



WORLD CONFERENCE ON  
**MARINE**  
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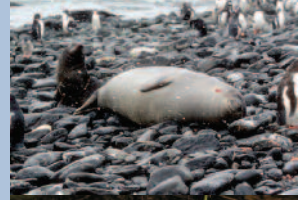
# Our Oceans, Our Future



26 - 30 September 2011  
Aberdeen, Scotland (UK)



<http://www.marine-biodiversity.org/uploads/files/WCMB-2011.pdf>



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## Combined Abstract Booklet

World Conference on Marine Biodiversity, September 2011  
[www.marine-biodiversity.org](http://www.marine-biodiversity.org)

22/0775

**The status of Eritrea Marine Biodiversity (compiled from different research papers).**

Mehari Fessehaye

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**Abstract**

The Eritrean Red Sea is known with home to globally important coral reefs, mangroves, sea grasses, seaweeds, seabirds, fishes and other habitats. It is also known with highly marine biodiversity and unpolluted sea. The average salinity and temperature are reached (3.6 and 3.8 ‰) and (25 and 35 °C) respectively. The sea water is characterized with heavy oligotrophy and low primary productivity, contrasting with high biological biodiversity.

Some researchers have been undertaken surveys in past time. In the recent survey a total of 220 species of corals were recorded. Three species of mangroves were recorded the most dominant species, *Avicennia marina*. There are also a total of 286 species of seaweeds and 12 species of seagrasses have been recorded.

The Eritrean coasts and islands are well known for the large diversity of seabirds and shorebirds. As per last years ecological surveys, 84 species of seabirds and shorebirds have been recorded. Fishes are characterized with many species. Moreover, it has also five species of sea turtle and fifteen species of sea cucumber were recorded.

Even though the sea is free of pollution and virgin several species are threatened, because of industrial development, tourism, fisheries and less awareness of coastal habitants.

22/0937

**Biodiversity in the global ocean - incorporating molecular biology in field-based approaches to undergraduate studies of marine conservation.**

Erik Zettler<sup>1</sup>, Linda Amaral-Zettler<sup>2</sup>, Amy Siuda<sup>1</sup>, John Jensen<sup>1</sup>, Caleb McClennen<sup>3</sup>

<sup>1</sup>Sea Education Association, Woods Hole, MA, USA, <sup>2</sup>Marine Biological Laboratory, Woods Hole, MA, USA, <sup>3</sup>Wildlife Conservation Society, Bronx, NY, USA

**Abstract**

Divisions between science and policy are common among undergraduate education programs. With support from the US National Science Foundation, we are developing a semester-long program *Marine Biodiversity and Conservation*, linking science and policy through interdisciplinary research of a current topic in marine conservation. The program challenges students to integrate scientific study of marine biodiversity with conservation planning for the open ocean environment.

During the initial discovery phase students operate as a research team to develop a conceptual framework, identifying gaps in biodiversity research and in methods used in ocean conservation. Students subsequently employ molecular and morphological techniques to measure biodiversity during a month-long open ocean research cruise, also archiving samples for the global marine biodiversity effort. In the final application phase students generate science-based policy recommendations and defend these to scientists and public stakeholders. This program represents an unprecedented opportunity for undergraduates to complement leading-edge techniques in marine science research with the wisdom and skills to effectively operate within the world of public policy and tackle global-scale environmental challenges.

Major elements of this curriculum will be transferrable to local biodiversity and conservation topics in any aquatic environment from a small pond or stream to the seashore.

22/1083

**The implementation of a sustainable seafood guide in Brazil: *Guia de Consumo Responsável de Pescados***

Carla Isobel Elliff, Driely Sato Marchesani, Carolina Pacheco Bertozzi, Alessandro Augusto Rogick Athiê, Cintia Miyaji

Centro Universitário Monte Serrat, Santos, São Paulo, Brazil

**Abstract**

Decline in fisheries has been the target of many discussions worldwide. Public awareness seems to be one of the most important mitigating actions to be taken in this case. Several countries have guides that orientate consumers towards sustainable fisheries, indicating species that have overexploited stocks or not.

In Brazil, the first guide of this kind, called the *Guia de Consumo Responsável de Pescados*, was created in 2008 by the Centro Universitário Monte Serrat (Unimonte) and the Grupo ANIMA Educação. The species within this guide refer to those caught in the southeast region of the country. The abundance status of each species was researched in various national and international databases, such as IUCN, Instituto de Pesca de São Paulo, IBAMA, Greenpeace, etc. They were then separated in four categories: "Bon appetite", "Eat in moderation", "Avoid" and "No, thank you!".

