THIRTEENTH INTERNATIONAL MEIOFAUNA CONFERENCE (THIRIMCO)

July 29 – August 3, 2007

Location:	Recife Palace Hotel, Recife, Pernambuco, Brazil
Hosted by:	International Association of Meiobenthologists (IAM)
Organized by:	Universidade Federal de Pernambuco (UFPE) Universidade Federal Rural de Pernambuco (UFRPE)
Administered by:	Bureau de Eventos Fundação para o Desenvolvimento da UFPE (FADE)
Sponsored by:	Universidade Federal de Pernambuco Petróleo Brasileiro (PETROBRAS)

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CONFERENCE LOGO
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Recife

CONFERENCE PROGRAMME, THIRIMCO 2007
Scientific agenda and social events

Sunday

10:00- 15:00 h	Registration	
15:00- 22:00 h	Excursion to Olinda City and Opening Dinner	

Monday

8:30 - 18:00 h	Registration	
9:00 - 10:10 h	Opening conference (coordination Paulo Santos and Keith Walters) Bruce C. Coull. Ecological studies on Meiobenthos: An historical journey and predictions for the future	**Oral 1**
10:10 - 10:30 h	**Coffee-break**	

Session Ecology of Meiofauna - The Nematode Communities - Chairperson Magda Vincx

10:30 - 10:50 h	Michaela Schratzberger, Karema Warr & Stuart Rogers. Functional diversity of nematode communities	**Oral 2**
10:50 -11:10 h	Sofie Derycke, Roxane Van Vynckt, Joost Vanoverbeke, Magda Vincx, Tom Moens. Colonisation of decomposing algae by Nematoda: founder and priority effects shape the population-genetic structure of the dominant species *Pellioditis marina.*	**Oral 3**
11:10 - 11:30 h	Paul Whomersley. M. Schratzberger, M. Huxham & S. Bolam. An investigation into the effects of burial on an intertidal nematode community using community-based metrics and biological traits analysis.	**Oral 4**
11:30 - 11:50 h	Irina Kulakova. The Structure of the nematode taxocene in the marine part of the Ukrainian Danube Delta.	**Oral 5**

11:50 - 12:10 h Chairperson Magda Vincx and general discussion
12:10 - 13:40 h **Lunch**

Session Ecology of Meiofauna – Mangrove Communities and Interactions with Macrofauna - Chairperson John Fleeger

13:40 - 14:00 h	Agnes Muthumbi & Simiyu Musobi. Distribution of meiofauna in mangrove sediments: what factors determines assemblages?	**Oral 6**
14:00 - 14:20 h	Tania Nara C. Bezerra, Ilse de Mesel, Steven Bouillon, Ann Vanreusel & Tom Moens. Diversity and structure of nematode communities across mangrove and seagrass vegetations at Gazi Bay, Kenya.	**Oral 7**
14:20 - 14:40 h	John Fleeger & David Johnson. Top-down and bottom up effects on saltmarsh meiofauna using whole-ecosystem manipulation	**Oral 8**
14:40 - 15:00 h	C. Dupuy, L. Rossignol, P.Y. Pascal & J.P. Debenay. Benthic food web in mudflat: relationship between Foraminifera and *Hydrobia ulvae*.	**Oral 9**
15:00 - 15:20 h	Matthew J. Boeckner & H.C. Proctor. The role of benthic bivalves in structuring marine meiofaunal communities.	**Oral 10**
15:20 - 15:40 h	Chairperson John Fleeger and general discussion	
15:40 - 16:00 h	**Coffee break**	

Session Ecology of Meiofauna - Sandy Environments- Chairperson Antonio Todaro

16:00 - 16:20 h	Katerina Sevastou & Anastassios Eleftheriou. Meiofaunal communities of sandy beaches: what factors influence their diversity and zonation patterns in the microtidal environment of Eastern Mediterranean?	**Oral 11**

16:20 - 16:40 h	Virag Venekey, Veronica da Fonsêca-Genevois & Paulo J.P. Santos. Tidal and rainfall cycles influence on the structure of the nematofauna in a tropical sandy beach (Tamandaré Bay-PE, Brazil).	**Oral 12**
16:40 - 17:00 h	Alzira P.C. Silva & Paulo J.P. Santos. Tidal effects on the vertical distribution of Copepoda Harpacticoida at Maracaípe sandy beach (Pernambuco, Brazil).	**Oral 13**
17:00 - 17:20 h	Lidia Lins, Rita de C. Lima, Alzira P.C. Silva, Paulo J.P. Santos, André M. Esteves & Verônica da Fonsêca-Genevois. Vertical distribution of Nematoda in a tropical sandy beach (Maracaípe, Pernambuco, Brazil).	**Oral 14**
17:40 - 18:00 h	Chairperson Antonio Todaro and general discussion	

Tuesday

Session Major Projects: MANUELA - Chairperson Jan Vanaverbeke

8:00 - 8:20 h	M. Vincx, Jan Vanaverbeke, MANUELA participants. **M**eiobenthic **A**nd **N**ematode biodiversity: **U**nravelling **E**cological and **L**atitudinal **A**spects (MARBEF-MANUELA): an introduction.	**Oral 15**
8:20 - 8:40 h	Maaike Steyaert, Tania N. C. Bezerra, Ulrike Braeckman, Gustavo Fonseca, Eveline Hoste, Jeroen Ingels, Bea Merckx, Maarten Raes, Lien Steenhuyse, Jan Vanaverbeke, Saskia Van Gaever, Magda Vincx & Tim Deprez. Nemys: an online nematode identification and taxonomical tool.	**Oral 16**
8:40 - 9:00 h	Leen Vandepitte, Jan Vanaverbeke, Edward Vanden Berghe & Tania N. C. Bezerra. Developing an integrated database to perform joint analyses: MANUELA participants. **M**eiobenthic **A**nd **N**ematode biodiversity: **U**nravelling **E**cological and **L**atitudinal **A**spects	**Oral 17**

9:00 – 9:20 h	M Schratzberger, N Lampadariou, P Somerfield, M Austen, A McEvoy, L Vandepitte & E Vanden Berghe. Response of nematode communities to physical perturbation: role of man-made impacts	**Oral 18**
9:20 - 9:40 h	Bea Merckx, Peter Goethals, Maaike Steyaert, Ann Vanreusel, Magda Vincx & Jan Vanaverbeke. Predicting nematode biodiversity using artificial neural networks.	**Oral 19**
9:40 - 10:00 h	**Coffee-break**	

Session Major Projects: MANUELA - Chairperson Jan Vanaverbeke

10:00 - 10:20 h	C. Gambi, A. Vanreusel, S. van Gaever, R. Danovaro, C. Heip, P.J.D. Lambshead, N. Lampadariou, A. Muthumbi, K. Soetaert, J.H. Tietjen, J. Vanaverbeke, S. Vanhove, H. Vermeeren & M. Vincx. Unravelling patterns in deep-sea nematoda communities.	**Oral 20**
10:20 - 10:40 h	Jan Vanaverbeke, Maria Franco, Nikoloas Lampadario, Agnes Muthumb, Maaike Steyaert, Leen Vandepitte, Edward Vanden Berghe, Karline Soetaert. Nematode morphometry from the shelf to the deep sea in european marine water	**Oral 21**
10:40 - 11:00 h	Gritta Veit-Köhler, Marleen de Troch, Mateja Grego, Wendy Bonne, Vriser Borut, Christina Folkers, Michael Gee, Kai Horst George, Chen Guotong, Rudi Herman, Rony Huys, Nikolaos Lampadariou, Pedro M. Arbizu, Armin Rose, Michaela Schratzberger, Paul Somerfied, Edward V. Berghe & Leen Vandepitte. Large scale patterns in harpacticoid copepod diversity – exploring the MANUELA data base.	**Oral 22**

11:00 – 11:20 h	T. J. Ferrero, N. Lampadariou, H. Adão, A. Ameryk, N. Barnes, T. N. Bezerra, T. Deprez, A. Drgas, V. Kalogeropoulou, J. Kuhnert, M. Schratzberger, K. Sevastou, B. Urban Malinga, J. Vanaverbeke, G. Veit-Köhler, P. Whomersley & M. Steyaert. Response of meiofauna communities to increased rainfall as predicted by global climate change models	**Oral 23**
11:20 - 11:40 h	Chairperson Jan Vanaverbeke and general discussion	
11: 40 -13:20 h	**Lunch**	

Session Selected Habitats - Chairperson Keith Walters

13:20 - 13:40 h	Julian J. Lewis & Janet W. Reid. Patterns and processes of groundwater invasion by copepods in the interior low plateaus of the U.S.A.	**Oral 24**
13:40 - 14:00 h	Ainhoa Gaudes, Isabel Muñoz & Tom Moens. Bottom-up influence on a freshwater nematode population: a microcosm approach.	**Oral 25**
14:00 - 14:20 h	Maarten Raes, Wilfrida Decraemer & Ann Vanreusel. Ecology of the free-living marine nematodes associated with cold-water and tropical coral structures.	**Oral 26**
14:20 - 14:40 h	Paula Foltran Gheller & Thaïs Navajas Corbisier. Antarctic marine nematodes as indicators of anthropogenic impact near the brazilian station	**Oral 27**
14:40 - 15:00 h	Gritta Veit-Köhler, Jürgen Laudien, Jan Knott & Ricardo Sahade. Colonisation in the cold: an experiment in Arctic Glacial Kongsfjorden.	**Oral 28**
15:00 - 15:20 h	Chairperson Keith Walters and general discussion	
15:20 - 15:40 h	**Coffee-break**	

Session Trophic Relationships – Chairperson Tom Moens

15:40 - 16:00 h	Pierre-Yves Pascal, Christine Dupuy, Pierre Richard, Jadwiga Rzeznik & Nathalie Niquil. Bacterial ingestion by a nematode community from an intertidal mudflat: influence of biotic and abiotic factors.	**Oral 29**
16:00 - 16:20 h	Giovanni A P. dos Santos, Maria T. S. Correia, Eline V. Puyvelde, Verônica Fonseca-Genevois & Tom Moens. 1+1+1=or?3? Three bacterial-feeding nematode species indirect interactions and their implications for population development.	**Oral 30**
16:20 - 16:40 h	Marleen De Troch, Mateja Grego, Marisa Wyckmans, Victor Chepurnov, Ann Vanreusel & Magda Vincx. Grazing of harpacticoid copepods on epipelic diatoms: the effect of food concentration and diversity.	**Oral 31**
16:40 - 17:00 h	Tom Moens, Steven Bouillon, Tania N. C. Bezerra, Ilse De Mesel, Frank Dehairs & Ann Vanreusel. Carbon sources supporting nematode communities in Kenyan mangrove and seagrass sediments.	**Oral 32**
17:00 - 17:20 h	Franco M A, Soetaert K, van Oevelen D, Van Gansbeke D, Costa M J, Vincx M & Vanaverbeke J. Trophic resource and position of metazoan meiobenthos at contrasting subtidal sediments: combining carbon and nitrogen stable isotope analysis and labelling of food resources.	**Oral 33**
17:20 - 17:40 h	Keith Walters. Of gnats, nematodes, and nekton: top-down, bottom-up regulation of salt marsh insect populations.	**Oral 34**
17:40 - 18:00 h	Daniel Leduc. Of worms and good fats: new approaches for the study of meiofauna trophic dynamics.	**Oral 35**
18:00 - 18:20 h	Chairperson Tom Moens and general discussion	

Wednesday

Session Deep-Sea - Chairperson Monika Bright

8:00 - 8:20 h	Jeroen Ingels & Ann Vanreusel. Metazoan meiofauna in the Nazaré Canyon and adjacent slope.	**Oral 36**
8:20 - 8:40 h	Nikolaos Lampadariou, Paraskevi N. Polymenakou & Anastasios Tselepides. Metazoan meiofauna in the Samaria Canyon (Crete, Eastern Mediterranean) and adjacent open slope systems.	**Oral 37**
8:40 - 9:00 h	Sharma, Jyotsna, Jeffrey Baguley & Paul Montagna. The distribution of meiobenthic nematodes along depth and longitude gradients in the deep northern gulf of Mexico.	**Oral 38**
9:00 - 9:20 h	Sérgio A. Netto, Gustavo Fonseca & Fabiane Gallucci. Meiofauna response to synthetic drilling mud discharge: a comparison between deep sea and continental slope.	**Oral 39**
9:20 - 9:40 h	Chairperson Monika Bright and general discussion	
9:40 - 10:00 h	**Coffee-break**	

Session Deep-Sea - Chairperson David Thistle

10:00 - 10:20 h	Marco Büntzow. Harpacticoida (Crustacea; Copepoda) of Sedlo- and Seine-Seamount (NE Midatlantic).	**Oral 40**
10:20 -10:40 h	H. Gheerardyn, M. De Troch, M. Vincx & A. Vanreusel Biodiversity of harpacticoid copepods in the Porcupine Seabight (North-East Atlantic).	**Oral 41**
10:40 - 11:00 h	David Thistle & James E. Eckman. Large, motile epifauna interact strongly with harpacticoid copepods and polychaetes at a bathyal site.	**Oral 42**

11:00 - 11:20 h	Fabiane Gallucci, Gustavo Fonseca & Thomas Soltwedel. Effects of megafauna exclusion on nematodes assemblages at a deep-sea site: an *in situ* experimental approach.	**Oral 43**
11:20 - 11:40 h	Chairperson David Thistle and general discussion	
11:40 - 12:00 h	**Photograph of the group**	
12:00 - 13:40 h	**Lunch**	

Session Chemosynthetic Environments – Chairperson Olav Giere

13:40 - 14:00 h	D. Muschiol, W. Traunspurger & O. Giere. Cave meiofauna in chemoautotrophic microbial mats – trophic and life cycle dynamics in a self-contained ecosystem -	**Oral 44**
14:00 - 14:20 h	Julia Zekely, Sabine Gollner, Barbara Riemer & Monika Bright. MEIOVENT – Hydrothermal vent meiobenthos along a vent flux gradient from the 9°50`N East Pacific rise region.	**Oral 45**
14:20 - 14:40 h	Julia Zekely, Sabine Gollner & Monika Bright. MEIOVENT – colonization patterns of hydrothermal vent meiobenthos using artificial settlement devices at the 9°50`N East pacific rise region.	**Oral 46**
14:40 - 15:00 h	Sabine Gollner & Monika Bright. MEIOVENT - Succession of hydrothermal vent meiobenthos after a recent volcanic eruption at the 9°50`N East Pacific Rise region.	**Oral 47**
15:00 - 15:20 h	Chairperson Olav Giere and general discussion	
15:20 – 18:20 h	**Poster Session, Cocktail and Cultural Presentation (coordination Verônica Genevois and Nic Smol)**	**Poster 1-107**

Thursday

Session Pollution and Environmental Impacts – Chairperson Michaela Schratzberger

8:00 - 8:20 h	M. Grego, M. De Troch, B. Cermelj, J. Forte, M. Berden-Zrimec & A. Malej. Impact of fish farming on meiofauna: a case-study from The Bay of Piran (Slovenia).	**Oral 48**
8:20 - 8:40 h	Katerina Sevastou, Nikolaos Lampadariou, Paolo Tomassetti, Fabio Pranovi, Alain Bodoy & Ioannis Karakassis. The use of meiofauna in the assessment of marine farming effects on the environment.	**Oral 49**
8:40 - 9:00 h	Priscila P.A. Murolo, Paulo J.P. Santos & Ananias B. Nascimento Jr Meiofauna and harpacticoid copepods as indicators of aquaculture and sugar cane impacts in two tropical estuaries, Pernambuco – Brazil.	**Oral 50**
9:00 - 9:20 h	Hanan M Mitwally & Ahmed M Khadr. Spatial variability of meiofauna sandy assemblages in response to sand nourishment, Alexandria Egypt	**Oral 51**
9:20 - 9:40 h	Jose A. Pérez-García; Maickel Armenteros; Alexei Ruiz-Abierno & Lisbet Díaz-Asencio. Spatial distribution of nematodes assemblages in Cienfuegos Bay, Cuba	**Oral 52**
9:40 - 10:00 h	Chairperson Michaela Schratzberger and general discussion	

10:00 - 10:20 h **Coffee-break**

Session Pollution and Environmental Impacts - Chairperson Joseph Staton

10:20 -10:40 h Cristiane M.V. Araújo-Castro, Deloar D. Oliveira, Lília P. Souza-Santos, Monica F. Costa, Carlos E. Rezende & Renato S. Carreira. The use of *Tisbe biminiensis* to study spatial and temporal variability of whole sediment toxicity of Suape estuarine system (PE, Brazil) **Oral 53**

10:40 - 11:00 h Viviane Lira, Giovanni Santos, Maria Eduarda Larrazabal, Verônica da Fonsêca-Genevois & Tom Moens. Effect of cadmium and barium on the population development of *Pellioditis marina* (Nematoda-Rhabditidae). **Oral 54**

11:00 - 11:20 h Geanne K. N. Santos, Verônica Fonsêca-Genevois, Mônica L.Adam, Lília P. Souza-Santos, Tom Moens & Daniela M.A.F. Navarro. Evidence of phthalate bioaccumulation in Nematoda. **Oral 55**

11:20 - 11:40 h Chairperson Joseph Staton and general discussion

11:40 - 13:40 h **Lunch**

Session Phylogenetics Studies: Morphology and Molecular Analysis- Chairperson Kai H. George

13:40 - 14:00 h Wilfrida Decraemer. General overview of taxonomic studies of THIRIMCO.

