Azores of *Spongites yendoi*, *Lithophyllum corallinae* and *Phymatolithon calcareum*. The first two were found in Ilhéu de Vila Franca-São Miguel Island, while the third in Lajes do Pico-Pico Island. All the species were found as rhodolith-forming species. In each locality the depth range and approximated area of rhodoliths were obtained in situ, while the cover percentage and rhodolith sampling was done from three 20 m long transects, where four quadrats (25 cm x 25 cm) per transect were randomly selected. For each rhodolith the mean branch density and sphericity level was also obtained. Significant differences were found on the percentage cover, maximum length and sphericity between both Islands, the higher values registered for São Miguel. No significant differences were found on the mean density and branch density between both Islands. The sphericity differences between isles seem to be influenced by the hydrodynamic conditions but further studies are necessary to confirm this. Further studies on the taxonomy of the nongeniculate coralline algae in the Azores will be important to determine the real biodiversity of this group in the area.

P3.33

Are the reported coralline red seaweeds species for the Macaronesian region taxonomically still valid?

Rosas-Alquicira EF, Riosmena-Rodríguez R, Neto AI

The Macaronesian region, characterized by a mixed algal flora with temperate and tropical elements, is considered as an important biodiversity hot spot in the north-eastern Atlantic. The Order Corallinales is an important element in this region, with records going back to the 1800's (Canaries Archipelago) and many specimens housed in different herbariums. The taxonomy of this group has been re-evaluated on the last century but only a few species were reviewed. As a result there is no consensus on the nomenclature of most species, neither a revision of the coralline red algae taxonomy in the Macaronesian. This work is the first critical recompilation of the Macaronesian coralline red algal species. It aims to clarify nomenclatural problems and re-evaluate the Macaronesian Corallinales. The published information for the region was reviewed

and commented according to modern concepts of taxonomy. From a total of 121 names reported (33 geniculate and 88 nongeniculate), only 84% were considered valid, respectively 36 % for geniculate and 48 % for nongeniculate species. Non-valid records correspond to: a) misapplied names that require verification, b) possible heterotypic synonyms, and c) lost, unknown or not designated type material. Worth mentioning is also the uncertain status of 14 possible endemic species. A taxonomic revision of the Macaronesian coralline seaweeds is now in progress aimed at clarifying the Corallinales biodiversity in the region.

P3.34

### Assessing population structure of European Anchovy in the Central Mediterranean by means of traditional and geometric morphometry

Saborido-Rey F, Basilone G, Traina A, Ferreri R, Caruana L, Bonomo S, Masullo T, Cuttitta

A, Mazzola S

The small pelagic fisheries represent the main fishing resource worldwide. European Anchovy (*Engraulis encrasicolus* L. 1758) is an important economic resource both at national and local levels in the Strait Sicily, as well for fishing industries and canning companies. It's well known how this species, as other Clupeids, undergo relevant interannual fluctuations, due to environmental and anthropogenic (overfishing) factors. This fluctuations could damage the local economy. Hence the biomass evolution monitoring it's important. The basis for a correct assessment and management is the knowledge of the population structure and migrations patterns of exploited resources. Stock identification is an integrated component of modern management of economically important species. The study area regarded, mainly, the waters around Sicily (Terrasini, Trapani, Sciacca, Agrigento and Pozzallo) and other two distinct areas in Tunisian (Kelibia) and in Adriatic Sea (Civitanova Marche). The population structure analysis has been conducted by means of two morphometric methods: the first is a tested technique, the "traditional morphometric"; the second one is a relatively recent technique, the "geometric morphometric". Both methods gave similar results which support the existence of a single population in the study areas (Adriatic Sea, Tunisia and Sicily). Nevertheless, a higher separation degree between Sicilian stock and Adriatic stock was detected, while the difference between stocks from northern (Sicilian coast) and southern (Tunisia) Sicily Strait was not significant. This results are very relevant for the management and conservation of this shared resource among Tunisian and Italian water, also if more efforts have to be addressed to deeply investigate the sudden findings with migration patterns reconstructions.