The promotion of this guide demonstrated a high interest of the population towards the theme, considering the attention given by the media. Some fishing companies have even adapted their fleets to target the more abundant species, showing their commitment to sustainable fisheries.

22/1132

**"Life, The Sea and Many Stories to be Told - The Origin of Biodiversity in the Oceans": A Scientific Exhibition as a Powerful Tool for the Perception of Marine Biodiversity Importance**

Roberta Maia<sup>1</sup>, Otto Oliveira<sup>2</sup>, Alvaro Migotto<sup>1</sup>

<sup>1</sup> University of Sao Paulo, Brazil, <sup>2</sup>Federal University of ABC, Brazil

**Abstract**

The oceans' importance for maintaining Earth's climate balance in face of planet changes becomes increasingly evident. This has special significance for Brazil, given the magnitude of its coastline, and the emergence of technologies for oceanic exploitation that has changed the political landscape in the country, resulting in greater public participation in strategic decisions. Located in an environmentally sensitive area within one of the most beautiful coastlines in Brazil, threatened by crude oil transport and uncontrolled seasonal tourism, the Marine Biology Centre of the University of Sao Paulo (CEBIMar) has the mission of bringing scientific knowledge to the public. The scientific exhibition "Life, The Sea and Many Stories to be Told - The Origin of Biodiversity in the Oceans" was designed to present issues such as the origin and diversification of life, highlighting the ecological and historical importance of the biodiversity in the oceans. Aiming to stimulate interest, critical reflection and opportunities for the discovery of relationships among the themes addressed, the exhibition traveled to several venues in Brazil and has been viewed by about 100,000 people. Now we seek for partnerships to widen its outreach and produce its English version, to continue promoting marine biodiversity awareness and education.

23/0073

**How old are the genera of living brachiopods in warm-temperate and cold-temperate waters?**

Olga Zezina

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**Abstract**

Brachiopods as living marine Invertebrates are known as zoological group rich of fossil findings. To clear the problem new publications help us: Treatise on Invertebrate Paleontology revised in 1997-2007 and Check-List of recent brachiopods annotated with geographical ranges of species published by the author in 2008 and 2010. So now we have data on 390 recent species and 114 recent genera.

A special interest is situated in so called "transitional" faunistic zones between the most low-latitude and the most high-latitude zones. The "transitional" zones include their own endemic brachiopod genera (30% of all the genera in temperate waters), more numerous to compare to the tropical zone (28%) and to the cold-water ones (15% in Boreal-Arctic and 12% in the Antarctic).

The most ancient endemic genera from warm-temperate zone are known from Maastricht, and this zone is comparable to the tropic zone where endemic genera appear in Cretaceous and Jurassic. In other "transitional" zones endemic genera show their appearance at Eocene and Miocene when the recent contrast climate was forming in the World Ocean because of the Circumantarctic Current. Warm-temperate and cold-temperate "transitional" zones could be considered as buffer system during the crises periods in the Earth history.

23/0467

**Niche partitioning in 'living fossils' drives sympatric radiation in the eastern Pacific**

Julia Sigwart

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**Abstract**

Mopaliidae is a family of polyplacophoran molluscs (chitons) that are large and abundant in rocky intertidal habitats especially in the temperate eastern Pacific. The 24 species of *Mopalia* are particularly interesting as many species locally occur, but this genus has a relatively recent origin in the Miocene (16 million years ago). How have so many species radiated in a short geological time span and within the narrow morphological constraint of the polyplacophoran body plan? The present study investigated potential dietary niche partitioning in *Mopalia* and other members of the family Mopaliidae through examination of digestive anatomy and isotope analyses of carbon and nitrogen stable isotope ratios. The gut length varies dramatically between (but not within) species. However, isotopic values from body muscle tissue are surprisingly constrained in species of *Mopalia*. The members of Mopaliidae include specialised predators and other genera that are known to feed preferentially on "whole-leaf" green algae; this evidence of specialisation is at odds with the traditional presentation of chitons as basal grazing molluscs that can be included as a functionally uniform ecological group.