14:00 - 14:20 h Kai Horst George. Intraspecific variability and difficulties in morphological species differentiation: The "*Dorsiceratus* Case" (Copepoda, Harpacticoida, Ancorabolidae). **Oral 56**

14:20 - 14:40 h Rony Huys. Harpacticoids and the transition from the sea to freshwater habitats: some examples elucidated by SSU rDNA and Bayesian inference. **Oral 57**

14:40 - 15:00 h	Jeffrey G. Baguley, Joseph L. Staton, Bonnie L. Coggins & Bruce Coull. Phylogeography of a cosmopolitan harpacticoid copepod: a preliminary report.	**Oral 58**
15:00 - 15:20 h	Katrine Worsaae. Muscle and nervous system of the meiofaunal *Diurodrilus* (Diurodrilidae, Annelida) – reconstructed by phalloidin- and immunostainings, CLSM, and TEM.	**Oral 59**
15:20 - 15:40 h	**Coffee-break**	
15:40 - 16:00 h	Alexander Kieneke, Pedro Martínez Arbizu, Wilko Ahlrichs. Anatomy and ultrastructure of the reproductive organs in *Dactylopodola typhle* (Gastrotricha: Macrodasyida) and their possible functions in sperm transfer.	**Oral 60**
16:00 - 16:20 h	Martin V. Sorensen, Martin B. Hebsgaard, Iben Heiner, Henrik Glenner, Reinhardt M. Kristensen & Eske Willerslev. The rise and fall of Scalidophora - new insights in the phylogenetic position of Loricifera.	**Oral 61**
16:20 - 16:40 h	Gustavo Fonseca, Sofie Derycke & Tom Moens. Integrative taxonomy discloses hidden diversity in nematodes.	**Oral 62**
16:40 - 17:00 h	Chairperson Kai H. George and general discussion	
17:00 - 18:00 h	**Society Meeting**	
19:00 - 22:00 h	**Conference Closing Banquet**	

Friday

8:30 h-19:00 h **Conference Excursion to Porto de Galinhas Beach**

Olinda Tour and Opening Dinner - transport will take the group at 15:00 h Recife Palace Hotel to Olinda Old City. During the tour a typical brazilian music and dance group will play. At 19:00 h, the Conference's Opening Banquet will be in Saint Francisco Convent. Transport will return to Recife Palace Hotel at 22:00 h.

Poster Session with Typical Cocktail - drinks and cocktails will be served during the poster session and another dance group will present typical dances to close the session.

Closing Banquet - will be held at a Barbecue Restaurant. Transport will pick participants up at Recife Palace Hotel at 19:00 h. During the banquet the souvenirs of each country will be raffled to benefit Swedmark Fund.

Porto de Galinhas Beach Excursion - Transport will pick participants up at Recife Palace Hotel at 8:30 h (the course takes one hour). Group will be left in the village's center and during three hours the participants may enjoy the beach, go on board the rafts (typical vessel), dive in the swimming pools of the sandstone reefs, go shopping on the popular crafts fair and rent a Buggy to know beachs nearby. Lunch will be served at 13:00 h in a Seafood restaurant where a typical music group will play. Afternoon is free to go shopping and the return to the hotel will be at 17:00 h. In case of rainy day, the morning excursion will be transferred to Brennand art Museum.

Accompanying person will have a daily schedule to visit Recife, Olinda, the cities nearby, museums and other tourist places, but must pay for these separately.

ECOLOGICAL STUDIES ON MEIOBENTHOS: AN HISTORICAL JOURNEY AND PREDICTIONS FOR THE FUTURE.

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I took my first meiofaunal sample in Bermuda in 1965 (before many of the participants at this conference were born). The task was to quantify meiobenthos at 5 locations on the Bermuda platform and to correlate species and abundance with physical factors. In the 1950 and 60's the primary end objective was such descriptive ecology! Coull & Giere (1988) reviewed the history of meiofauna research through the mid 1980's, and defined two other meiofaunal eras: 1) Laboratory Studies & Species Diversity (late 1960's-1970's) and, 2) Experimental Ecology & Phylogenetics (1980's). This experimental ecology era was primarily focused on trophic transfer studies, nutrient regeneration/mineralization studies and the effects of pollution on meiofauna. Meiofauna were touted as sentinels for assessing pollution both via experimentation and by various quantitative techniques. In the 1990's experimentation using meiofauna to assess environmental risk was greatly expanded via techniques in ecotoxicology. Coupling molecular biology techniques and meiofauna opened up many new areas of research and this follows into the 21st century. From determining genetic risk due to environmental contaminants, to tracing prey though food webs, to refining phylogenies of multiple taxa, to creating gene banks for specific species, molecular techniques have changed the study of meiobenthos. What can we expect in the future?

ECOLOGY OF MEIOFAUNA

Oral 2

FUNCTIONAL DIVERSITY OF NEMATODE COMMUNITIES

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The traditional methods of nematode community analyses, deriving diversity and community structure from species abundance data, do not take account of the diverse biology and autecological requirements of the taxa. Natural-history information on nematode species is scant, so studies which require information on nematode ecology have used a functional group approach. A range of biological traits of nematode species were combined to identify patterns in the functional composition of their assemblages collected at 19 soft-bottom stations in the southwestern North Sea with the primary aim to determine which environmental variables control communities. We used 19 categories of five biological traits thought or known to represent an important ecological function. These were related to buccal morphology, tail shape, body size, body shape and life history strategy. Data on trait membership was provided by biological information on species and genera. A total of 79 different trait combinations were recorded. Results from correlation analyses revealed several significant relationships between traits. Some trait combinations were shared by different species and genera, and the ratio of realised versus total number of possible trait combinations of < 1 suggested that some trait combinations were not represented by the nematode fauna from this region. The functional composition of nematodes was strongly linked to median particle diameter and silt content of the sediment and water depth. The approach adopted and our attempts at defining and analysing functional attributes of nematode communities raised a number of conceptual and methodological issues which are discussed.

COLONISATION OF DECOMPOSING ALGAE BY NEMATODA: FOUNDER AND PRIORITY EFFECTS SHAPE THE POPULATION-GENETIC STRUCTURE OF THE DOMINANT SPECIES *Pellioditis marina*

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We performed a field experiment in the polyhaline part of the Westerschelde estuary (The Netherlands) in order to characterize the colonization dynamics of nematodes on ephemeral algal deposits. We identified nematodes to genus level and used molecular tools to investigate the genetic structure of the dominant species, *Pellioditis marina*. Two sites, each containing four experimental units with defaunated algae, were sampled seven times during one month. Site A was situated amidst *Fucus* stands, which permanently harbour a *P. marina* population, while site B was situated more distantly from any source population and was subject to more stressful environmental conditions. In total, 992 individuals were screened for variation in 426bp of the cytochrome oxidase c subunit 1 gene with the single strand conformation polymorphism method. Our results show that the algal deposits of site A were more rapidly colonized and reached fivefold higher densities than those in site B. The haplotype composition of *P. marina* in site A was very similar to that of the natural source population, while rare haplotypes were abundant and genetic diversity was lower in site B. We conclude that founder effects and genetic bottlenecks structured the populations in site B. The genetic differences between experimental units in each site further indicate that effective migration in *P. marina* is very low and that priority effects influence the genetic structure of *P. marina* populations.

Oral 4

AN INVESTIGATION INTO THE EFFECTS OF BURIAL ON AN INTERTIDAL NEMATODE COMMUNITY USING COMMUNITY-BASED METRICS AND BIOLOGICAL TRAITS ANALYSIS.

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A long-term field experiment (9 months) was carried out to investigate the effects of different frequencies of burial on a soft bottom intertidal nematode community. Meiofauna (nematode) samples were taken at 1, 3, 6 and 9 months and a range of community-based metrics calculated. Biological traits analysis was also carried out using traits assumed or known to represent important ecological functions. These included buccal morphology, tail shape, body shape/size, body ornamentation and life history strategy. Marked treatment-specific changes in species abundance, richness and diversity were revealed. Patterns in the functional structure of assemblages were primarily related to differences in the most species-rich trait combinations. These included both dominant and low-abundance species with different taxonomic affiliation. Some of the low-abundance species, which were analogues of the dominants with respect to their ecological functions, proliferated in some experimental treatments. This was primarily a result of their capability to respond to disturbance. Multivariate analysis revealed taxonomic and functional differences between the disturbed communities and also between disturbed and control communities. Demonstrating that frequency of a disturbance in this case burial, can be an important structuring force.

THE STRUCTURE OF THE NEMATODE TAXOCENE IN THE MARINE PART OF THE UKRAINIAN DANUBE DELTA

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The results have been obtained from benthic surveys conducted in the autumn of 1983, 1998, 2003, 2005 in different parts of the highly eutrophic estuarine area of the Danube Delta. The nematode fauna in this area is characteristic for near estuarine areas witch constantly undergoes quantitative changes to ambient environmental conditions. Of the 46 nematode species taxocenic leading or indicator species have been identified. In the taxocene of the delta these are *Mesotheristus setosus* and *Sabatieria pulchra*. In the avandelta the leading are: *S. pulchra*, *Terschellingia pontica* and *Axonolaimus setosus*. In the marine part – *S. abyssalis* and *Ax. setosus*. However, it should be noted that the assemblages of indicator species characteristic to the delta, avandelta and marine areas did not vary during the whole period of study. This gives evidence for favorable conditions of development of nematodes. According to the qualitative parameters of the indicator species, the state of the taxocene study area is linked with changes in environmental conditions.

Oral 6

DISTRIBUTION OF MEIOFAUNA IN MANGROVE SEDIMENTS: WHAT FACTORS DETERMINES ASSEMBLAGES?

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Meiofauna samples were collected along a transect perpendicular to the shore in Gazi Bay, South Coast, Kenya. The transect traversed through different zones of mangrove species. In each of the zones three replicate sediment samples were taken in September 2005 and analysed for fauna community. Two replicate sediment samples were taken for the analysis of sediment grain size and sediment organic matter. Sediment community analysis revealed a total of eleven taxa represented in the meiofauna. There was a high density of meiofauna (170- 800 ind /10 cm^2) which decreases from high water to low water level. The most dominant meiofauna taxa was nematoda which contributed to at least 70- 87% of total fauna. The next most abundant group was oligochaete which contributed to 5- 19%. Community analysis showed a clear distinction of community assemblages between the three mangrove zones encountered (Avicennia, Ceriops and Rhizophora). Physical chemical analysis will be done to assess what factors influence meiofauna distribution. Since meiofauna and in particular nematodes are usually very abundant in mangrove sediments, they are being evaluated as potential bio-indicator group for recovery of the mangrove environments following rehabilitation. It is therefore crucial to understand the normal distribution and factors that influence this distribution in the undisturbed situation.

DIVERSITY AND STRUCTURE OF NEMATODE COMMUNITIES ACROSS MANGROVE AND SEAGRASS VEGETATIONS AT GAZI BAY, KENYA

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Mangrove benthos has long been assumed to rely primarily on mangrove litter fall, but in recent years, several studies have shown that bacteria, macrobenthos and meiobenthos may preferentially utilize more labile sources such as microphytobenthos and inwelled phytoplankton and seagrass detritus from adjacent shallow waters. The relative importance of these different carbon sources for different consumer taxa, however, remains unclear. We have studied the meiofauna at Gazi Bay, Kenya, based upon samples of a dozen stations from the supralittoral down to the shallow subtidal, covering different mangrove and seagrass vegetations. Nematoda were by far the most abundant taxon throughout the area, followed by Oligochaeta and, depending on the station investigated, Harpacticoida, Polychaeta, Kinorhyncha, and Ostracoda. We identified 135 nematoda genera, with a range of 19 – 60 per station. We hypothesized that densities and genus diversity of nematodes could be linked to sediment organic matter (OM) quantity and quality. For both nematodes and oligochaetes, total densities were indeed positively correlated with OM content, but not with C:N ratio as a measure of OM quality. Nematode genus diversity did not show any clear trend with OM quantity or quality. The most common genus overall was *Daptonema*, followed by *Microlaimus*, *Desmodora*, *Metachromadora* and *Spilophorella*. We will present data from a nematode community analysis highlighting shifts in community composition and in 'dominant' genera across different vegetation types. Finally, we wil present results from a short-term field experiment in which the colonization of fresh mangrove litter fall by nematodes was followed using *in situ* litter bag incubations.

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TOP-DOWN AND BOTTOM UP EFFECTS ON SALTMARSH MEIOFAUNA USING WHOLE-ECOSYSTEM MANIPULATION

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Responses of meiofauna to manipulation of nutrient loading and predator abundance were studied in salt marsh creeks in Plum Island Estuary, Massachusetts, USA. Throughout a growing season, 70 µM NO_3^- and 4 µM PO_4^{-3} were added daily on incoming tides, and killifish were removed (a 60% reduction in abundance of *Fundulus heteroclitus* was maintained). Creek (mudflat and creek wall), marsh edge (tall form *Spartina alterniflora*) and marsh platform (*Spartina patens* and stunted *S. alterniflora*) habitats were sampled before and after treatments were begun; responses were tested with BACI statistics. Fertilization effects were strongest in creek walls where ostracod abundance increased, indices of copepod reproduction increased and copepod and annelid communities were altered. These taxa may use epiphytes (that may respond rapidly to fertilization) of filamentous algae as a food source. Fish removal effects were detected only for copepod abundance at the marsh edge and suggest predator limitation. Fish removal effects on annelids did not suggest top-down regulation in any habitat, however fish removal may have stimulated an increased predation rate on annelids by grass shrimp. No effects of either treatment on copepod or annelid species diversity were detected. Interactions between fertilization and fish removal were uncommon. Overall, responses to these environmental challenges were relatively mild and most common in the mid range of the marsh inundation/elevation gradient. Although fertilization caused more ecological effects than predator removal, the relative strength of top down and bottom up effects are difficult to compare because predation may have been underestimated because our experimental design manipulated only one of two principal infaunal predators.

BENTHIC FOOD WEB IN MUDFLAT: RELATIONSHIP BETWEEN FORAMINIFERA AND *Hydrobia ulvae*

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We proposed to study the relationships between foraminifera/ gastropod, *Hydrobia ulvae* (a common gastropod from European intertidal mudflats) in mudflat (Atlantic coast of France). Sediment bearing foraminifera from Brouage Mudflat was washed through a 50-mm sieve and distributed with 20, 40 and 80 specimens of *Hydrobia ulvae*. As a control experiment, one dish was treated similarly but maintained without *Hydrobia*. After two days, most of the sediment in the *Hydrobia* treatments was compacted into small cylindrical gastropod feces, and the tests of living benthic foraminifera (*Ammonia tepida* and *Haynesina germanica*) were easily visible and we concluded that the foraminifera were not ingested by *Hydrobia ulvae*. This experiment permit too to pick quickly and easily foraminifera.

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THE ROLE OF BENTHIC BIVALVES IN STRUCTURING MARINE MEIOFAUNAL COMMUNITIES.

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Bivalves have frequently been observed to influence meiofaunal assemblages, but sometimes in contradictory ways. This may be due to species-specific differences in how bivalves impact the meiofauna (e.g. disturbance of substrate, consumption, excretion). We performed a field experiment to separate effects of bioturbation from direct predation by comparing impacts of the suspension-feeding littleneck clam (*Protothaca staminea*; bioturbation only) and the surface-deposit-feeding clam (*Macoma nasuta;* bioturbation + predation) on meiofauna. Although presence of both bivalve species resulted in a decrease in abundance of post-larval harpacticoid copepods, nauplius larvae and nematodes, copepods were far more negatively affected by bioturbation + predation (*M. nasuta*) than by bioturbation alone (*P. staminea*). In the second part of this study we investigated the effects of chemicals excreted by bivalves on meiofaunal abundance by comparing treatments of caged and un-caged bivalves. We also investigated the effects of a larger range of bivalve species to determine if there existed a generalization regarding the effects of bivalve behaviour on meiofauna. Bivalve chemicals had no appreciable effect on meiofaunal abundance while the bioturbating + infaunal-feeding bivalves continued to cause drastic declines in meiofauna. The results further supported hypothesis that the magnitude of bivalve effect is dependant upon the individual rates of bioturbation and predation for a given bivalve. Apparent contradictions among earlier studies were likely due to the failure to distinguish between these different modes of bivalve disturbance.

