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P3.17

The red algal genus *Scinaia* (Nemaliales; Rhodophyta) on the Azores Archipelago: a molecular approach with morphological and anatomical observations.

León-Cisneros K, Neto AI, Fredericq S, Gabriel D, Riosmena-Rodríguez R

Two species of *Scinaia* that have been reported to co-exist in the Azores, *S. furcellata* and *S. interrupta*, are commonly confused with one another. In the present study, recently collected specimens from the Azorean Archipelago and historical vouchers housed in The Natural History Museum (BM) and Conservatoire et Jardin Botanique de la Ville de Genève (G) were investigated. Chloroplast-encoded rbcL sequence analysis was conducted from silica gel-preserved specimens belonging to different populations. The morphologic and anatomical analyses confirmed the occurrence in the Azores of *S. furcellata* and *S. interrupta* and two non-identified species. The available molecular data supported the morphological interpretation. Molecular characterization of *S. furcellata* is still in progress. Species biodiversity were higher than reported suggesting the need of further monographic work in the Azorean flora.

P3.18

Morphological and anatomical observations on the genus *Scinaia* (Nemaliales; Rhodophyta) from the Gulf of California, Mexico.

León-Cisneros K, Riosmena-Rodríguez R, Neto AI

Four species of *Scinaia*: *S. complanata*, *S. confusa*, *S. johnstoniae*, and *S. latifrons* have been reported from the Gulf of California. Due to incomplete descriptions of any of these species, their segregation inside their morphologic-evolutionary group (sensu Huisman 1986) is difficult and many taxonomic controversies have been reported. In the present study, recently collected specimens from the Gulf of California and historical vouchers housed in several herbaria (BM, CMEX, FBCS, LAM, LD, MICH, NY and UC) were investigated. The analyses of morphological, anatomical and reproductive characters confirmed the occurrence of *S. confusa*, *S. johnstoniae*, and *S. latifrons*; the misidentification of *S. johnstoniae* as *S. complanata* in historical records and the new addition of *S. interrupta*. A new development pattern of the cystocarp fusion cell, involving the pericarp cells, was found in *S. latifrons*.

P3.19

Cetacean photo-identification at CIRN: present status and future developments

Marques JC, Escarduça SA, Losada T, Azevedo JMN

Photo-identification is an important tool in studies where individual information is needed and where tagging, branding or other forms of artificial marking are not possible. This is particularly the case of the cetaceans, given their large size, high mobility and the heavy logistics required for their observation in the field. We hereby briefly describe the protocol developed over the past year to store, process and analyse images and their associated information (incl. species determination, dates, geographical coordinates,

behaviours. The CIRN catalogue presently contains mainly four species: common dolphin (*Delphinus delphis*), Atlantic spotted dolphin (*Stenella frontalis*), bottlenose dolphin (*Tursiops truncatus*) and spermwhale (*Physeter macrocephalus*). A preliminary analysis confirms previously published information from Pico Island regarding the degree of persistence of the bottlenose dolphin population, and suggests that at least a substantial proportion of the locally seasonal Atlantic spotted dolphin population returns to the Azores every summer, perhaps to the same island. The full use of the photo-identification potential in the Azores requires that some way must be found to share information between the different research teams, and also with those from nearby areas. A single catalogue for each species in the area would be a particularly useful tool in this context. The involvement of the general public in this task could tap on the huge observational effort going on through the whale watching business.

P3.20

Past, present and future of albacore tagging in the Mediterranean Sea

Megalofonou P, De Metrio G

Albacore, *Thunnus alalunga*, are known to undergo seasonal migrations affecting the fisheries of many nations in the Atlantic Ocean and Mediterranean Sea. Conventional tagging data in the north Atlantic and the western Mediterranean Sea have revealed long distance transoceanic migrations and the possibility of an interchange between the Atlantic and Mediterranean albacore. In the present study tagging experiments carried out in the eastern Mediterranean Sea using conventional tagging are described since 1985. Moreover, recent tagging experiments carried out in the same area using electronic devices (Mk9 archival tag) are assessed. Our scope is to re-evaluate the conventional tagging in the light of information obtained from the tagging experiments using electronic archival tags and discuss the future opportunities in the albacore tagging research. The Greek Ministry of Development and the Italian Ministry for Foreign Affairs funded this study in the frame of the Joint Research and Technology Programmes 2005-2007.

P3.21

Antitumour activity of extracts from Azorean macroalgae

Mendonça EA, Barreto MC, Neto AI, Gouveia VF

The ocean is at present the most promising source of bioactive substances, with a high number of new compounds discovered every year. The Azores archipelago is a rich environment concerning the ecology of algal communities. The aim of the present study was to evaluate the antiproliferative activity of 15 extracts from 5 representative seaweed species from São Miguel: *Ulva compressa*, *Gelidium microdon*, *Osmundea pinnatifida*, *Fucus spiralis* and *Cystoseira abies-marina*. Methanolic (ME), dichloromethane (DE) and hexane (HE) extract fractions were prepared from these five algae species and tested, using the MTT assay, to measure the in vitro inhibition of cancer cell growth. Human cervix cancer cell line (HeLa) and African green monkey kidney cell line (Vero) were used in the assays. Overall, the best results were obtained for the DE extracts (except for



*O. pinnatifida*) followed by the HE and ME extracts. Maximum antiproliferative activity against HeLa cell line, expressed as EC50 (extract concentration needed to produce 50% of cell growth inhibition) was found in *C. abies-marina* and *F. spiralis* DE fractions, with the lowest EC50 values (8.5 µg/ml and 11.8 µg/ml, respectively). On Vero cell line, which was used as a control, a lower cytotoxicity was observed, which is a requisite for any chemo-preventive agent. Other interesting activities of compounds from brown algae (*Fucus*), such as antimetastatic activity, have been reported by other authors. Further research on *Cystoseira abies-marina* and *Fucus spiralis* will provide new data about the chemical composition of their dichloromethane extracts.