34/0565

**Seamounts are hotspots of pelagic biodiversity in the open ocean and areas of special interest for management of marine pelagic predators**

Telmo Morato<sup>1</sup>, Simon D. Hoyle<sup>2</sup>, Valerie Allain<sup>2</sup>, Simon J. Nicol<sup>2</sup>

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<sup>2</sup>*Oceanic Fisheries Program, Secretariat of the Pacific Community, Noumea, New Caledonia*

**Abstract**

The identification of biodiversity hotspots and their management for conservation have been hypothesized as effective ways to protect many species. There has been a significant effort to identify and map these areas at a global scale, but the coarse resolution of most datasets masks the small-scale patterns associated with coastal habitats or seamounts. Here we used tuna longline observer data to investigate the role of seamounts in aggregating large pelagic biodiversity and to identify which pelagic species are associated with seamounts. Our analysis indicates that seamounts are hotspots of pelagic biodiversity. Higher species richness was detected in association with seamounts than with coastal or oceanic areas. Seamounts were found to have higher species diversity within 30-40 km of the summit. The study supports hypotheses that seamounts may be areas of special interest for management for marine pelagic predators. Our study have also identified many seamounts throughout the western Pacific Ocean that may act as important aggregating points for pelagic species. This indicates that management of seamounts is important Pacific-wide, but management approaches must take account of local conditions. Management of tuna and biodiversity resources in the region would benefit from considering such effects.

34/0577

**(Un)discovered macrofaunal biodiversity in the mud volcanoes from the Gulf of Cadiz (NE Atlantic)**

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**Abstract**

The deep-sea environment in the Gulf of Cadiz (NE Atlantic) shows a high diversity of benthic habitats including over forty known mud volcanoes at depths from 200 to 4000 m and adjacent habitats (octocoral "gardens", mostly dead cold water coral reefs, carbonate concretions). These mud volcanoes are subjected to numerous sources of abiotic and biotic heterogeneity (depth, physiographic and biogenic features, properties of water masses and oceanographic circulation, fluid geochemistry and fluxes of methane and sulphide, surface productivity, etc.) and support highly diverse macrofaunal assemblages including a remarkable number of chemosymbiotic species (30 species of bivalves and siboglinid polychaetes) and an important "hidden" diversity was revealed by molecular approaches in some faunal groups. Macrofaunal samples are characterized by high degrees of rarity (numerous singletons) and complementarity (both within and between mud volcanoes) which add to the regional biodiversity. The three major mud volcano provinces (shallow Moroccan field, Moroccan carbonate province, deep-water field) show important differences in the composition and structure of their assemblages as well as in the degree of endemism. Biodiversity patterns and bathymetric turnover are presented and discussed in relation to habitat heterogeneity, oceanographic circulation, the geologic evolution of the region and its biogeographic context.

34/0646

**Phylogeny and phylogeography of Lysianassoidea (Crustacea: Amphipoda): connectivity within and between Antarctic, sub-Antarctic and southwest Atlantic regions**

Charlotte Havermans, Zoltán Tamás Nagy, Gontran Sonet, Claude De Broyer, Patrick Martin

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**Abstract**

By molecular analyses (using COI and 28S rRNA), we investigated for several lysianassoid species: (i) their circumpolarity, (ii) the link between the Magellan region, the Scotia Arc and the Antarctic Peninsula and (iii) the link between the Antarctic regions and the southwest Atlantic abyssal basin. In several species, a genetic homogeneity was found even among specimens from remote sampling sites indicating a circum-Antarctic and eurybathic distribution. In other species, genetically divergent lineages and possible cryptic taxa were revealed. Moreover, in some abyssal lysianassoids, identical haplotypes were found between the Antarctic Peninsula, the Weddell Sea and the Argentine abyssal basin, while high genetic divergences were detected between these regions and the Brazil abyssal basin. This can be explained by the northward movement of the Antarctic bottom water, formed in the Weddell Sea and connecting the Antarctic and Argentine abyssal basins. Based on these observations, our current view on the species richness and distribution of the Antarctic lysianassoids may have to be modified. As polar regions are more affected by climate change than others, biodiversity and phylogeographic studies are of particular importance since they may serve as a basis for monitoring and conservational efforts.

34/0662

**Going Off the Deep End: Diversity and Foodwebs in Bering Sea, Alaska Marginal Sea Ice Zone Submarine Canyons**

Michelle Ridgway, Nora Foster, David Scholl, Peter Hickman

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**Abstract**

Submarine canyons globally are recognized as rare habitats, occupying <4% of the world's seafloor and serve as conduits for organic and inorganic matter moving between deep basins and continental shelves. In Alaska, canyons are hotspots for marine mammal and seabird foraging, and for industrial fisheries harvests. Recent in situ submersible and ROV surveys, plus new bathymetry contributed to records from 60 years of geological, hydrographic and biological research in the canyons.