MEIOFAUNAL COMMUNITIES OF SANDY BEACHES: WHAT FACTORS INFLUENCE THEIR DIVERSITY AND ZONATION PATTERNS IN THE MICROTIDAL ENVIRONMENT OF EASTERN MEDITERRANEAN?

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During the last decades a considerable body of theory has been developed for sandy beach research through the extensive study of macrofaunal communities. However, the highly diverse and abundant meiofauna have received little attention. Based on a 13-month sampling design that was applied at two sandy beaches with a different degree of exposure, the diversity and zonation patterns of sandy beach meiofauna were studied for the oligotrophic, almost atidal environment of the Eastern Mediterranean (Crete, Greece). Furthermore, the hypothesis that physical factors are the driving force controlling the dynamics of sandy beach fauna was examined.The multivariate analyses that were applied to the copepod assemblages, the dominant metazoan group in most sandy beaches, indicated the existence of two biological zones in both types of beaches, which correspond to the medio- and sub- littoral zones. However, the copepod zonation patterns in the mediolittoral zone do not agree with the traditional macrofaunal schemes, especially with regard to the exposed beach. Therefore, the view that biological zonations change intensively and dynamically as a response to the continuously fluctuating environment of sandy beaches is reinforced. In agreement with the pattern described for macrofaunal communities, copepod diversity was higher at the sheltered beach. However, the across-shore diversity patterns were different between the two beach types. In the sheltered environment, the sublittoral zone hosts a higher number of species in comparison with the mediolittoral zone, while at the exposed beach the horizontal diversity patterns are irregular and heterogeneous in time. Sediment type, hydrodynamics and food availability are pointed out as the principle factors determining the observed faunal patterns. It is thus concluded that biogeochemical factors are important in determining sandy beach meiofaunal patterns and should therefore be considered in sandy beach research.

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TIDAL AND RAINFALL CYCLES INFLUENCE ON THE STRUCTURE OF THE NEMATOFAUNA IN A TROPICAL SANDY BEACH (TAMANDARÉ BAY-PE, BRAZIL).

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This work presents data of the nematofauna genera composition and densities during 24h sampling periods in four different months of the year focusing on the tidal influence. The nematofauna was collected each hour (during two consecutive tidal cycles) with a corer of 3.7 diameter x 10cm length in the intertidal area and fixed with formol 4% in four different months (May and July - rainy season, September and November - dry season) of 2001. At the laboratory the samples were elutriated and the animals were sorted out to posterior slide mounting and identification at genus level. Nematoda densities varied from 37.98 to 1012.58 ind/cm^2. Forty eight genera were found, including a new. *Metachromadora* and *Perepsilonema* were the dominant genera with more than 50% of the total examined individuals. According to ANOSIM ($p<0,05$) densities differed significantly among months and also tides (low, ebb, flood and high). Concerning months, July presented lower densities probably influenced by the rainfall cycle which average annual higher values occur clearly for June-July. Stable dry season (November) showed the highest values. In relation to the tides the highest densities were found in the ebb and the lowest in the flood. These results suggest that there may be a horizontal passive dispersion along the intertidal area due to hydrodynamics and that the rainfall cycle may influence vertical migration in Tamandaré sandy sediments.

TIDAL EFFECTS ON THE VERTICAL DISTRIBUTION OF COPEPODA HARPACTICOIDA AT MARACAÍPE SANDY BEACH (PERNAMBUCO, BRAZIL)

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Beaches are highly dynamic systems that constantly respond to short and long term fluctuations in energy levels. One of the shortest cycles of this nature is induced by the rise and fall of the tide. The objective of this study was to evaluate the effect of tidal variations and sediment stratification over the distribution of Copepoda Harpacticoida species at Maracaípe sandy beach. Three surveys were realized at weekly intervals starting with a spring tide. During each survey two samplings were done, during both the flood and the ebb tide. A trench with 50cm depth was dug and three replicates were sampled in each visible stratum (E1 to E8) for meiofauna, granulometry, salinity and microphytobenthic pigments analysis. Comparisons among surveys of Maracaípe beach morphology showed clear evidence of sediment mobilization processes occurring between the superior and the intermediate mid-littoral zones. The strata average grain size varied from 0.224 to 1.078mm. Sediment classification varied between fine or medium sand in the superficial strata to coarse or very coarse sand in the deepest strata. The degree of selection of the grain size varied from poorly to moderately selected sizes. Copepoda Harpacticoida was represented by 19 species with *Schizoperopsis* (*Psammoschizoperopsis*) sp., being the dominant one, followed by *Arenopontia* (*Neoleptastacus*) *indica* and *Noodtiela hoodensis*. There were significant differences in the structure of Harpacticoida species association among strata and tidal stages for all surveys. Harpacticoida species' densities presented positive and significant correlations with percentages of fine and very fine sand and kurtosis and negative significant correlations with assimetry and average grain size. Patterns of vertical distribution and migration of Harpacticoida species were strongly influenced by the stratification of sediment and tidal variation due to mobilization processes of sediment. The formation of non-uniform microhabitats along the sediment strata was very important to determine the relations between organisms and the interstitial environment.

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VERTICAL DISTRIBUTION OF NEMATODA IN A TROPICAL SANDY BEACH (MARACAÍPE, PERNAMBUCO, BRAZIL).

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The aim of this work was to observe the vertical distribution of Nematoda in relation to the sediment grain size and tidal level. The Nematoda community was studied on the upper tide level of intertidal zone of Maracaípe sandy beach (Pernambuco, Brazil), in two different moments of the tide cycle. The sample was made according to the natural stratification pattern of the sediment, demonstrated by opening a trench of 50 cm depth, which revealed 5, well defined, sedimentary layers. Three replicates were sampled using a corer with 10 cm^2 area in each layer. In the laboratory, meiofauna was extracted using washing-sieving method. Nematodes retained on the 42 µm mesh were counted and identified in generic level. At least 30 nematodes (or all in the case of samples with less than 30 nematodes) were picked out and transferred to 3 different solutions and mounted on glass slides. Thirty genera (16 families and 3 orders) were found in this study. Among these genera, *Latronema* was the most abundant, followed by *Metachromadora*, during the high tide period. This pattern was changed in low tide period, with *Metachromadora* as the most abundant, followed by the genera *Latronema*. Some genera showed a distribution along all layers. On the other hand, some others were found in a specific layer, like *Actinonema* and *Epsilonema*, which occurred only in deeper layers. *Actinonema* was the most abundant genus from the deepest layer, where the sediment was composed by coarse to very coarse sand. The genera *Metachromadora* and *Procamacolaimus* showed a vertical migration in relation to tidal level.

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MEIOBENTHIC AND NEMATODE BIODIVERSITY: UNRAVELLING ECOLOGICAL AND LATITUDINAL ASPECTS (MARBEF - MANUELA): AN INTRODUCTION

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Within the EU- Network of Excellence MarBEF (EU-FP6), several projects are selected for interdisciplinary and international collaboration. MANUELA is the only project devoted to meiofauna research at different levels and is a collaboration of more than 45 scientists from 14 institutes. The objective of MANUELA is: (1) to integrate the currently fragmented information on the dynamics and functional role of meiofauna; (2) to improve understanding of how the activities of meiobenthic organisms, population dynamics and community assemblages are linked to ecosystem processes; and (3) to facilitate meiobenthic research within the MarBEF community and stimulate the interest in meiobenthology. Information on the spatial distribution of meiofauna has been acquired from small- to medium-scale studies involving various benthic habitats ranging from shallow waters to the deep sea, estuarine to marine environments and from pure silts to fine-sandy and gravels. By adding ecological and geographical information, a large-scale analysis of the meiobenthic communities in European marine waters is performed, aiming at (1) assessing large-scale biodiversity patterns in European marine waters ; (2) identifying the structuring factors of assemblages on a large geographical scale vs. the importance of locally varying variables within habitat type or limited geographical area; (3) assessing the role of anthropogenic drivers for differences in large-scale distribution patterns; (4) testing the performance of functional attributes of nematode assemblages in assessing the potential effects of anthropogenic and natural disturbances on benthic systems; (5) gaining insight in species assembly rules to increase the understanding of the high diversity within taxa. A central database is compiled on a broad European scale, including species information, distribution patterns, ecological background, environmental data, This database forms the backbone for the integrated analysis of the broad-scale patterns of the meiobenthic communities. Next, an integrated identification support tool (http://nemys.ugent.be) is generated with free-living marine nematodes as an example and act as a support tool for MarBEF's Taxonomy Clearing System.

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NEMYS: AN ONLINE NEMATODE IDENTIFICATION AND TAXONOMICAL TOOL.

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Nemys is an online biogeographical information system, accessible through http://www.nemys.ugent.be/ . Due to its generic structure, this tool can be used for the storage of taxonomical and biogeographical data of many taxa. At the moment NeMys is used for data on mysids, nematodes, turbellaria, peperomia, amphibians, reptiles and ladybirds. In total, information on more than 8500 taxa is available. The nematode part of the database consist of 3500 references to 8727 taxa, 5862 distribution records and 13100 media files. From almost all nematode species, morphological and morphometric information is available thereby facilitating nematode identification at species level. Since the start of MarBEF-MANUELA, considerable effort is spent on providing online nematode identification keys to genus and species level. This was done to stimulate meiobenthology in areas where the pictorial keys of Platt & Warwick and Warwick, Platt & Somerfield are not readily available. Moreover, species descriptions provided in the latter pictorial key are limited to those species occurring around the UK. Since Nemys provides information on almost all marine species ever described, we make it possible to identify species in most parts of the world. In addition, "private workspaces" were made available in NeMys in order to facilitate communication between scientists working on the same project or within the same area. Here, pictures and drawings of undescribed species can be shared and discussed with a limited number of users while these are not accessible for scientists outside this workbench. As an extra tool, a methodological section provides information on sampling and lab treatment of samples, again in order to facilitate meiobenthic research around the globe.

DEVELOPING AN INTEGRATED DATABASE TO PERFORM JOINT ANALYSES: MANUELA (MEIOBENTHIC AND NEMATODE BIODIVERSITY UNRAVELLING ECOLOGICAL AND LATITUDINAL ASPECTS)

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In the old days - before the computer and internet era - all information was written down on paper, making it sometimes hard to retrace certain information. Now, since the advent of wide-spread access to computers and the World Wide Web, finding, exchanging and saving information and data for future use has become a lot easier. Unfortunately, too many good datasets are still lost.The possibility to archive datasets in a proper way is offered to scientists through MarBEF (*Marine Biodiversity and Ecosystem Functioning*), a network of excellence funded by the European Union. All the received datasets are well documented, so they can easily be tracked (e.g. information on origin and which data they contain). Manuela (*Meiobenthic and Nematode biodiversity, unraveling ecological and latitudinal aspects*), a research project within the MarBEF network of excellence, has a twofold objective: (1) developing a central integrated database capturing all the available data on meiobenthos on a broad geographical scale and (2) performing a joint analysis on the collected data, with a focus on different aspects of how meiobenthos activities are linked to ecosystem processes. The first objective - an integrated database - has already been reached. Twelve institutes from ten European countries have made datasets available. Collected data range from deep sea to coastal zone and from the Arctic to the Antarctic. All these datasets have been compiled into one single - integrated - database, making it possible to perform joint analyses. The database gives e.g. the possibility to calculate diversity and to exclude certain datasets, sampling methods and/or rare taxa.As the integrated database has been fine-tuned, the Manuela scientific community has started analyzing. These results and a detailed description of the database will be made available in scientific literature.

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RESPONSE OF NEMATODE COMMUNITIES TO PHYSICAL PERTURBATION: ROLE OF MAN-MADE IMPACTS

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Numerous human activities cause chronic and widespread physical disturbance in shallow shelf seas, often leading to significant alterations in sedimentation patterns. Whilst these alterations can greatly exceed naturally occurring changes, there is little information on how physical perturbation arising from various human activities affects assemblages of meiobenthic populations. We used a meta-analysis of selected Manuela data to investigate the effects of physical disturbance arising from different types of man-made impacts on nematode communities. The observed faunal patterns integrated responses to the direct impacts of the disturbance itself, to alterations of the sedimentary environment as a result of disturbance, and to the natural environmental regime experienced by the resident biota. Importantly, differences in factors such as water depth inevitably confounded, but did not mask, direct and indirect effects of the man-made activities studied. The genus composition of assemblages from geographically separate seas became increasingly similar with increased level of disturbance. Low trophic diversity in highly disturbed assemblages was generally coupled with low genus diversity. Sabatieria exhibited the most consistent response to human impacts at all field study sites. By linking the outcome from large-scale field surveys with results from small-scale laboratory experiments, we could show that increased dominance of this genus with increasing levels of disturbance was possibly due to its resilience to burial. Comparative analyses also suggested that potential effects of sediment resuspension at the field sites were most likely masked by the effects of other impacts (e.g. contamination, burial and other unmeasured factors). Coupling the results of analyses at multiple scales is a useful means of providing insights into the general response of ecological communities to environmental change.

PREDICTING NEMATODE BIODIVERSITY USING ARTIFICIAL NEURAL NETWORKS.

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Biodiversity indices are an integrative descriptive of communities. The influence of environmental factors and anthropogenic disturbances on these indices is modeled by artificial neural networks (ANNs). ANNs are able to model complex relationships and the predictive quality of ANNs has been shown in several cases (Gevrey et al., 2004, Schleiter et al., 1999). We used 33 environmental factors as input variables, including biochemical, oceanographic, anthropogenic and sediment characteristics. The response variables were diversity measures such as the expected number of species (ES25) and taxonomic diversity (delta). The dataset we used consisted out of 56722 identified nematodes from 343 different samples. A 10-fold crossvalidation of stratified subsets was used to select the model with the best predictive value. The correlation coefficients between the predicted and the measured values for the independent testset showed a high accuracy (r=0.89 for ES25 and r=0.84 for delta). ANNs are often considered to be a blackbox and several algorithms were used to identify the most influential environmental factors. Sediment characteristics, such as clay and sand fraction, total suspended matter, salinity and frictional currents seem to have the strongest influence on the biodiversity indices. Based on the selected models and the maps of the environmental factors, we were able to create predictive maps of the biodiversity indices for the Belgian Continental Shelf.

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UNRAVELLING PATTERNS IN DEEP-SEA NEMATODA COMMUNITIES

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Nematodes are the most abundant metazoan on the Earth and their relative importance rises up to 90% in deep sea. Information on deep-sea nematode biodiversity and composition is rather scant, limited to few areas. In the framework of the MANUELA project within the EU network of Excellence MARBEF, the largest dataset on deep sea nematodes has been created. Information on the nematode diversity and composition is collected on 133 deep-sea sites, located at depth ranging from ca 200 to 8,300 m, at latitude 90°N - 75°S and at longitude 153°W - 179°E. The worldwide distribution of these data allows to investigate nematode diversity and composition along bathymetric, latitudinal and longitudinal gradients. Nematode diversity generally decreases with the increasing depth but different spatial patterns are observed when data are selected within different regions. Nematode diversity does not display clear spatial patterns along the latitudinal and longitudinal gradients. Among the 289 identified genera, Sabatiera, Acantholaimus, Thalassomonhystera, Halalaimus, Molgolaimus, Microlaimus and Dichromadora are the most abundant genera and allow to identify bathymetric zones and, within each bathymetric zone, different regions. Results presented here will be discussed in order to provide new insights on the spatial patterns of nematode diversity and composition in the deep sea.

NEMATODE MORPHOMETRY FROM THE SHELF TO THE DEEP SEA IN EUROPEAN MARINE WATER.

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We investigated patterns in nematode length, width and length/width ratio by analyzing the MarBEF-MANUELA database (morphometric data on 37733 nematodes from the shelf to the deep-sea). Generally, nematode individual biomass is decreasing from the shelf to the deep sea as a consequence of a decreasing length, confirming the hypothesis that an increase in length requires structural growth which is related to food availability. of sufficient food. Nematode length at the shelf seems to be influenced by food availability: nematode length in cohesive sediments rich in organic matter (OM) is significantly higher compared to permeable sediments. However, in sandbanks subjected to very strong currents where food availability is extremely low, we observed the longest average nematode length. This increased length from these nematodes probably prevents them from being eroded. In addition, we suggest that the ectosymbiontic bacteria observed on *Leptonemella* individuals provide additional organic matter for the nematodes. Nematode biomass and nematode length spectra shift towards lower values, both at the Aegean Shelf and on the sandbanks of the Belgian Continental Shelf where anthropogenic physical disturbance (beam trawling or sand extraction) occurs frequently.Nematode width decreases with depth in general and within most of the bathymetric transects sampled. However, large differences in nematode width occur at comparable depths, both at the shelf and the deep sea. High width values in the Aegean Sea coincide with short lengths, resulting in a stout nematode morphometry in this area.. We hypothesise that the increased width values are a result of storage of reserve products to overcome periods with low food availability. Therefore, we conlude that nematode morphometrics are influenced by food availability, biogeochemichal processes, hydrodynamic stress, mineralisation rates and physical disturbance.

