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ABSTRACTS

3thTLG, that is supposed to be a migratory group from Argentinean waters. The absolute growth rate of the 3TLG was higher than 3TSG. This variability could be explained by the oceanography processes during their juvenile exponential growth phase. During the 4thT Ekman transport spread paralarva offshore, while in 2thT and 3thT its retention over the continental shelf was favored where food is abundant. In the 1thT the 3TSG was subjected to upwelling events on the continental shelf and shelf break provided by favorable northeast winds upwelling and the 3TLG experienced the nutrient enriched Plata-river-plume-waters achieving faster growth rates than 3TSG.

P67. Schwarz R and Perez JAA

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Age and growth of short-finned squid *Illex argentinus* (Cephalopoda: Ommastrephidae) in southern Brazil using statoliths. Statoliths of *Illex argentinus* were analyzed in 689 specimens collected by national and chartered fishing trawlers in Brazilian waters between 23-32°S, at depths of 80-730 m between 2001-2008 year in order to determine age, growth rates and intraspecific structure of the species caught in this region. Size-at-age data were fitted using the exponential, power, Gompertz and Schnute as growth models and the logistic model for maturity modeling. They were fitted using the maximum likelihood for estimation and Akaike weights for identification. Mantle length range used was 35-376 mm with age range estimates between 56-320 days. The best growth model identified was Gompertz for females and Schnute for males. Back-calculate estimative for the hatchlings show that the majority of birth dates occur in summer months for the spawning squid caught in winter and in last autumn-winter for spring and summer caught squid. The average duration of paralarval phase based on statolith post nuclear zone was 30 days. The inflection point in the maturity curve was 144 days for males and 142 days for females. The age range for post spawning squid was 116-250 (average 187) days for males and 133-280 (average 201) days for females showing a life cycle close to six months. None individual presented the age of one year. The wide range of age structure have demonstrated that *Illex argentinus* exhibits at least two spawning groups inhabiting southern Brazilian waters with a possible local population with shorter life cycle than for the species in its southward distribution (42-54° S)

P68. Seibel BA

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Oxygen transport in *Dosidicus gigas*: implications for life in a high CO₂ ocean. *Dosidicus gigas* is a large predator endemic to the Eastern Tropical Pacific. It migrates vertically on a diel basis between warm, oxygenated surface waters and colder waters at depth that are hypoxic. A respiratory protein with a high affinity for oxygen and a pronounced pH- and temperature-sensitivity of oxygen binding plays an important role in facilitating oxygen transport across these disparate environmental conditions. A critical partial pressure is not reached until about 175 meters depth where the blood achieves only 50% hemocyanin-oxygen saturation. *D. gigas* is capable of achieving 90% oxygen saturation of its blood at depths shallower than ~120 meters, where seawater is at least 20% saturated with oxygen. However, the high pH-sensitivity that allows release of oxygen at the tissues from such a high affinity respiratory protein may impair oxygen uptake at the gills as anthropogenic carbon dioxide diffuses into surface waters causing ocean acidification.

P69. Seixas S¹, Faria MJ², Ferreira AM² and Pierce G J³

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Temporal variation in element concentrations in arms of the common octopus (*Octopus vulgaris*) We investigated temporal patterns in the concentrations of iron, manganese, copper, zinc, calcium, potassium, arsenic and selenium in the arms of *Octopus vulgaris*, based on animals from the commercial fishery in winter and spring, in 2000 and 2008 from Cascais (Portugal). Element concentrations were measured using Particle Induced X-ray Emission (PIXE) and Atomic Absorption Spectrometry (AAS) in 2000 and 2008 respectively. We analyzed differences between years, seasons and sexes and correlations between metal concentrations and indicators of body size (weight, length) and maturity, using redundancy analysis, ANOVA and correlation analysis. RDA analysis reveals that concentrations of elements were affected by years and seasons but not by biological variables. ANOVA revealed t significant differences between years for Fe, Cu, Zn, K and Se and between seasons for Fe, Mn and Zn. Ca

and K concentration was negatively related to body size. Results suggest that octopus can be a useful bioindicator of seasonal and annual variation in environmental pollution.