P3.22

### Predicting aspects of meiofauna biodiversity for the Belgian Continental Shelf using neural networks

Merckx B, Goethals P, Steyaert M, Vanreusel A, Vincx M, Vanaverbeke J

We investigated 1) the predictability of different aspects of biodiversity, 2) the effect of spatial autocorrelation on the predictability and 3) the variables affecting these diversity indices. The dataset we used was nematode data from the Belgian continental shelf. Different aspects of biodiversity were considered: evenness, species richness and taxonomic diversity. Evenness indices resulted in the best models. Also species richness could be quite accurately predicted, although the residuals indicated a lack of performance from the model. Pure taxonomic diversity showed high spatial variability and could not be strongly linked to the considered environmental variables. For all the indices we found a strong spatial autocorrelation, but the residuals of the models did not show any relevant spatial autocorrelation anymore, indicating that the spatial variability in the biodiversity indices can be attributed to the environmental variables we used. Our analysis points out that clay and sand fraction, together with the minimum annual TSM are the most important factors structuring evenness of a nematode community. Species richness is also strongly influenced by sand extraction and the amount of gravel.

P3.23

### Marine benthic communities from Mesa del Mar (Tacoronte, Tenerife, Canary Islands)

Monterroso Ó, Rodríguez M, Gil-Rodríguez MC, Riera R, Pérez Ó, Ramos E

A bionomic cartography was done from the protected area “Paisaje protegido de la Costa de Acentejo” during January and February 2008. The methodology consisted of marine video georeference transects that provide data about seabed structure and morphology, as well as, marine benthic communities. In order to complete the study, a series of dives were done to identify and collect flora and fauna specimens. In the intertidal, a visual journey by foot was carried out and six stations were selected to be representative of the marine communities present in this area. Geomorphological and biological data (cobertura and frequency) of the conspicuous species were collected using a 50 x 50 cm quadrat and a tape measure. The most important communities were sandy bare bottoms (48.6%) and rocky bottoms dominated by the urchin *Diadema aff. antillarum* (31.1%). In the intertidal, mixed beaches (sand and boulder) dominated overwhelmingly the eulitoral environments (36%) and algal assemblages composed by encrusting corallinacea (14.7%)

and *Cystoseira abies-marina* assemblages (12.9%). In short, seabeds are characterized by a heterogeneous community assemblages, emphasizing the presence of seabeds colonized by gorgonaceans (*Leptogorgia viminalis* and *L. ruberrima*). These bottoms are typical from a non-altered area, with small coastal towns (Mesa del Mar and El Pris) and the absence of important human-induced perturbations. This study was supported by the council of Tacoronte (Tenerife, Canary Islands).

P3.24

### Spatial variation of the macrobenthos species and communities of the Belgian Continental Shelf and the relation to environmental variation

Moulaert I, Hostens K, Hillewaert H, Wittoeck J

Macrobenthos data of the Belgian Continental Shelf (BCS) were used (1) to give an overview of the spatial distribution of the macrobenthic species and communities of the BCS and (2) to examine the influence of different environmental variables on the spatial distribution of the macrobenthos species and communities on different spatial scales. The Belgian part of the North Sea is a highly dynamic area with a continuous succession of gullies and sandbanks. A variety of human activities like sand extraction, dredge dumping and fishing also affect the ecosystem. Samples were collected in the framework of different monitoring programs during 2004 and 2005 using the same sampling techniques. Total abundance, number of species and diversity indices were calculated and used for spatial comparison. The differences in community structure were investigated through multivariate analyses. Several a-biotic variables were measured and used in statistical tests to investigate the relation with the macrobenthos on different spatial scales. Multivariate analysis distinguished five major community groups, with a clear separation between the coastal and the offshore samples. The groups were characterised by the presence and/or absence of certain species and the relative abundance of different taxonomic and feeding type groups. The average density, species richness and diversity were highly variable within each group. The distribution patterns of certain species were clearly related to the environmental variability. Univariate measures correlated best with depth and salinity, whereas multivariate analysis identified median grain size, mud content and salinity as the major environmental variables influencing the faunal patterns. The relationships found between macrobenthos and habitat were clearly dependent on the spatial scale and the area looked at. The results on the different drivers affecting the benthos of the Belgian part of the North Sea will enhance future assessment and monitoring studies.

P3.25

### Sensory analysis of Azorean red algae (Rhodophyta)

Patarra RF, Neto AI, Baptista J

Sensory analyses were performed on raw and transformed samples of the red algae *Porphyra* sp. and *Osmundea pinnatifida* in order to examine their acceptability by the local community. A group of panelists, previous trained to be familiarized with the species, evaluated the raw species, to rate sample's attributes of flavour, aroma,