P3.35

### Concentrations of natural products are associated with certain bacterial types in the sponge *Aplysina aerophoba*

Sacristán O, Banaigs B, Casamayor EO, Becerro MA

Sponges have long been known as a rich source of bioactive natural products that can play multiple ecological roles. Sponges are also known to host large amounts of endobiotic bacteria within their tissues. Although the role of these bacteria on sponge biology and

ecology is far from being fully understood, endobiotic bacteria are known to be involved in the production of certain secondary metabolites in sponges. The sponge *Aplysina aerophoba* has a high diversity of brominated natural products and microorganisms. The brominated compounds are located within sponge cells but the enzyme that incorporates the halogenated metals to the organic compound has been exclusively described in algae and bacteria. Bacterial communities within *Aplysina aerophoba* could therefore play a major role in the biosynthesis of these brominated compounds. To investigate whether the concentration of brominated compounds in *Aplysina aerophoba* relates to its endobiotic bacterial community, we quantified major brominated compounds by HPLC (High Performance Liquid Chromatography) and bacterial types by DGGE (Denaturing Gradient Gel Electrophoresis). We also induced changes in the cyanobacterial population within *Aplysina aerophoba* by experimentally limiting the amount of light received by sponges for a period of three months. Then, we investigated whether light caused variation in the production of secondary metabolites, in the associated bacterial community, and checked whether those changes were correlated. We found great chemical and bacterial diversity in *Aplysina aerophoba*. We also found strong correlations between several natural products and specific bacterial types. Our results suggest that bacteria could either be involved in the production of brominated compounds or be affected by them. To our knowledge, this is the first report of a quantitative association between natural products and bacterial populations in any benthic organism. Further investigating these types of associations will shed light on the role of species interactions in the organization and functioning of these host-endobiont ecosystems.

P3.36

### Predator-prey interactions between *Hexaplex trunculus* (Gastropoda: Muricidae) and the black mussel *Mytilus galloprovincialis* (Bivalvia: Mytilidae) in the Gulf of Trieste

Sawyer JA, Zuschin M, Riedel B, Stachowitsch M

*Hexaplex trunculus* is one of the most abundant muricid gastropods in the Mediterranean Sea. It lives on a variety of substrates and is commercially important as a consumer of cultured bivalves. Beyond a laboratory study by Peharda and Morton (2006) on its feeding behaviour, relatively little is known about *H. trunculus*'s ecology. That study documented two modes of attack on *Mytilus galloprovincialis*: drilling and marginal chipping. Drilling is a safe, but slow mode of predation. Marginal chipping is faster, but somewhat dangerous: the gastropod's shell may be damaged, or the bivalve's shells may snap together during feeding and amputate the gastropod's proboscis. The Peharda and Morton (2006) study found no preference in wedging versus drilling predation, and no preference for prey size by large *H. trunculus* predators. The present study examines the predatory mode and size choice of large *H. trunculus* in its natural habitat. Four samples were collected from a single mytilid bed at a depth of 24m on a muddy-sand substrate in the Gulf of Trieste over two summers using SCUBA. A 0.25m<sup>2</sup> quadrat was placed randomly on the mussels, and all material within the quadrat collected. Living *H. trunculus* and *M. galloprovincialis* were measured (length and width) and weighed. Dead mussels consisted of both articulated and disarticulated individuals. Disarticulated shells were paired based on size, shape, growth lines, repair scars, and epibiont growth. Perfect matches were examined as whole individuals. Articulated and matched pairs were then measured (length and width) and examined for mode of attack (drilling, marginal chipping). A total of 205 *M. galloprovincialis* and 114 *H. trunculus* were examined. *H. trunculus* chose marginal chipping 109 times and drilling 8 times as the mode of attack