P70. Sendão J and Borges TC

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The Portuguese Teuthofauna: a review. Only a small number of cephalopods species are utilized as living resources and are fished commercially. Many others are caught accidentally being landed as marketable by-catch and/or discarded at sea as by-catch of major offshore fisheries that target more valuable marine organisms. This fact limits the access to information of those species and their biology. The aim of the present study is to present a review of the teuthofauna inhabiting the Portuguese Continental Shelf. This work is to the best of our knowledge, one of the firsts and more complete list of the cephalopods that were recorded in the Portuguese Coast. A total of 56 different species belonging to 22 families were caught and identified either as adult living form (39), paralarvae (13) or by the beaks in stomachs of predators (4). This number represents about 7.2% of the world teuthofauna.

P71. Sendão J, Calixto P and Borges TC

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Behaviour of the common octopus (*Octopus vulgaris*) towards entrapment fishing gears: clay and plastic pots ("alcatruzes") and iron traps ("covos") The most efficient fishing gear takes into account the behaviour of the target species. Traps are devices designed to encourage the entry of animals, which are then prevented from escaping either by particular aspects of their behaviour or by the design of the trap itself. The traditional southern European octopus traps are made simply from clay pots ("alcatruzes") hung from a line set along the sea floor. More recently vinyl chloride has been used as material for octopus pots (plastic pots) replacing the traditional clay pots. As the animal entering such a trap is territorial and prevents the entry of other individuals, a large number of small traps must be set in order to make a commercially viable catch. The principle of baited traps is that animals, attracted to the bait, enter the trap through tapered openings from which it is difficult to escape. Traditional baited traps called "covos" (here called "iron traps") have been used to catch cuttlefish (and species of crustaceans) and more recently in Portugal have been used to also catch octopus. Different behaviour aspects of the common octopus (*Octopus vulgaris*) have been observed towards the fishing gears pots ("alcatruzes") and iron traps ("covos"). Variables like different material (clay and plastic) shape and colour (black, white and red) have been introduced in the pots to understand possible preferences. Specific behavioural aspects towards the iron traps have also been registered by video camera, showing that octopus is entrapped due to the attraction by the bait, but he is also able to leave if wanted.

P72. Silva L, Vila Y, Sobrino I, Torres MA and Acosta JJ

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Abundance, distribution and assemblages of cephalopod species in the Gulf of Cadiz (SW Spain) The cephalopod fauna caught in ARSA bottom trawl surveys carried out in two different seasons (autumn and spring) on the Spanish waters of the Gulf of Cádiz was analysed. The main objective of this study is to present information about the bathymetric distribution, inter-annual and seasonal patterns, and structure of the cephalopod assemblages in the Gulf of Cádiz. The analysed period was from 2004 to 2008 with a total of 393 hauls. A random stratified sampling design was applied using five depth strata. A total of 36 cephalopod species belonging to 4 families were found at depths between 20 and 700 m. To identify different assemblages cluster analysis and multidimensional scaling (MDS) ordination were applied using the Bray-Curtis index as the similarity coefficient. The preliminary results obtained show the existence of two main assemblages: Assemblage 1 that includes species distributed from 20 to 220 m corresponding to the shelf-edge/upper slope, and Assemblage 2 composed by species distributed between 220 and 700 m related to the middle slope. Similarity percentage analysis (SIMPER) revealed that *Alloteuthis media*, *Octopus vulgaris*, *Loligo vulgaris*, and *Sepia elegans* were the main indicator species which characterised the Assemblage 1 and *Seppieta oweniana*, *Eledone cirrhosa* and *Todaropsis eblanae* in Assemblage 2. There were not found major seasonal differences in the species composition for both assemblages throughout the analysed period. However, it is possible to identify two groupings within Assemblage 1 in autumn related with the depth. Some ecological parameters were applied for each group. The Shannon-Wiener diversity index (H') shows highest values in the shelf community.