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LARGE SCALE PATTERNS IN HARPACTICOID COPEPOD DIVERSITY – EXPLORING THE MANUELA DATA BASE

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The integrated MANUELA data base is an extensive collection of European meiofauna data compiled for the responsive mode programme "Meiobenthic And Nematode biodiversity: Unraveling Ecological and Latitudinal Aspects" within the MarBEF (www.marbef.org) EU Network of Excellence, funded under the Sixth Framework Programme of the European Union.With a focus on copepod species we extracted 15 data sets ranging from the Arctic to the Mediterranean and from estuaries to deeper shelf stations (maximum depth: 136 m). Species composition, diversity and density of copepods depending on geographical and environmental factors are compared on single core scale. While different sampling strategies and sample sizes prevent from analyses using richness and eveness measures only the number of expected species and various dominance indices are possible measures of diversity for this data base. Species composition similarity analysis between single cores by means of multidimensional scaling significantly distinguishes between the different data sets: For water depths between 5 and 60 m two Mediterranean sites are clearly separated from each other and from the Northern European regions such as Great Britain, the Arctic, the Baltic and the North Sea. It can be clearly stated that these differences are not depth-related, but that they have to be explained geographically or sedimentologically.

RESPONSE OF MEIOFAUNA COMMUNITIES TO INCREASED RAINFALL AS PREDICTED BY GLOBAL CLIMATE CHANGE MODELS

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MANUELA (Meiobenthic and Nematode Biodiversity Unravelling Ecological and Latitudinal Aspects) is a Responsive Mode Project undertaken within the MarBEF (http://www.marbef.org) EU Network of Excellence, funded under the Sixth Framework Programme of the European Union. One aim of the project was to carry out a "joint activity" across a number of European laboratories engaged in meiofaunal research. Following a planning workshop held in Hel, Poland in 2006, it was decided that a field experiment should be undertaken at four European beaches (Portugal, Belgium, Greece and Poland) aimed at examining whether meiofaunal assemblages respond in a unified manner to an environmental perturbation. Such responses have been assumed in studies of disturbance and pollution, but results have often been contradictory. This can be explained in terms of ecological theory as current models are not based on monotonic responses. However, the problem for ecologists has been to understand the location of a system (the starting point) in relation to the theoretical model. In this experiment, the experimental model was the potential disturbance effects of rainfall on beach sands not normally inundated by seawater, but known to harbour meiofaunal assemblages. The experiment also provided an opportunity to understand the potential impact of a predicted result of global warming, an increase in amount and intensity of rainfall, on marine systems. This talk will describe the background to the experiment, consider practical and scientific aspects of field experimentation and give preliminary results.

SELECTED HABITATS

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PATTERNS AND PROCESSES OF GROUNDWATER INVASION BY COPEPODS IN THE INTERIOR LOW PLATEAUS OF THE U.S.A.

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The copepod crustacean fauna collected from subterranean habitats, including caves, wells, and the hyporheos of streams in and near the Interior Low Plateaus of the U.S.A. is dominated by Cyclopoida, with 39 species, followed by Harpacticoida with 9, and Calanoida with 2. Nearly all of the harpacticoid and calanoid species are widespread, primarily surface-dwelling generalists. Fourteen of the cyclopoids, members of the genera *Diacyclops*, *Itocyclops*, *Megacyclops*, and *Rheocyclops*, are apparently obligate stygobionts or hyporheic. Several of the species that are more strongly modified for subterranean existence occur only in the more southern, unglaciated areas. Our sampling data support the hypothesis that the more specialized, groundwater-interstitial species have been unable to disperse into previously glaciated regions; whereas some, less-specialized species may have invaded groundwaters from surface habitats as the glaciers receded.

BOTTOM-UP INFLUENCE ON A FRESHWATER NEMATODE POPULATION: A MICROCOSM APPROACH.

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The aim of this study was to test the effect of different nutrient concentrations on the population development of a bacterivorous freshwater nematode, *Bursilla monhystera*. The experimental design intended to complement data obtained by two *in situ* nutrient addition experiments in a pristine Mediterranean forested stream located in the NE of Spain. The first one was a 44-day experiment that yielded a positive response of the bacterial community in epilithic biofilms but much less so for psammic biofilms, which may be limited in labile organic carbon. The second one was a 1-year experiment where the response of the whole meiofauna community was studied in the sandy riverbed. Nutrients added in both systems, the Fuirosos stream and the microcosms, were phosphate, nitrate and ammonia. Additionally, in the microcosm experiment, glucose as a biodegradable dissolved organic carbon (BDOC) source was also tested in basal conditions (low carbon) and 20-fold the average concentration found in the stream (high carbon). In each of the carbon conditions, different N and P concentrations were performed (basal, 3-fold, 10-fold of N or P alone and a combination of both). Microcosms were filled with autoclaved natural sand from the stream and milliQ water with the corresponding nutrient solution. The experiment lasted three months; the first sampling date was one week after the addition of nematodes, and biweekly from then onwards. One week after the nematode addition, in the first sampling date, nematodes increased their population 2 to 6-fold higher, illustrating the fast reproduction and short generation time of *B. monhystera*. Treatments with the highest nutrient concentrations (mainly 10-fold P and 10-fold N and P) showed lower nematode densities, but with a higher proportion of large (adult) individuals. In later samplings, nematode densities tended to converge in nearly all nutrient conditions. Our results indicate that episodic nutrient enrichment may affect populations of bacterial-feeding nematodes in the short term, but that longer-term population dynamics are largely determined by leaching of nutrients and labile carbon from sediment-bound organic matter, rather than by nutrient concentrations of the overlying water. These results confirm trends observed in the field experiments, where the meiofaunal community was more influenced by detritus input and retention (as indicated by hydrology and seasonality) than nutrient concentrations per se.

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ECOLOGY OF THE FREE-LIVING MARINE NEMATODES ASSOCIATED WITH COLD-WATER AND TROPICAL CORAL STRUCTURES.

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Meiofauna associated with coral reefs is much less studied than coral-reef associated macro- or megafauna. Moreover, the meiofauna of cold-water coral degradation zones was unknown until now. Dead cold-water coral fragments, glass sponge skeletons and sediment were sampled with a box corer in the Porcupine Seabight. Dead coral fragments, coralline sediment and coral gravel were collected by hand during snorkeling along the south coast of Kenya and east coast of Zanzibar. Nematodes were identified on genus level; representatives of the typically epifaunal nematode families Epsilonematidae and Draconematidae were identified on species level. Nematode communities associated with the different microhabitats in cold-water coral degradation zones were significantly different from each other. Typically epifaunal taxa were especially abundant on coral fragments. Coral and sponge substrata lie relatively unprotected on the seafloor and are more subjected to strong currents. This resulted in a higher abundance of taxa better adapted to physical disturbance (heavily cuticularised, attachment, special locomotion). The underlying sediment housed typically slender slope nematodes. In tropical coral degradation zones, nematode community composition was structured on a regional, local and microhabitat scale. The structuring effect of microhabitat type was clearly most important. Nevertheless, community composition was typical for this type of habitat. Epsilonematidae and Draconematidae communities associated with coral fragments were significantly different from those in the underlying sediment (cold-water) or coral gravel (tropical). Species-specific habitat preferences were explained by fine-tuned morphological adaptations. Overall, genus diversity was higher in the underlying sediment than on the large biogenic structures. This was explained by the adaptation of most nematodes to an infaunal life strategy. However, large biogenic substrata provide a microhabitat for rare, epifaunal taxa, which showed a higher diversity on coral fragments. Cold-water coral degradation zones are at least as diverse as tropical coral degradation zones.

ANTARCTIC MARINE NEMATODES AS INDICATORS OF ANTHROPOGENIC IMPACT NEAR THE BRAZILIAN STATION

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Activities at the Brazilian Antarctic Station may cause damage to the fragile antarctic environment. Meiofauna was used to evaluate this impact, since it has been considered a useful tool. Two areas were compared: one being possibly impacted by the presence of the station (sites CF1-oil tanks and CF2-sewage outfall) and other, Botany Point, a reference area (sites BP1 and BP2). Sampling was undertaken in two periods of the austral summer of 2004/2005 in Martel Inlet, King George Island, Antarctica. Three box-corers were taken from each site at two depths (20-30m and 50-60m). Sediment samples were obtained with plastic cores for analyses of meiofauna (4.9cm² - 5.0cm deep), chlorophyll *a* and phaeopigments biomasses, grain size, carbonates and organic matter. Meiofauna was washed through 0.5mm and held on a 0.062mm mesh sieve. Nematodes represented more than 90% of the organisms and were identified to genera level. Nematode densities ranged from 1,278 ± 599 to 16,021 ± 12,298 ind.10cm^{-2}, at BP2 20-30m and BP1 50-60m, respectively. A total of 65 genera and 3 subfamilies were found, belonging to 24 families (among 3436 identified specimens). Number of genera found at each site ranged from 12 to 34 and diversity ranged from 1.57 to 4.22 bits/ind, both being higher at 50-60m at Botany Point sites. MDS and cluster analyses for genera densities separated the samples between depths, but not between sites or periods. *Aponema*, *Sabatieria*, *Daptonema* and *Halalaimus* were dominant, with higher densities at 20-30m, and were positively correlated with sand and chlorophyll *a*, as well as *Dichromadora*, *Odontophora*, *Acantholaimus and Prochromadorella*. In contrast, *Actinonema*, *Molgolaimus*, *Amphimonhystrella and Marylynnia* were more abundant at 50-60m and negatively correlated with fine sands. All results were similar for genera or family level, suggesting that identification only to family would be enough to evaluate environmental impact in the coastal antarctic zone. Although these results are not conclusive yet, as other environmental variables are still being analyzed, the lower diversities at 50-60m in CF sites indicate a possible anthropogenic impact near the Brazilian Station.

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COLONISATION IN THE COLD: AN EXPERIMENT IN ARCTIC GLACIAL KONGSFJORDEN

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An *in situ* experiment on metazoan meiofauna colonisation and succession was carried out at Brandal (78°56.88'N, 11°51.63'E) situated in the arctic glacial Kongsfjorden (Spitsbergen). 28 soft sediment containers were deployed at 20 m depth and sampled after a one, two and three years immersion period. Main taxonomic groups and abundance of colonising meiofauna are described and compared. Meiofauna communities at Brandal show the highest densities reported for inner Kongsfjorden to date. While the three exposure varieties and the ambient sediments did not differ in total individual numbers the treatments showed marked differences in community structure as detected by ANOSIM based on Bray Curtis and cosine similarity. The extended three year period until a community stage comparable to ambient sediments was reached leads to the assumption that long recovery and colonisation times are to be expected for polar shallow water meiofauna.

BACTERIAL INGESTION BY A NEMATODE COMMUNITY FROM AN INTERTIDAL MUDFLAT: INFLUENCE OF BIOTIC AND ABIOTIC FACTORS

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The fate of marine benthic bacterial biomass is a topic of major importance in microbial ecology. Because of their high abundance, production and nutritional value, benthic bacteria may constitute an important food resource for benthic fauna. Nevertheless, due to technical limitation, studies dealing with benthic bacterivory are limited. Bacterial consumption by a nematode community from Brouage mudflat (Marennes-Oléron – France) was determined under different experimental conditions. Main species of the community were *Chromadora macrolaima* and *Daptonema sp.* (respectively 64 and 8 % of total abundance). Nematodes put in contact with ^{15}N pre-enriched bacteria present an isotopic excess proportional to bacterial ingestion. In average standardized conditions, the nematode community grazed 17.2 $pgC.ind^{-1}.h^{-1}$. Ingestion of bacteria was influenced with bacterial and algal concentrations, salinity, temperature and light. Optimal conditions for bacterial ingestion feet well with conditions frequently found in the study area.

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1 + 1 + 1 = OR ≠ 3? THREE BACTERIAL-FEEDING NEMATODE SPECIES INDIRECT INTERACTIONS AND THEIR IMPLICATIONS FOR POPULATION DEVELOPMENT.

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Numerous of environmental communities have a high diversity. Species interact through direct interactions, such as predation, competition for food or space, etc… However, species may also affect each other through indirect interactions, involving one or more intermediate organisms, or through interferences other than predation or competition. Free-living nematode communities in marine, freshwater and terrestrial habitats are often characterized by a high species diversity, several tens of species m^{-2} being quite common. Most communities also comprise several 'confunctional' (i.e. sharing the same sources) and even congeneric species, making nematode communities very interesting models to assess different species interactions, but do community interactions affect population development and population densities? We have investigated the population dynamics of three species of estuarine, bacterial-feeding nematodes on different levels of food supply in microcosms, and we have done so both in monospecific and in three-species cultures. We observed facilitative (i.e. one species improving population development of others) interactions at very high food availability, and inhibitory (i.e. both *Diplolaimelloides* species negatively affecting each other's population development) interactions at intermediate food availability. Surprisingly, behavioural parameters, such as chemotactic responses and feeding rates, indicated that one *Diplolaimelloides* species facilitated the response of the other species. We conclude that indirect interactions between species are rule rather than exception and render the outcome of models that link species number to system functioning highly unpredictable. The picture becomes even more complex because short-term (behavioural) and longer-term (population development) parameters may yield conflicting responses.

GRAZING OF HARPACTICOID COPEPODS ON EPIPELIC DIATOMS: THE EFFECT OF FOOD CONCENTRATION AND DIVERSITY

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Harpacticoid copepods (Crustacea) consume a wide variety of food sources and the question rises whether they feed at random or whether they select specific food items. In general, many factors interact to determine patterns of prey use by predators, but two are fundamental. First, only food items that are physically available can be eaten. The second factor is the consumer's effectiveness to locate, capture, handle and digest food items. Two lab experiments were conducted to study the effect of food diversity and its concentration on food selectivity by harpacticoid species (*Paramphiascella fulvofasciata*, *Harpacticus obscurus*, *Tigriopus brevicornis*). To trace food uptake, epipelic diatoms (*Navicula phyllepta*, *Grammatophora marina* and *Cylindrotheca closterium*) were grown in f2 medium enriched with the carbon stable isotope ^{13}C. In a first experiment, the epipelic diatom *Seminavis robusta* was applied in recipients of different area and in various concentrations. To test the effect of food diversity, different treatments consisting of combinations of 1, 2 or 3 diatoms were applied in a second set-up. We found that the grazing efficiency of *Paramphiascella fulvofasciata* was diatom concentration-dependent with a lower diatom uptake at lower diatom densities. On the contrary, there was no significant effect of the area *per se* where the copepods could graze upon. Uptake of a unispecific food source by a single copepod species decreased as food diversity (and concomitant overall food concentration) increased. All three consumers reacted similarly to changing food diversity, but exhibited strong species-specific responses to food identity (diatom species). Irrespective of level of food diversity, *H. obscurus* took up high amounts of *G. marina*, whereas both *P. fulvofasciata* and *T. brevicornis* preferred *C. closterium* when given the choice between different diatoms. In conclusion, diversity of food and its identity are of critical importance at the base of the trophic pyramid, influencing trophic transfer from primary producers over grazers to higher trophic levels.

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CARBON SOURCES SUPPORTING NEMATODE COMMUNITIES IN KENYAN MANGROVE AND SEAGRASS SEDIMENTS

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The benthos in intertidal and shallow subtidal coastal habitats typically receives a variety of carbon and energy inputs. In vegetated habitats such as mangroves and seagrass meadows, the local plant production generates important inputs of detritus, but microphytobenthos, epiphytes and imported phytoplankton remain potentially significant C sources for benthic invertebrates.The relative importance of different carbon sources for different consumer taxa under particular ecological settings often remains unclear. Clearcut information on endobenthic consumers in general, and on meiofauna in particular, is scant. In mangrove systems, the mangrove litter fall has long been considered as the major source of energy and carbon for benthic consumers. The aim of this study was to investigate the relative importance of different major carbon inputs for the meiobenthos in a mangrove-bordered creek at Gazi Bay, Kenya. We have sampled a range of stations from mangrove vegetations up in the high littoral down to seagrass meadows in the shallow subtidal. We have measured stable carbon isotope signatures of the predominant primary producers and of nematodes and oligochaetes. The deposit-feeding oligochaetes typically follow the $*^{13}C$ of sedimentary organic matter, suggesting little selectivity. Nematodes show a broad range of patterns. In the upper sediment cm, the relative importance of microphytobenthos and/or inwelled phytoplankton to their nutrition is large. Several dominant nematode genera, like *Astomonema* and *Catanema*, consistently exhibit very depleted $*^{13}C$ which can only be explained by a trophic link with chemosynthetic bacteria. Our findings challenge the old view that the benthos in mangrove systems completely relies on mangrove litter for its carbon and energy requirements.