Sponge, coral, echinoderm, and mollusc species in upper depths of Zhemchug Canyon and Pribilof Canyon in the Bering Sea exhibit an extraordinary diversity unreported for the region. Fauna was dominated numerically by hexactinellid sponges, corals, and ophiuroid echinoderms, but the suite of species present and relative proportions within taxa varies by substrate, with sea-ice conveyed "dropstones" and presumed chemosynthetically derived hard surface features providing habitat for the greatest diversity and abundance of epibenthic megafauna. Of the ten invertebrate phyla examined (Porifera, Cnidaria, Nemertea, Annelida, Mollusca, Arthropoda, Echinodermata, Brachiopoda, Ectoprocta, Chordata), echinoderms exhibited greatest richness, with over 57 taxa represented.

Patchy benthic assemblages remaining in the canyons provide biotic structure for commercial fish and crustacean organisms and are testament to the canyons' role as biocultivators of regional ecological significance.

34/0669

**Investigations of a unique fauna from hydrothermal vents along the Arctic Mid-Ocean Ridge (AMOR)**

Hans Tore Rapp<sup>1</sup>, Christoffer Schander<sup>1</sup>, Jon Anders Kongsrud<sup>2</sup>, Tom Alvestad<sup>3</sup>, Ingvar Byrkjedal<sup>2</sup>, Joar Tverberg<sup>1</sup>, Jon Tomassen Hestetun<sup>3</sup>, Ida Helene Steen<sup>1</sup>, et al.

<sup>1</sup>*University of Bergen, Norway,* <sup>2</sup>*Bergen Museum, Norway,* <sup>3</sup>*Uni Environment, Norway, et al.*

**Abstract**

Recently two major hydrothermal vent fields have been discovered in deep waters along the Arctic Mid-Ocean Ridge. The Jan Mayen field (5-700m) includes high-temperature white smoker venting as well as large areas with low-temperature seepage. The deeper Loki Castle (2400 m) high temperature vent field consists of extensive black smokers surrounded by a sedimentary area with diffuse low-temperature venting.

The Jan Mayen sites show low abundance of specialized fauna, and fauna otherwise common in vent areas are absent, while the deeper Loki Castle vent field hosts an endemic fauna comprising specialized polychaetes, gastropods, amphipods and fish. The fauna composition seems to be a result of local specialization, with similarities to cold seeps and wood-falls in the abyssal Norwegian Sea. Data indicate a migration of vent fauna into the Arctic Ocean from the Pacific rather than from the Atlantic. The fauna of the abyssal Norwegian-Greenland-Iceland Seas is characterized by very low species diversity with a handful of very abundant taxa, and the vent fauna seems to follow the same general trends. The high degree of local adaptation and specialization of fauna from the studied sites allow us to propose the AMOR to be a new zoogeographical province for vent fauna.

34/0724

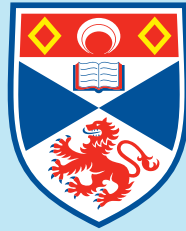
**Effects of freshwater deprivation on the pelagic communities of the St Lucia Estuary, South Africa**

Nicola Carrasco, Renzo Perissinotto, David Muir

*University of KwaZulu-Natal, KwaZulu-Natal, South Africa*

**Abstract**

St Lucia is the largest estuarine lake in Africa and is currently experiencing unprecedented freshwater deprivation, due to an ongoing drought and to its artificial disconnection from the Mfolozi River, historically its main supplier of freshwater during drought conditions. The main drivers of ecosystem change are the induced hypersalinity, mouth closure, water level drop and turbidity. Pelagic communities are undergoing major losses in biodiversity (e.g. a decline of 60-70% in zooplankton taxa and 40% in fish species) and dominance shifts, with species adapted to extreme conditions taking over large sections of the system. Recently, a halophilic community has been documented in the system. In particular, the northern hypersaline (>100) lakes have exhibited a 1½ year-old orange bloom of cyanobacteria (*Cyanothece* sp.), which was found to support the cyclopoid copepod *Apocyclops* cf. *dengizicus*. This copepod is unique in that it has an extremely high salinity tolerance, only disappearing from the region once the salinity exceeded 130. It is thought, though, that this copepod is capable of forming resting stages or spores capable of enduring harsh conditions. With the increased freshwater input experienced from Dec 2010 - Jan 2011, this copepod re-appeared, attaining densities in the region of 3.7 x 10<sup>4</sup> ind.m<sup>-3</sup>.



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