TROPHIC RESOURCE AND POSITION OF METAZOAN MEIOBENTHOS AT CONTRASTING SUBTIDAL SEDIMENTS: COMBINING CARBON AND NITROGEN STABLE ISOTOPE ANALYSIS AND LABELLING OF FOOD RESOURCES

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Two different approaches were used to determine the trophic position and food resources for meiobenthos: (i) the natural abundance of carbon and nitrogen stable isotopes ratios and (ii) uptake of ^{13}C labelled diatom *Skeletonema costatum* and Prymnesiophyte *Phaeocystis*. Two contrasting sites in the southern North Sea were investigated: one with fine grained sediment located close to the coastline and another with highly permeable sediments. ^{13}C and ^{15}N signatures were analysed in sediment Particulate Organic Matter (POM), water Suspended Particulate Matter (SPM) and in different meiobenthic taxa at three different sampling periods (prior, during and after the spring bloom deposition) at two sediment depths (0-1 and 4-5 cm). In the fine grained station, surface-dwelling nematode species feed on fresh organic matter (OM) year-round while deeper dwelling nematodes feed on older material. *Sabatieria* and *Richtersia* feed on surface POM independent of the sediment horizon they were encountered in. Copepods' isotopic signatures indicated a chemoautotrophic food source. In the coarser sediment no vertical differences in food sources were detected. In the tracing experiment both the diatom and *Phaeocystis*–derived OM cascaded into meiobenthic biomass in low but similar percentages. *Phaeocystis*–derived OM might therefore be an important food source for the benthic environment. Label uptake was highest at the upper cm in both stations. In the coarse sediment meiobenthic label uptake per unit of organismal carbon was higher, probably as an adaptation to low availability of labile OM. The so-called stout nematodes showed lower uptake compared to the slender nematodes. Their sudden increase in densities shortly after a phytoplankton bloom must rely then on their life-history characteristics. In finer sediments *Enoploides* presented the highest uptake, indicating other food sources besides meiobenthic preys. *Sabatieria* showed the highest uptake at the 1-3cm layer suggesting migration to the sediment surface to feed on fresher OM. This behaviour explains its faster response in terms of densities after a phytodetritus deposition event. Generally total uptake was low and not nearly sufficient to maintain nematodes feeding requirements.

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OF GNATS, NEMATODES, AND NEKTON: TOP-DOWN, BOTTOM-UP REGULATION OF SALT MARSH INSECT POPULATIONS

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The ability of top-down, predation, and bottom-up, resource availability, processes to regulate sand gnat (Diptera: Ceratopogonidae) populations was investigated within Southeastern U.S. salt marshes. Ceratopogonids are significant pests in coastal areas transmitting disease to both livestock and humans. Many adult ceratopogonids lay eggs within salt marsh habitats. Eggs develop through 4 larval instars within the sediments before pupating. Studies indicate larvae can feed on a range of benthic organisms from microalgae to meiofauna. Larval predators include ceratopogonid and other insect larvae, polychaetes, and fish. To examine bottom-up effects, both larval and meiofaunal densities were manipulated within mesocosms. In one experiment nematode densities were reduced by 50% after 5 days in treatments where ambient larval densities were increased 3 fold. Seasonal densities >10,000 larvae m^2 occurred within study site marshes and exceeded all experimentally increased density treatments. Larval densities >3 times ambient levels also resulted in a significant reduction in copepod numbers. The consumption of copepods only in >3 fold larval density treatments may indicate larvae are capable of switching to non-preferred prey when preferred prey, nematode, densities are reduced. Top-down effects were examined experimentally using *Fundulus heteroclitus*, a common salt marsh fish, as the predator. Mesocosms with *F. heteroclitus* 17 mm in standard length at two typically experienced field densities were established. Fish were allowed to forage for ca. 6 h or one high tide. *Fundulus heteroclitus* reduced larval densities by 50 and 94% in 250 and 1500 fish m^2 treatments, respectively. While evidence indicates the availability of meiofaunal prey may regulate larval development in intertidal habitats, the near decimation of larval populations by only one of a number of potential marsh predators suggests top-down effects are critical to marine insect population dynamics.

OF WORMS AND GOOD FATS: NEW APPROACHES FOR THE STUDY OF MEIOFAUNA TROPHIC DYNAMICS

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Several methods have been used for the study of meiofauna trophic dynamics, including stable isotope analysis and feeding experiments. Fatty acids are a promising method but the amount of information available so far about the fatty acid composition of meiofauna is limited. The fatty acid profile of a free-living nematode from the field was obtained for the first time as part of an ongoing research project about the feeding ecology of meiofauna in intertidal seagrass and sandflat habitats of southern New Zealand. Harpacticoid copepods were also analysed for fatty acid composition. Both nematodes and copepods were found to be rich in polyunsaturated fatty acids, which has significant implications for the role of meiofauna in coastal food webs. The use of both fatty acid and stable isotope analysis for elucidating the diet of meiofauna in the field was found to be very useful. The often complex nature of food web relationships at the meiofauna scale, however, may require more careful interpretation of fatty acid data than for macrofauna. Other potential applications of fatty acid analysis for the study of meiofauna ecology are suggested.

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METAZOAN MEIOFAUNA IN THE NAZARÉ CANYON AND ADJACENT SLOPE

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During the HERMES *Discovery* cruise 297 (Summer 2005), multicore and megacore meiofauna samples were taken in the Nazaré canyon at shallow, mid and full water depths (700, 3400 and 4300m) and on the adjacent continental slope (3400 and 4300 m depth). The samples were analyzed for metazoan meiofauna abundances, nematode composition and biomass. Next to the metazoan meiofaunal component, environmental variables: i.e. organic carbon content, CPE, and grain size were determined. By identifying structural and functional diversity of the meiofauna (nematodes) and nematode biomass at the intensively studied Nazaré canyon sites and linking the data to environmental variables, we can get an idea on what drives and maintains nematode diversity within the Nazaré Canyon. The flux of organic matter has proven to be an important factor regulating benthic standing stocks, and not only will the degradation of the sedimentating organic matter play an important role in these deep waters, also spatial and temporal differences in primary production rates influence benthic production and diversity. Other research has shown that hydrodynamic disturbance – an important factor in submarine canyons - plays a key role in the formation of structural biodiversity. While the Nazaré canyon has no direct riverine input it acts as a huge trap for organic material, reflected in high CPE values and consequently higher meiofauna densities and biomass compared to the adjacent slope. At the sampled sites, the Nazaré canyon shows higher dominance for particular nematode genera compared to the adjacent slopes and harbors an aberrant nematode community composition.

METAZOAN MEIOFAUNA IN THE SAMARIA CANYON (CRETE, EASTERN MEDITERRANEAN) AND ADJACENT OPEN SLOPE SYSTEMS

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Submarine canyons are complex environments that host a range of substrates and sedimentary processes such as organic matter funneling, sediment failures and dense shelf water cascading. As a result, they provide a great variety of important habitats for deep-sea fauna and may represent areas of elevated faunal diversity compared to the more stable abyssal plains and open slope areas. Within the framework of the EU project HERMES (Hotspot Ecosystem Research on the Margins of European Seas), and in order to understand the role of submarine canyons as pathways for organic matter input into deeper areas as well as their role in structuring benthic communities, samples were collected from the submarine extension of the famous Samaria Gorge (Eastern Mediterranean, Crete) as well as from two adjacent slope areas during May 2006. The samples were collected from 17 stations representing shallow, mid and deeper areas (i.e. 500, 2000 and 3600 m). The samples were analyzed for metazoan meiofauna, nematode diversity as well as environmental parameters such as organic carbon, phytodetritus and sediment grain size. All non canyon stations had fine sediments while the content of silt and clay was relatively higher at the deeper areas. In contrast, all the canyon stations were characterized by coarse sediments, possibly due to strong local currents as well as the steep cliff structure of the canyon. ?rganic carbon and chlorophyll *a* exhibited elevated values near the mouth of the canyon and the nearby slope system and were found to be comparable to those reported for organically-rich sediments. Regarding meiofauna, nematodes and harpacticoid copepods were dominant at all stations and their densities were strongly correlated with the organic content of the sediment, indicating that the flux of organic matter is an important factor in regulating benthic standing stocks. Meiofaunal densities however, were not always higher inside the canyon indicating that other factors, such as the local hydrodynamic regime, may also be equally important in structuring benthic communities. The influence of the different environmental settings of the canyon and slope areas on nematode diversity patterns will also be discussed.

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THE DISTRIBUTION OF MEIOBENTHIC NEMATODES ALONG DEPTH AND LONGITUDE GRADIENTS IN THE DEEP NORTHERN GULF OF MEXICO

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The free-living nematodes from 15 stations along two transects in the eastern and western part of the northern Gulf of Mexico (GOM) were analyzed. The GOM is a semi-enclosed basin with complex bathymetry, physical oceanographic and biological regions. These features interact with the anti-cyclonic Loop Current and Mississippi River outflow to create areas of high nematode abundance in the northeastern GOM. Conversely, the northwestern GOM is relatively benign in terms of slope topography, river outflow, and physical oceanographic processes; resulting in comparatively modest nematode abundance. Significant depth and longitude differences in the community composition of nematode genera were observed by multivariate analyses. A significant difference in nematode feeding morphology was observed between depth groups, but not between longitudinal groups. An increase in average taxonomic diversity with depth may explain the observed difference in feeding morphology, and may suggest proportionally more higher order taxa and trophic complexity with depth. These data offer further insight into processes structuring communities and species distributions in the deep sea.

MEIOFAUNA RESPONSE TO SYNTHETIC DRILLING MUD DISCHARGE: A COMPARISON BETWEEN DEEP SEA AND CONTINENTAL SLOPE

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The response of the meiofauna communities to the discharge of synthetic based mud (SBM) cuttings from exploratory drills was investigated in a deep sea (890 m) and a continental slope (215 m) site off SE Brazil. Samples (deep-sea – 159; slope- 135) were undertaken on three sampling cruises: one pre- and two post-drilling. Post-drilling samplings were carried out one and twelve months after drilling at the deep sea, and three and twenty-two months after at the continental slope. Short after drilling, a significant decrease in the meiofauna density and number of taxa, as well as in the nematodes density and richness (number of families and genera), was detected at both sites. The univariate and multivariate analysis indicated that the impacts on meiofauna communities, at both sites, were not restricted to a potential area of impact as proposed by a cuttings dispersion model (OCC). Whereas in the deep-sea site changes in the meiofauna structure were mainly related to physical changes in the substrate due to the presence of cuttings, in the continental slope, the effects on meiofauna were related to both physical and chemical impacts. Twelve months after drilling in the deep-sea site, most of the values of the meiofauna descriptors were similar to those at the pre-impact period. Nonetheless, the multivariate structure of meiofauna community was still significantly different. Besides, the number of meiofauna taxa, densities of copepods and epigrowth-feeder nematodes increased significantly. Possibly, the increase of superficial forms of meiofauna in the deep-sea will last until the complete disaggregation of the cuttings. At the slope, twenty-two months after drilling, areas only physically impacted showed signs of recovery. Contrary, in areas under the influence of SBM, meiofauna descriptors still showed significantly lower values than those found in the pre-drilling period.

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HARPACTICOIDA (CRUSTACEA; COPEPODA) OF SEDLO- AND SEINE-SEAMOUNT (NE MIDATLANTIC)

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To elucidate the origin of the summit Meiofauna of seamounts, Sedlo- and Seine-seamount and the surrounding deep sea were sampled. The harpacticoid copepods were identified to species level. The faunistical data of the seamounts, of the deep sea, of each station and additionally the already existing dataset of the Great Meteor Bank were analyzed for similarities and dissimilarities (Cosine similarity, Bray-Curtis dissimilarity). On both seamounts and in the deep sea together 28 harpacticoid families with more than 50 genera and 150 species were found. Ten species were collected on both summits, they belong for example to genera of *Neobradya* Scott, 1892, *Marsteinia* Drzycimski, 1968, *Tisbisoma* Bozic, 1964, *Malacopsyllus* Sars, 1911, *Cletodes* Brady, 1872, *Idyella* Sars, 1906. As most of the sampled species they are new to science, only *Stylicletodes longicaudatus* Brady & Robertson, 1880 was found again. The species found on more than one summit show all what we consider typical deep-sea characteristics, whereas most of the other species are typical elements of a shallow water fauna. That forces the conclusion that one part of the harpacticoid summit fauna has its origin in the deep-sea and comes up with the developing seamount. The other part of this fauna colonizes the summit with time starting from coasts or islands around the seamount. The results presented here support the idea of seamount colonization as George mentioned it in 2004.

BIODIVERSITY OF HARPACTICOID COPEPODS IN THE PORCUPINE SEABIGHT (NORTH-EAST ATLANTIC)

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The harpacticoid copepod fauna associated with cold-water coral substrates was investigated in the Porcupine Seabight (North-East Atlantic). The main aim was to assess the influence of microhabitat type on copepod assemblage structure. Therefore, different substrate types were distinguished, namely dead coral fragments, glass sponge skeletons and the underlying sediment. Although nature and structure of the examined microhabitats are different and the associated faunas most likely experience different conditions (e.g. in terms of food supply and physical disturbance), it appears that coral fragments and underlying sediment do not harbour distinctly different copepod assemblages, apart from some subtle differences. Several factors might be important in explaining this pattern. The sediment retained between the branches of the coral fragments might provide a habitat for typical sediment-dwellers which obscure the presence of real epibenthic taxa. Also, active migration by swimming and the close contact between upper sediment layer and overlying biogenic substrates may facilitate considerable exchange between the microhabitats. At the family level, the copepod fauna in the Porcupine Seabight does not seem to differ markedly from other deep-sea studies in which essentially the same families are dominant. However, at the genus and species level it is apparent that the hard biogenic substrates provide a habitat suitable for typical 'phytal' taxa, with prehensile first legs and modified body shapes. Substantial information from neighbouring soft-bottom and coral-free regions is necessary to assess whether regional diversity is increased by the presence of these complex habitat-providing substrates. Coral fragments and sediment were both characterised by high species diversity and low species dominance, and did not differ markedly in this. This might indicate that copepod diversity is not substantially influenced by hydrodynamical stress, which however was the main structuring factor of the associated nematode assemblages.

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LARGE, MOTILE EPIFAUNA INTERACT STRONGLY WITH HARPACTICOID COPEPODS AND POLYCHAETES AT A BATHYAL SITE

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The strengths of interactions among groups in deep-sea-sediment communities are poorly known. Large, motile epifauna (= LME) such as sea cucumbers, star fishes, and demersal fishes occur in the deep sea and are sources of predation, disturbance, and habitat alteration and thus have the potential to interact strongly with the infauna. At a site off southern California (32°57.3' N 117°32.2' W, 780 m depth), we excluded the LME from five 75-cm × 75-cm plots with cages. After 143 days, we sampled these plots and five plots of the same size paired with them as controls. The abundances of harpacticoid copepods and polychaetes were significantly lower in cages than in controls. In three cages, the nematodes and kinorhynchs were dramatically less abundant than in paired controls. The results suggest that the LME ordinarily affects the infaunal assemblage in such a way that harpacticoids and polychaetes (and perhaps nematodes and kinorhynchs) can maintain higher abundances than they can in the absence of LME, indicating that strong interactions can influence the organization of deep-sea sediment communities. In a multivariate analysis of the environmental parameters we measured, cage and control samples were intermixed, so how the LME transmit their effect is not yet clear. The decline in harpacticoid and polychaete abundances resulting from exclusion of the LME occurred in 143 d or fewer, a result that begins to scale the rates at which such interactions occur in the deep sea.

EFFECTS OF MEGAFAUNA EXCLUSION ON NEMATODES ASSEMBLAGES AT A DEEP-SEA SITE: AN *IN SITU* EXPERIMENTAL APPROACH

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Explanations for high benthic local diversity in the deep sea implicate the impact of small-scale biological disturbances, originated partly from the activities of epibenthic megafauna, in creating habitat complexity of deep-sea sediments. In the present study, *in situ* exclusion experiments were performed at the Arctic deep sea to investigate the effects of megafauna exclusion on diversity and community structure of nematodes. Six experimental cages were deployed at 2500 m water depth and sampled after 4 years for meiofauna and a series of sediment parameters. With the exception of chloroplastic pigments which were significantly higher under the cages, sediment parameters did not differ between inside and outside cages. Results from univariate (ANOVA) and multivariate statistical methods (ANOSIM) showed that nematodes were significantly more abundant underneath cages while differences in species richness, diversity and also in the multivariate community structure were not significant. Since univariate measures are often insensitive for changes in community and the multivariate method was puzzled by the large number of rare species, we further investigated our data by dividing the community into three groups of occurrence (common, intermediate and occasional) and in three groups of abundances (dominant, subdominant and rare). The higher nematode abundances under the cages were mainly due to the increase in density of species that were common and intermediate distributed. Interestingly, these species belonged to the subdominant and rare groups. Also, all of them were positively correlated with chloroplastic pigments. These results make us believe that in the absence of megafauna disturbance and under favoured conditions in the deep sea, mainly the frequent species with low densities take advantage, while rare-occasional species or dominant-common do not. Our analysis still showed that the number of occasional species was higher in control sites. Species at the control were also taxonomically more different. Although our results give support to the importance of biogenic structure and disturbance created by megafauna in structuring deep-sea communities, the fact that species richness under cages remained unaltered after 4 years suggests that they cannot account for the maintenance of the high levels of species coexisting in the deep sea.

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CAVE MEIOFAUNA IN CHEMOAUTOTROPHIC MICROBIAL MATS – TROPHIC AND LIFE-CYCLE DYNAMICS IN A SELF-CONTAINED ECOSYSTEM

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Chemoautotrophic microbial production is the food basis for metazoan life in Movile Cave, Romania, an ecosystem completely isolated since preglacial times. Microbial mats floating on a cave pond with thermomineral, highly sulphidic and methanic water are populated by several bacterivorous nematode species which, in turn, are intensively preyed upon by the copepod *Eucyclops subterraneus*. Experimental devices allowed assessing the growth rates and population development of the two dominant nematodes, *Poikilolaimus* sp. and *Panagrolaimus* sp., under cave conditions and, under optimal food conditions, in the lab. Different food doses disclosed distinct differences in the intrinsic rates of natural increase, reproductive pattern and generation time between both nematode species. This may reflect adaptation to varying food conditions caused by aging of the mats. Interpretations of the phenomenon that only females could be found maintaining the nematode populations in the cave would require further experiments. Feeding experiments revealed considerable grazing on both nematode species by *Eucyclops* which seems to act as a top-down control. During our 2-years study, the production of this three-level meiobenthic food chain did not seem to be transferred further to any macrobenthos since potential predators on the copepods were not encountered. It is gathered that, in this stable, troglobitic environment even short and simple food chains can persist, with some fluctuations between the prevailing nematode species, for geological time periods without any input of photosynthetic energy.

MEIOVENT – HYDROTHERMAL VENT MEIOBENTHOS ALONG A VENT FLUX GRADIENT FROM THE 9°50'N EAST PACIFIC RISE REGION

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Catastrophic volcanic eruptions, tectonic disturbances, and hydrothermal fluid emissions with variable flux rates form transient environments at the midocean ridge system, the largest volcanic mountic chain on Earth. The deep-sea hydrothermal vent fauna is a largely distinct assemblage with global distribution adapated to unstable physico-chemical conditions such as high temperature and pH gradients and the toxicity of vent emissions. For the first time, the meiobenthic community of an entire hydrothermal vent region at the 9°50´N East Pacific Rise axial summit collapse trough was studied quantitatively along a gradient of vent flux, ranging from high temperature and high sulfide emissions at black smoker chimneys hosting alvinellid polychaetes, to moderate emissions at tubeworm aggregations and low emissions at bathymodiolid mussel beds growing on basalt to bare basalt communities with ambient deep-sea temperatures. Despite the presence of *in situ* chemosynthetic primary production, but large differences in rates, the meiobenthic abundances were low (133±244. 10 cm^{-2}) and statistically similar at all sites. All together, we identified 63 species, belonging to the dirivultid and harpacticoid copepods, nematodes, ostracods, tanaidaceans, and foraminiferans. Species richness was low at all sites and the vent communities were dominated by almost two thirds of hard substrate generalists also living on cold bare basalt in the axial summit collapse trough. Only one third of species were vent endemics and even the majority of these endemics were vent generalists as they occured over a wide range of physico-chemical conditions. However, each habitat is characterized by a distinct community with similarities lower than 50% between each other. Species richness and diversity clearly decreased with increasing vent flux from alvinellid (2-7, H`$\log_e$ 0.1-1.1), tubeworm (9-24, H`$\log_e$ 1.7-2.7), to mussel assemblages (28-31, H`$\log_e$ 2.4-3.3) and bare basalt (19-31, H`$\log_e$ 1.9-2.8), suggesting that with an increase of temperature and toxic hydrogen sulfide and an increase of amplitude of fluctuations, a decrease of species being able to cope with these extreme conditions and thus a less divers community will be found.

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MEIOVENT – COLONIZATION PATTERNS OF HYDROTHERMAL VENT MEIOBENTHOS USING ARTIFICIAL SETTLEMENT DEVICES AT THE 9°50'N EAST PACIFIC RISE REGION

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Meiobenthos is an important part of the faunal assemblages at deep-sea hydrothermal vents. Detailed studies at the 9°50`N East Pacific Rise region revealed that different communities occur along gradients of vent flux from hot, toxic sulfide chimneys colonized by alvinellids to moderate basalt communities inhabitated by tubeworms and mussels to bare basalts in the axial summit collapse trough. Species richness and diversity were found to be inversely correlated with vent flux and abundances were low at all sites. The colonization and habitat preference of meiobenthos were studied using artificial settlement devices, designed to mimic aggregations of the giant tubeworm *Riftia pachyptila* . a set of one-year deployments in tubeworm aggregations, 50cm, and 20 meters away from such aggregations along a gradient of vent flux and *in situ* chemosynthetic productivtiy and the meiobenthic communities were quantitatively compared to those occuring naturally. The highest meiobenthic abundances were found in intermediate flow zone 50cm away from tubeworm aggregations (460±366 10cm ^{2}), followed by the high flow zone in aggregations (216±94 10cm^{-2}), and the low flow zone 20 meters away from such aggregations (81±14 10cm^{-2}) These abundances were significantly higher than those estimated from natural communities at tubeworm aggregations (high flow zone) or mussel beds (intermediate flow zone) and also on bare basalt (low flow zone). As the macrobenthic communities were also studied and found to be lower in abundance in artificial devices, we suggest that meiobenthos had to face less predation and competition and thus increased in abundance. However, species richness was similar in artificial devices (19-27); than in the natural habitats (tubeworms S: 11-20, ,mussels 28-31, basalt 19-31). The same held true for diversity. Also some different species were found, some of which for the first time at hydrothermal vents, such as gastrotrichs. The results of these one year deployments suggest that the establishment of a meiobenthic community is a rather slow process, at least when using artificial settlement devices, as the community of the adjacent natural habitat, which had at least 5 years to develop, was quite different. This points to an early phase of succession with first colonizers later outcompeted.

MEIOVENT - SUCCESSION OF HYDROTHERMAL VENT MEIOBENTHOS AFTER A RECENT VOLCANIC ERUPTION AT THE 9°50'N EAST PACIFIC RISE REGION

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Deep-sea hydrothermal vents are globally wide-spread extreme environments located at the mid-ocean ridge system of the largest mountain chain on Earth. Driven by *in situ* chemosynthetic primary production, a special vent fauna thrives under highly fluctuating conditions along a gradient of temperature and toxic chemicals such as hydrogen sulfide. Meiobenthos of the 9°50'N East Pacific Rise region is a prominent component of all vent communities there and has been found in low diversity and low abundance. As the volcano of this region erupted early 2006 and destroyed most of the living beings there, this gives us the unique opportunity to study the sofar completely unknown successional patterns of meiobenthos. Using artificial settlement devices and control natural collections in a variety of benthic locations with and without vent flux in the axial summit collapse trough, we have started to investigate the temporal and spatial hydrothermal vent communities over a time course of about 4 months to 3 years post eruption. This study on succession, the non-seasonal, directional continuous pattern of colonization and extinction will include the description of new species, the identification, and quantification of the specific meiobenthic communities of selected hydrothermal vent habitats in terms of species richness, diversity, and abundance in conjunction with an assessment of the abiotic conditions as well as of the bacterial abundance and particulate organic matter measurements serving as food for this exclusively primary consumer community. In addition, this study will include the search for vent meiobenthic species in the pelagial in the vicinity the 9°50'N EPR region. This study will be the first of its kind and will lead to a better understanding of the processes and underlying mechanisms of vent meiofauna succession. First samples taken only 4 months post eruption showed that meiobenthos has not yet been colonized the bare basalt in most areas, but one location was found with dirivultid copepotids. Only 9 months post eruption, a community of copepods, plathyhelmintes, nematodes, and ostracods was established. During the available time frame, sofar an increase in abundance and particulate organic matter was detected.

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IMPACT OF FISH FARMING ON MEIOFAUNA: A CASE-STUDY FROM THE BAY OF PIRAN (SLOVENIA)

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The impact on meiofauna of a small-scale fish farm producing 100 tons of European seabass *Dicentrarchus labrax* per year was studied. In 2006, two sampling cruises around the farm, which is located in the inner part of the Bay of Piran, were performed within the framework of the ECASA project (ECosystem Approach for Sustainable Aquaculture). The sampling strategy included collection of samples just below the center of the edge cage as well as at sites 6, 20 and 100 m away in three directions. With a scuba technique, triplicate samples were obtained using a standard meiofauna core. In addition to meiofauna parameters, such as N of taxa, densities, and nematode/copepod ratio, relevant environmental data were gathered, including pore water nutrients, organic carbon, total nitrogen, Chl a and sediment toxicity using the Basic Solid-Phase test (Microtox®). Major changes in environmental conditions were found in all directions away from the cage. The MDS separated the samples into two different communities: samples from below the cage and 6 m away were grouped apart from the other samples (20 m and 100 m away from the cage). The communities differ in density and composition with mainly nematodes, harpacticoid copepods, polychaetes and turbellarians in the vicinity of the mariculture in contrast to, on average, 10 taxa at the sites away from the cage. Some taxa, such as kinorhynchs were not retrieved below the center of the cage, while their density increased (up to 80 ind /10cm²) with increasing distance away from the cage. The impact of mariculture in this shallow system is mainly demonstrated by structural diversity changes within a 20 m area around the cages. However, functional effects in terms of changes in the feeding ecology of meiofaunal organisms can also be expected because of differences in food supply. The effect of mariculture on the biodiversity of the meiofauna in the Bay of Piran is of major importance to understanding the functioning of the entire ecosystem.

THE USE OF MEIOFAUNA IN THE ASSESSMENT OF MARINE FARMING EFFECTS ON THE ENVIRONMENT

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European aquaculture is a growing industry that expands rapidly in the coastal environment and as such it may cause ecosystem changes. Since aquaculture is heavily dependent on ecosystem services it typically takes place in water of high quality. Therefore, it is in the interest of both regulators and the aquaculture industry to aim towards sustainable aquaculture.ECASA (Ecosystem Approach for Sustainable Aquaculture) is a Framework 6 RTD project with 16 research partners from 13 European states. Its major objective is the assessment, development, testing and validation of operational tools, such as indicators and models, which will be included in a proposed methodology for Environmental Impact Assessment (EIA) and effective aquaculture site selection. Within this framework the applicability of several biological variables of meiofauna, e.g. community structure, diversity and abundance at higher taxonomic levels, in the assessment of aquaculture – environment interactions is tested for two different types of aquaculture systems, finfish and shellfish. The results obtained through an extensive fieldwork that was carried out at 5 different sites across the Mediterranean and the Atlantic in summer of 2007 are discussed with regard to the environment specific conditions, the farm size and type of culture at each site.

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MEIOFAUNA AND HARPACTICOID COPEPODS AS INDICATORS OF AQUACULTURE AND SUGAR CANE IMPACTS IN TWO TROPICAL ESTUARIES, PERNAMBUCO – BRAZIL

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Estuaries have been threatened by the rapid increase of coastal aquaculture, and the development of agricultural activities has contributed to degradation of hydric resources. Pernambuco is the 4th State in the national shrimp production and the 5th one in sugar cane production. An evaluation of the different influence of shrimp farm and sugar cane activities over two tropical estuaries in Pernambuco using both meiofauna and Copepoda Harpacticoida as bioindicators of possible impacts was carried out. Botafogo (Botafogo-Arataca Basin) and Siri (Itapessoca Basin) estuaries were investigated. Botafogo-Arataca Basin presents most of its "wetland" sites used to construction of shrimp farms while Itapessoca Basin has the sugar cane monoculture and bird farms as the most important activities in the low Siri valley. ANOSIM "two way" indicated significant differences ($p<0.05$) between Botafogo and Siri estuaries, among the months and the stations both using meiofauna and copepods species data. BIOENV analysis showed that these differences are mainly explained by chlorophyll-*a* and pheopigments ($r_s=0.459$) on the Botafogo River and organic matter content on the Siri River ($r_s=0.399$) for meiofauna; while for Copepoda, they are explained by nitrogen concentration ($r_s=0.092$) on the Botafogo and phosphorous concentration, organic matter content and Eh value ($r_s=0.467$) on the Siri River. Besides, the Wilcoxon test showed significant differences between the estuaries concerning phosphorous ($p=0.0499$), chlorophyll-*a* ($p=0.0381$) and pheopigments ($p=0.0151$) concentrations and silt and clay percentage ($p=0.0108$). Such results corroborate the hypothesis that both shrimp farm and sugar cane activities have affected meiofauna and copepod communities which have responded to eutrophication effects as indicators of this impact.

SPATIAL VARIABILITY OF MEIOFAUNA SANDY ASSEMBLAGES IN RESPONSE TO SAND NOURISHMENT, ALEXANDRIA EGYPT

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The coastal zone of Egypt is now under forceful stress due to the expansions of coastal activities during the last few years. The most important problems are coastal erosion, pollution, rapid development and lack of planning. In order to combat erosion and protect beaches, large amounts of sand are spread over the beaches every year. Two sandy beaches were chosen for the current study. Miami beach is subjected periodically to nourishment process and El Mamoura beach is not.We conducted a survey during August 2003 to investigate spatial variability and the effect of sedimentological factors (grain size, %organic carbon and %total carbonate) at a range of spatial scales including two different beaches (50s of km apart), five profiles within each beach (10s of m apart) and six stations within each profiles (1 m apart), composition, abundance and distribution of meiofauna assemblages across a supralittoral sandy area of Miami and El Mamoura beaches. Duplicate cores were taken (50cm apart) and a total number was120 cores. Meiofauna abundance ranged from 12 to 893 individuals.$10cm^{-2}$ (Miami) and from 65 to 1128 individuals.$10cm^{-2}$ at El Mamoura beach. Multivariate and univariate analyses revealed that there were differences between two beaches in structure of assemblages, in mean abundance of total meiofauna, and in common taxa. The spatial variation of the community was higher at the small scale than at the large or middle scales except for foraminifera and ostracodes. The nMDS plot distinguished between two beaches and among profiles and stations. Factor analysis revealed the distribution of total meiofauna and nematods to variations in grain size. The distribution of foraminfera and ostracodes were associated with the %of total carbonate and organic carbon affected the bryozoan's distribution. It was concluded that, the sand nourishment of beaches has a positive agent to protect beaches against erosion and does not have negative effect on meiofaumal assemblages at Miami beach. Sand nourishment is not a destructive factor for infauna assemblages and the enrichment of beaches with sand is recommended.

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SPATIAL DISTRIBUTION OF NEMATODES ASSEMBLAGES IN CIENFUEGOS BAY, CUBA.

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Spatial patterns of distribution of nematodes across six subtidal stations and four depth strata (0-1, 1-2, 2-4 and 4-6 cm) within sediment were describe in Cienfuegos Bay, Cuba. Abiotic environment was characterized by homogeneity across stations; the bay has muddy (mean % silt + clay: 86.2) and organically enriched (mean C content: 4.4 g kg^{-1}) sediments. Evidence of moderate pollution exists on basis of measures of heavy metals (Co, Cu, Ni, and Zn), but a clear gradient of pollution across stations could not be detected. A total of 65 species of nematodes was recorded in the bay, and the mean density was 739 animals 10 cm^{-2} (range: 18 – 3 277). The density and composition of assemblages were clearly different among stations, however some species (e.g. *Terschellingia longicaudata*, *Sabatieria (Pulchra)* and *Spirinia sp*) were widely distributed. The three stations near to industrial and urban areas showed highest diversity and density of nematodes, possibly as response to organic enrichment. The localization and bottom topography of station 15 suggest the presence of physical disturbance by sediment-transport regime causing depletion of assemblages. There were clear differences in nematode assemblages among strata; but the vertical profiles of density and number of species were different for each station. Species confined to surficial or deep strata did not occurs; local processes related to hydrodynamic regime and/or food availability appear to be more important for distribution within sediment than typical vertical gradient of redox conditions.

THE USE OF *Tisbe biminiensis* TO STUDY SPATIAL AND TEMPORAL VARIABILITY OF WHOLE SEDIMENT TOXICITY OF SUAPE ESTUARINE SYSTEM (PE, BRAZIL)

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The industrial-portuary complex of Suape is located in Suape Bay about 40 km to South of Recife City (Pernambuco, Brazil) which is potential source of several pollutants to environmental. The sand fill for the port implantation blocked the communication of the Ipojuca Estuary with Suape Bay creating two different environments. Thus, this study had as objective to determine the sediment toxicity of both sides of the industrial-portuary complex using the harpacticoid copepod *Tisbe biminiensis*. Samples of superficial sediment were colleted during two periods in 2003, and four periods between 2005 and 2006. The control sediment was collected at Maracaípe Estuary (Pernambuco-Brazil) far way from urban centers and industries. At each station, three or four samples were collected. In laboratory, the sediments were sieved by a mesh of 63 μm. Experimental chamber contained sieved sediment (2 g) and 20 mL of diatom suspension (0.2 μg Chl-a mL^{-1}) and were incubated at 25 ºC and 12/12 h light/dark photoperiods. After 24 h, for sediment deposition, ten ovigerous female were added to each chamber. Three group of female were used for each sample. The bioassays lasted 7 days and every other day 1 mL of the diatom suspension was added. At the end of experiments, the samples were stained with Rose-Bengal and fixed. The lethal effect consisted in the mortality of the females; and the sub-lethal effects are number of nauplii and copepodites, and total fecundity. During 2003, there was only lethal effect in the one of the five stations at one period at Suape Bay. In 2005/2006 there were not lethal effects in Suape Bay or in the Ipojuca Estuary. However, sub-lethal effects were observed in five of the nine stations investigated at both areas. Correlationships with geochemical data will be discussed. These results indicated that the pollution in Suape Bay is increasing, probably due to agricultural, industrial, municipal and domestic discharge.

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EFFECT OF CADMIUM AND BARIUM ON THE POPULATION DEVELOPMENT OF *Pellioditis marina* (NEMATODA-RHABDITIDAE)

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Offshore oil drilling involves injection of Barium (Ba), with other associated heavy metals, and consequently poses potentially significant problems of heavy metal contamination of neighboring sediments. Whether, at which metal concentrations, and to what extent such metal contamination affects benthic life requires an understanding of the response of different benthic compartments to individual contaminants at realistic concentration ranges, as well as to contaminant mixtures. Nematodes are the most abundant benthic metazoans, and have key roles in benthic food webs and carbon fluxes. Because of their limited mobility and permanently benthic life, they cannot escape from local pollution. Several, albeit not typically endobenthic, species with short life cycles can be reared under laboratory conditions on well-defined media, and hence are suitable experimental organisms to determine critical loads of various toxicants. Here we identify the sensitivity of different life cycle and population parameters of *Pellioditis marina* to a range of Cadmium (Cd, 0.3 to 12 ppm) and Ba (120 to 10000 ppm) concentrations representative of concentrations found in sediments nearby oil drilling activity. Cd concentrations higher than 6 ppm significantly affected nematode densities, mainly, however, through a prolongation of development time. Juvenile survival, which has previously been proposed as the most sensitive life cycle trait in other model nematodes, was not significantly affected by any of the Cd concentrations tested here. Ba concentrations tested here were one to two orders of magnitude higher than Cd concentrations, yet only at 2000 ppm high mortality of both juveniles and adults was observed.Our results illustrate that *P. marina* can tolerate relatively high heavy metal loads. Caution is, however, due when extrapolating from these results, because (1) rhabditid nematodes are notoriously more tolerant to various types of toxicants than other nematodes, and (2) contaminant effects may become more pronounced upon prolonged exposure. It is therefore important to develop similar assays with other nematode species, and to focus on several consecutive population generations.

EVIDENCE OF PHTHALATE BIOACCUMULATION IN NEMATODA

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Bioaccumulation of chemical compounds has been a hazardous factor to maintenance of ecological equilibrium in biota. Several potentially bioaccumulators compounds have been identified in different species, due to antropic effects. This study objectived the investigation of these contaminants, using Gas-Chromatography/ Mass Espectrum analisys, in the nematode community of Porto de Galinhas beach (Ipojuca - Pernambuco, Brazil), and a population of *Diplolaimelloides oschei* (Nematoda: Monhysteridae) cultived in vitro (Universidade Federal de Pernambuco/Brazil -Gent University/Belgium). The extract was prepared with 1000 specimens of Nematoda population from Porto de Galinhas and 9000 specimes from culture. The compounds were extracted with hexane HPLC and sonication prior to analisys in GC/MS. The following compounds were identified: 2-ethylhexyl phthalate, diisododecyl phthalate, diisononyl phthalate, diisooctyl phthalate, di-n-decyl phthalate and dioctyl adipate (Porto de Galinhas); diisobutyl phthalate, di-n-butyl phthalate, 2-ethylhexyl phthalate, diisooctyl phthalate and dioctyl adipate *(D. oschei* - in vitro). Unexpected, a high amount of phthalates was identified in both extracts. Phthalates are compounds widely used in industrial activities, mainly as plasticizers. The presence of these contaminants in the cultived specimens indicate bioaccumulation effect of these phthalates.This effect is probably because the cultive was established in plastic Petri dishes, as there was not any other contamination source. This effect was also observed in the population in loco, suggesting the antropic interference in the natural environment.

PHYLOGENETICS STUDIES

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INTRASPECIFIC VARIABILITY AND DIFFICULTIES IN MORPHOLOGICAL SPECIES DIFFERENTIATION: THE "*Dorsiceratus* CASE"(COPEPODA, HARPACTICOIDA, ANCORABOLIDAE).

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Increasing replicative sampling of deep-sea localities in the past years provides higher individual numbers of even rare taxa like e.g. Ancorabolinae Sars, 1909 (Copepoda, Harpacticoida). Such findings reveal, that several morphological characteristics, formerly interpreted as unambiguous specific ones, may reflect nothing but intraspecific morphological variability. This may lead to certain complications when differentiating between species basing on morphological features. The "*Dorsiceratus* case" demonstrates such complications exemplary for *Dorsiceratus* Drzycimski, 1967, an ancorabolin genus that encloses three known species so far. Characteristics like e.g. segmentation of the first natatorial leg or the shape of the furca loose their former distinctive status and become vague. As a consequence, the distinction between the three known *Dorsiceratus* species basing on the so far applied characteristics becomes questionable.

HARPACTICOIDS AND THE TRANSITION FROM THE SEA TO FRESHWATER HABITATS: SOME EXAMPLES ELUCIDATED BY SSU rDNA AND BAYESIAN INFERENCE

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There is overwhelming evidence that the ancestors of modern freshwater copepods evolved in marine environments, where they existed and diversified over millions of years. Within the Copepoda at least twenty-two independent colonizations of fresh and inland continental waters have been identified, ten of which represent harpacticoid copepod lineages. Excluded from this are incursions into freshwater, which can be defined as invasions without subsequent speciation. In this presentation two entirely different examples of harpacticoid freshwater invasions will be analyzed using DNA sequence data (SSU rDNA) and Bayesian analysis. The first concerns the Cancrincolidae whose members are typically associated with semi-terrestrial grapsoidean crabs but can survive outside their hosts in damp meiobenthic environments. The second example will focus on the evolutionary success of the subterranean Parastenocarididae and its relationship to various marine interstitial families, which have been at times been proposed as its closest relatives.

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PHYLOGEOGRAPHY OF A COSMOPOLITAN HARPACTICOID COPEPOD: A PRELIMINARY REPORT

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Many meiofaunal species are noted to have cosmopolitan distributions, including the harpacticoid copepod *Nannopus palustris* Brady 1880. The maintenance of such a biogeographic range is problematic in that harpacticoids are direct developers with no planktonic stage. It is likely that many of these cosmopolitan species constitute complexes of related species, which are to a greater or lesser extent genetically isolated from one another. In these cases, several population genetic models predict a pattern of genetic "isolation by distance." That is, genetic diversity increases over geographic distance as a function of distance. As an extension of our recent study of the morphotypes of *Nannopus palustris* found sympatrically in the North Inlet Estuary, South Carolina, USA, we have begun sequencing specimens of this species from other localities: Louisiana and Massachusetts, USA, and Odessa, Ukraine (Black Sea). In the present study, we restricted our analysis to the non-notched caudal-rami females from all locations, as previous work has demonstrated that the caudual ramus notch is not merely an intraspecific polymorphism (Staton *et al.* 2005). To determine levels of divergence among individuals and populations from the localities, we amplified and sequenced a 420-bp fragment of the mitochondrial cytochrome *b* apoenzyme and a 380-bp fragment of the ribosomal 28S (D3 expansion segment). We created neighbor-joining trees using the HKY85 distance implemented in PAUP. Little genetic variation was observed between populations from Massachusetts, South Carolina, and Louisiana. However, a curious pattern is emerging that suggests non-notched Black Sea *N. palustris* are genetically distinct from the American non-notched and notched populations, but may more closely resemble the notched American notched form.

MUSCLE AND NERVOUS SYSTEM OF THE MEIOFAUNAL *Diurodrilus* (DIURODRILIDAE, ANNELIDA) – RECONSTRUCTED BY PHALLOIDIN- AND IMMUNOSTAININGS, CLSM, AND TEM.

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Diurodrilus Remane includes six species described from tidal to subtidal sand bottom in the North Atlantic, the Mediterranean, and the North Pacific. They are all meiofaunal (length up to 450μm), hyaline, dorso-ventrally flattened, slightly elongated, acoelomate metazoan inhabitants of the interstitial marine environment between sandgrains. *Diurodrilus minimus* Remane was originally assigned to Dinophilidae within the so called 'Archiannelida'. Diurodrilidae and Dinophilidae are presently considered to be highly derived, secondarily reduced, annelid families, or even to lie within Dorvilleidae. However, *Diurodrilus* lacks all major annelid characteristics such as chaetae, appendages, parapodia, and nuchal organs as well as paedomorphic characters. Diurodrilids even lack a midventral ciliary band, characteristic of interstitial annelids such as Dinophilidae. *Diurodrilus* instead possess unique specializations of ciliophores, duo-glands and spermatozoa. In the present study muscle and nervous system of three species of *Diurodrilus* were stained with phalloidin and antisera directed against serotonin (5-HT), FMRF-amid, and acetylated á-tubulin and investigated with confocal laser scanning microscopy, as well as transmission electron microscopy. *Diurodrilus* holds a bowl-shaped ventral pharyngeal apparatus, lacking a muscular bulbus, but showing an exclusive composition of glands and muscles. The nervous system shows no signs of segmentation and includes two supra-oesophageal ganglia in addition to specialized nerves innervating the ventral ciliophores. The total lack of annelid synapomorphies and larval features except for minute size, contraindicates a progenetic origin for *Diurodrilus*. It is therefore here rejected that *Diurodrilus* occupies a derived position within Annelida.

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ANATOMYAND ULTRASTRUCTURE OF THE REPRODUCTIVE ORGANS IN *Dactylopodola typhle* (GASTROTRICHA: MACRODASYIDA) AND THEIR POSSIBLE FUNCTIONS IN SPERM TRANSFER

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The reproductive anatomy of Gastrotricha is well known for several species, especially for the marine taxon Macrodasyida. However, there is little information on the reproductive organs and the modes of mating and sperm transfer in putative basal taxa, which is necessary for an accurate reconstruction of the ground pattern of Gastrotricha. We present the first detailed morphological investigation of the reproductive system of a putative basal gastrotrich, *Dactylopodola typhle*. This study was carried out by transmission and scanning electron microscopy, histology and microscopic observations of living specimens. *D. typhle* is a hermaphrodite that possesses paired female and male gonads, an unpaired uterus with an outlet channel that we call the cervix, and an additional accessory reproductive organ, the so-called caudal organ. We hypothesize that the hollow, secretory caudal organ serves for picking up autospermatozoa (self sperm), for spermatophore formation and finally for transferring the autospermatophore to a mating partner. The allospermatophore (foreign spermatophore) is stored within the uterus where fertilization occurs. We suggest that the mature and fertilized egg is released through the cervix and the dorsolateral female gonopore and not by rupture of the body wall. Based on morphology, we provide a plausible hypothesis for spermatophore formation and transfer in *D. typhle*. Preliminary phylogenetic considerations indicate that the stem species of Macrodasyida, perhaps that of all Gastrotricha, had paired ovaries and paired testes, an unpaired uterus, and only one accessory reproductive organ.

THE RISE AND FALL OF SCALIDOPHORA – NEW INSIGHTS IN THE PHYLOGENETIC POSITION OF LORICIFERA

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Loricifera represents one of the four animal phyla that were discovered within the last century. So far, the group has been considered closely related to Kinorhyncha and Priapulida, and together these taxa formed the clade Scalidophora. The monophyly of Scalidophora has rarely been questioned, but until recently the establishment of the phylogenetic position of loriciferans has solely been based on morphological data. Using Bayesian inference we present the first phylogeny that includes 18S rRNA sequences from multiple species of Loricifera. Interestingly, none of the resulting trees suggest any affinity between Loricifera and Priapulida + Kinorhyncha, whereas we find consistent support for a sister-group relationship between Loricifera and Nematomorpha. Such relationship has not been suggested previously and the results imply that a revision of our conception of early ecdysozoan evolution is required. Additionally, the data suggest that evolution through progenesis (sexual maturation of larvae) may have played an important role among the ancestral cycloneuralians.

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INTEGRATIVE TAXONOMY DISCLOSES HIDDEN DIVERSITY IN NEMATODES

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Integrative taxonomy considers species boundaries from multiple, complementary perspectives, the main objective being to compare the observed data against the predictions of the methodologies used. In the present study we used three methods for delineating species boundaries within the cosmopolitan nematode species *Rhabditis (Pellioditis) marina* and *Halomonhystera disjuncta*. First, phylogenetic relationships among molecular sequences from the mitochondrial cytochrome oxidase c subunit 1 gene (COI) and from the nuclear internal transcribed spacer region (ITS) were analysed. Subsequently, multivariate morphometric analysis was used to investigate whether concordant molecular lineages were also morphologically distinct. When morphological differences were found, typological taxonomy was performed to identify fixed or non-overlapping characters between lineages. Interbreeding experiments were conducted between the two closest related lineages of *R. (P) marina* to investigate potential reproductive isolation. This integrative approach confirmed the presence of several species within each nominative species: molecular lineages were concordant across two independent loci, and were characterized by significant morphological divergence. The two lineages investigated in our study did not produce offspring. Our results highlight that classical taxonomy grossly underestimates species diversity within the phylum Nematoda.

EMERGENCE OCCURS IN THE DEEP SEA: EVIDENCE FROM HARPACTICOID COPEPODS

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In coastal waters, individuals of many benthic species make temporary excursions into the water column, a behavior sometimes called emergence. The reasons for this behavior are not well established. Interestingly, some of the reasons that have been suggested to explain it apply equally well to animals living in the deep sea, and some unpublished, sediment-trap data suggest that emergence occurs in the deep sea. To investigate this possibility, we placed inverted-funnel traps at 3087 m depth on the continental slope off central California (36° 41.91` N 123° 0.14` W) for 36 days to collect individuals that emerged and took sediment cores to assess the background fauna. We investigated a representative taxon, the harpacticoid copepods. Although our methods probably undercollected emergers, we found that at least 4 of the 55 harpacticoid species at the site emerged. On this basis, we suggest that conceptualizations about the ecology of deep-sea-sediment communities should include the idea that some benthic species use the near-bottom flow to change locations on a time scale of 36 days or less.

Poster 2

THE INFLUENCE OF SEQUESTERED CO_2 ON DEEP-SEA MEIOFAUNA

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There is a general consensus that sequestration of anthropogenically produced CO_2 will be an important component of a comprehensive plan to mitigate the anticipated effects of global warming. Injection of CO_2 into the deep sea is one of many sequestration options being considered, but the ecological consequences for deep-sea animals are not well understood. Over the past five years we have conducted a series of experiments to examine the potential impact of sequestered CO_2 on deep-sea meiofaunal communities. A remotely operated submarine (ROV *Tiburon*) was used to transport CO_2 to five separate experimental sites in the Monterey Canyon (near Monterey, California, USA) at depths ranging from 3000 to 3600 m. In each experiment, approximately 20 L of liquid CO_2 was delivered to each of several circular "corrals" placed on the sea floor. Although the design of each experiment varied slightly, the common theme was to expose benthos to elevated CO_2 by allowing it to slowly dissolve from corrals into overlying seawater; benthos were exposed to CO_2-enriched seawater as it was dispersed by advection and diffusion. We examined potential effects of CO_2 on meiofauna by quantifying (1) abundances of major taxa, (2) mortality to individual harpacticoid copepods, (3) mortality to the nematode assemblage, and (4) emergence of harpacticoids from the seabed. Although responses varied among experiments, our results indicated that elevated CO_2 concentration and the associated acidic conditions can significantly impact meiofaunal animals.

CO_2 SEQUESTRATION EFFECTS ON DEEP-SEA NEMATODES

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It may be possible to ameliorate global warming by sequestering large amounts of CO_2 in the deep ocean. However, the environmental consequences of sequestration are poorly known. CO_2 effects on nematodes were studied after 2 experimental releases of CO_2 off California, at 3200 and 3600 m. Nematodes collected from inside "corrals" (into which CO_2 was directly injected) and near to and far from the CO_2 source were compared after 30 days. Fifty randomly selected nematodes from 4 vertical layers from each core were photographed, assigned to tail group type, and individual biovolume was estimated from measurements of length and width. Nematode abundance was not affected by proximity to CO_2 in either release experiment. Nematode shape, body size and tail group composition differed at the 2 release sites independent of CO_2 exposure. However, nematode length, width, and individual biovolume significantly differed between near and far samples in both release experiments. Median nematode length, width, biovolume, but not length/width ratio, always increased near the CO_2 source. We postulate that nematodes suffered a high rate of mortality after exposure to CO_2, and that nematodes were larger because *post mortem* expansions in body length and width occurred. Nematode body shape and morphometrics appear to a be sensitive measures of environmental effects in the deep sea.

Poster 4

A COMPARISON OF MEIOFAUNAL BIODIVERSITY IN DEEP CORAL AND ADJACENT SLOPE SEDIMENTS OF THE NE ATLANTIC AND CENTRAL MEDITERRANEAN

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Deep corals are widely distributed along European continental margins. The knowledge of their distribution, diversity and biology is rapidly increasing in the last few years. These ecosystems might support a high biodiversity in surrounding sediments which have not yet largely investigated. In particular, information on meiofauna associated to deep coral banks is very scant. Here we provide information on meiofaunal biodiversity in deep coral and adjacent slope sediments of the NE Atlantic and Central Mediterranean. In the framework of the HERMES (*Hotspot Ecosystem Research on the Margins of European Seas*) project, we collected sediment samples within areas characterized by the presence of deep corals and in adjacent systems (not influenced by the presence of corals) at increasing water depth. Meiofaunal abundance, community structure, taxa richness and nematode species diversity are analyzed. Results presented here will be discussed in order to gather new insights on the potential biodiversity "spill-over" effect of these systems towards the adjacent open slopes.

MEIOVENT – THE MEIOBENTHIC COMMUNITIES ASSOCIATED WITH ALVINELLID POLYCHAETES AT BLACK SMOKER SULFIDE CHIMNEYS FROM THE 9°50'N EAST PACIFIC RISE HYDROTHERMAL VENTS

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Deep-sea hydrothermal vents are well known for their exotic fauna. While mega- and macrobenthos is characterized generally by low diversity but high abundances, meiobenthos from warm vents emitting from the basalt is also low in diversity but additionally low in abundance. Here we studied the most extreme habitat found at hydrothermal vents, the chimney walls of black smokers, known to host the most temperature tolerant animal on Earth, the Pompei worm *Alvinella pompejana*. *In situ* temperature measurements around and in the tube of this polychaete were up to 80°C. A set of quantitative samples was taken from 5 different black smokers in the 9°50'N East Pacific Rise region. While 4 black smokers were known to existed at least 5 years at the time of sampling, one smoker has appeared more recently and was less than a year old. The sediment which was trapped by the chitinous tube walls of the alvinellid polychaetes mainly consisted of sulfidic precipitates, basaltic grains and a small amount of particulate organic matter. Neither the meiobenthic abundance (208.1 ± 186.2 $10cm^{-2}$) was found to be correlated with the sediment volume nor with the surface area. The meiobenthos was only represented by copepods and one foraminiferan species *Abyssotherma pacifica*. Nematodes known to thrive at more moderate hydrothermal vent conditions, completely lacked in this high vent flux environment. One dirivultid copepod *Stygiopontius hispidulus* clearly dominated all five sample sites (93.7 ± 3.3%). The young vent site was distinguished by extremely low meiobenthic species richness (S=3), compared to the other four sites which had a higher meiobenthic species richness (S=5-7). However, the similarity of the communities from the 5 different sites was higher than 70% on species level and the young site was not outstanding. All together only 12 meiobenthic species were found and diversity was extremely low ($H'\log_e$ 0.18 -0.51). While 10 of these species can be considered vent generalists as they are known also from other more moderate vent habitats, only two species *S. hispidulus* and *S. lumiger* appear to be high temperature, high sulfide specialists. The results indicated a short bottom up controlled food web, where chemosynthetic bacteria facilitate a habitat for a community mainly consisting of primary consumers.

Poster 6

FIRST RECORD OF A GASTROTRICH FROM DEEP SEA HYDROTHERMAL VENTS OF THE EAST PACIFIC RISE

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In the course of an experimental study on habitat provision by aggregations of the vestimentiferan *Riftia pachyptila* at hydrothermal vents of the East Pacific Rise, several specimens of a macrodasyid gastrotrich were found in small sediment accumulations between the elements of artificial tubeworm clusters. On the basis of these preserved specimens, we describe a new species of the taxon *Desmodasys* Clausen, 1965. *Desmodasys abyssalis* n. sp. is both the first record of a hydrothermal vent inhabiting gastrotrich and the first record of a gastrotrich from the deep sea. The two congeners, *Desmodasys phocoides* Clausen, 1965 and *D. borealis* Clausen, 2000 inhabit sublittoral organic deposits at the Norwegian west coast and may show pre-adaptations for settlement at hydrothermal vents. We suggest that *D. abyssalis* feeds on sulfide-oxidizing bacteria which are the most abundant microbes on the surface of the *Riftia*-tubes

MEIOBENTHIC DIVERSITY IN A SHALLOW HYDROTHERMAL VENT OF THE PACIFIC OCEAN (NORTH SULAWESI – INDONESIA)

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Despite their ubiquitous distribution in tectonically active coastal zones, shallow water vents have been less investigated than deep-sea ones. In order to investigate the effects of hydrothermal activity on benthic biodiversity and ecosystem functioning, sediment samples were collected in along at increasing distance from the fluid emissions of a shallow-water vent in North Sulawesi, Indonesia, Pacific Ocean. We investigated meiofaunal abundance, biomass, community structure, richness of higher taxa and nematode biodiversity in relation with the quantity and quality of the potential food sources. Results will be discussed in order to assess the influence of hydrothermal activity on shallow benthic biodiversity.

Poster 8

Mesonerilla sp. nov. FROM THE PACIFIC ANTARCTIC RIDGE (NERILLIDAE, ANNELIDA).

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Representatives of the meiofaunal family Nerillidae (Annelida) have been found in a broad variety of habitats around the world. During a cruise to the Pacific Antarctic Ridge in 2005 with RV *Atlantis* (Chief scientist R. Vrijenhoek, MBARI, California, USA), few specimens of a new species of the genus *Mesonerilla* were sampled with a slurp gun from DS *Alvin*. This is the first record of a nerillid from a hydrothermal vent and the first record of *Mesonerilla* (Nerillidae, Annelida) from the deep sea. The new species possesses a prostomium with two short palps and two long lateral and one short median antennae, nine segments with long compound chaetae and short cirriform parapodial interramal cirri in all segments, and a pygidium with two relatively short cirriform cirri. Interestingly, the species resembles the interstitial *Mesonerilla roscovita* described from shallow waters in Europe by the presence of a short median antenna. However, the new species differs distinctively by the presence of chaetae in segment one, much shorter length of the interramal cirri of segment 2-9, and a larger body size.

FUNCTIONAL DIVERSITY OF DEEP-SEA NEMATODES ALONG A SMALL-SCALE ENVIRONMENTAL GRADIENT

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Facing the high species richness of deep-sea sediments, the questions arise which processes produce and maintain diversity and at which spatial scales do they operate? The supposed small-scale habitat structure of deep-sea sediments provides the background of this study. Biogenic structures create a heterogeneous environment that might influence the structure of the communities and the dynamics of the populations of benthic meiofauna organisms. As an example for biogenic structures, the influence of deep-sea sponges on small-scale distribution patterns of benthic deep-sea nematodes was investigated. Diversity patterns of the nematode communities around the sponges and from control sediments were described. From the great variety of aspects of diversity, functional diversity for the nematode community structure were measured and described. To estimate functional diversity of the nematodes, organisms were divided into life-form types by means of the structure of buccal cavity (four groups) as well as tail shape and body shape (five groups each). These connectable criteria are considered as morphological adaptation to a given life-style and are the basis for the creation of functional groups. Based on this classification a total of 100 trait combinations are possible. Our study revealed, that the total number of approx. 5800 individuals which are distributed over 367 species, were represented by 52 functional groups within the entire nematode community. Overall the nematode community from the sponge samples show a higher functional divergence and thus a high degree of niche differentiation. Within the nematode community from the sponge cores, a stronger interaction between the species and a higher functional diversity seems to allow a larger extend of resource utilisation. The more homogeneous habitat conditions, in the control sediments seem to offer less micro-habitats (refuges) or ecological niches respectively, compared to the more heterogeneous habitat conditions of the sediments around the sponges.

Poster 10

MEIOFAUNA COMMUNITIES OF AN OIL SEEP FROM THE GULF OF MEXICO (GREEN CANYON), AND THEIR RELATIONSHIP TO OTHER CHEMOSYNTHETIC HABITATS

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Many deep-sea cold seeps have been detected and explored in various parts of the world`s oceans, since their discovery in the discovery in the early 80s of the last century. Most of them occur in geolo geologically active and passive continental margins, where fluids enriched with methane seep out of the sediment forced by pressure. Although mega-, and macrofaunal as well as microbial communities of many cold seeps have been investigated during the last 22 years, there is a lack of studies on the meiofauna communities at this kind of chemosynthetic ecosystem. Cold seeps are typically characterized by the presence of large megafauna aggregations, such as siboglinid tubeworms and bathymodiolid mussels, and of superficial microbial mats related to those found in hydrothermal vent systems. It is generally assumed that the meiofauna found at hydrothermal vents is also related to that in cold seeps, but there are no studies demonstrating this fact. Organisms of the mega- and macrofauna serve as hosts for symbionts and form biogenic structures that serve as habitat for meiofauna organisms such as nematodes, copepods and ostracods. The present study aims in increasing the knowledge of meiofauna diversity and community structure. Therefore, abundance, diversity, species richness, biomass and sex ratio of the meiofauna organisms were studied. Samples were taken from an oil seep in the Gulf of Mexico (Green Canyon GC 852) at approximately 1200 m depth using two different quantitative sampling designs called "bushmaster" for collections of tubeworms and "mussel pot" for collections of mussels with DVS Alvin in 2006 on board R/V Atlantis. The habitats sampled included tubeworm aggregations and mussel beds. Meiofauna organisms were collected associated with sampled mega- and macrofauna. The purpose of this ongoing study is to find answers to the following questions: 1) Is there an association between meiofauna and macrofauna at cold seeps? 2) Does the epi-/infauna differ between mussel beds and tubeworm aggregations? 3) Does the meiofauna known from hydrothermal vents also occur at cold seeps?

POLAR DEEP SEA AND PORTUGUESE SUBMARINE CANYONS – WHAT'S ON A NEMATODE'S MENU?

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During the Antarctic ANDEEP III campaign (Jan. – Apr. 2005, RV *Polarstern*) and the Arctic RV *L'Atalante* cruise (Sept. 2005) enrichment experiments were performed by the addition of labeled food sources to sediment cores recovered from 2112m (Weddell Sea) and 2400m (Hausgarten site) respectively. Deep-sea nematodes can play a key role in the carbon flux within the deep-sea benthic food webs, but little is known about their natural diets. To explore this question, a ^{13}C stable isotope approach was used. Onboard, multicore sediment samples were incubated with ^{13}C-labeled bacteria or diatoms to determine whether they preferentially incorporate diatoms or whether they rely on bacteria. Natural carbon isotope signals of nematodes and organic sedimentary carbon showed a clear fractionation but were also different on both poles. The deep-sea nematodes showed a selective response to the served ^{13}C-enriched bacteria in the upper cm at both polar stations, indicating that bacteria can act as a carbon source for Arctic and Antarctic deep-sea nematode communities. Submarine canyon systems provide a very different and variable habitat for deep-sea benthos compared to continental slopes. They intersect the continental shelf and slope and allow the interception of sediment carried over shelf and upper slope by alongshore currents and provide a conduit of particles from the upper shelf to the deep-sea. Structural and functional nematode composition and diversity is different in canyons compared to slopes and an in-situ enrichment experiment comparable to the experiments performed at the Weddell Sea and Hausgarten site will enable us to unravel to what extent differences in structural and functional nematode diversity is reflected in the natural ^{13}C isotope abundances and nematode food preference. Such an in-situ enrichment experiment will be performed in close collaboration with the NOCS Deepseas group on board RV *James Cook* during a campaign to the Portuguese canyons in summer 2007.

Poster 12

ARE THERE GEOGRAPHIC BARRIERS FOR *Mesocletodes* SARS, 1909 (ARGESTIDAE, HARPACTICOIDA, COPEPODA) IN THE SOUTH ATLANTIC OCEAN OFF SOUTHWEST AFRICA?

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During the cruise DIVA 2 (2005) to the south Atlantic Ocean, 3 deep-sea basins, the Cape, Angola and Guinea basin off southwest Africa were sampled. The obtained Argestidae Por, 1986 were identified to species level. The argestid taxon *Mesocletodes* provides half of all Argestidae discovered in the Cape and Angola basin and one third or more in the Guinea basin. ¼ of all *Mesocletodes* species were found in all 3 basins, ½ was detected in the Guinea basin but missing in the Cape and Angola basin. Nevertheless, this clear distinction between the Guinea and the other two basins is called into question by the distribution of some other species. The eastern station of the Guinea basin has common species with the Cape and Angola basin whilst the western stations of the Guinea basin are missing these species. Consequently, the Guinea ridge seems to be a geographic barrier only for some *Mesocletodes* species, the distribution of some other species is not subject to restriction by this ridge but might be restricted by other factors, located westward of this ridge. The remaining species were only found in the Cape or Angola basin or both. The former case indicates, that for some species, it is very likely, that the Walvis ridge is a geographic barrier.

GEOGRAPHIC DISTRIBUTION OF THE TAXA *Eurycletodes* SARS, 1909 AND *Mesocletodes* SARS, 1909 (ARGESTIDAE, HARPACTICOIDA, COPEPODA) IN THE DEEP SEA ALONG THE WESTERN AFRICAN COAST

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The deep sea argestid fauna collected during the cruises DIVA 2 (2005) to the Cape, Angola and Guinea basin in the SE Atlantic and OASIS (2003) to the seamounts Sedlo and Seine NE Atlantic was identified to species level. Providing 2/3 of all Argestidae, *Eurycletodes* SARS, 1909 and *Mesocletodes* SARS, 1909 are the most abundant taxa within these samples. Species of both taxa are for that reason subject of the further investigations. Some species were common in all sampling stations, whereas some other species were found in particular stations only. Most of the species observed at Sedlo deep-sea station were as well discovered in the Guinea basin but missing in Cape and Angola basin. The comparison of Guinea, Angola and Cape basin shows clear differences between Guinea and Angola basin and Guinea and Cape basin, while Angola and Cape basin are more similar to each other. These results indicate the existence of a geographic barrier between Guinea basin and Angola basin at least for some species.

Poster 14

ACTIVE COLONIZATION OF ENRICHED AND UNENRICHED SEDIMENTS BY DEEP-SEA NEMATODES

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One explanation for high deep-sea species richness is the patch-mosaic model, in which small-scale patches of organic matter and disturbance create microhabitats in space and time, providing opportunity for colonization. To elucidate the functioning of such mosaic systems one must understand the mechanisms and rates of arrival of new organisms into patches. Given that, a small-scale laboratory experiment was conducted on board to investigate the ability of deep-sea nematode species to actively colonize enriched and unenriched sediments. A 500 µm mesh-covered cylinder filled with defaunated sediment was placed in plastic containers previously filled with sediments containing indigenous meiofauna collected from 1300 m water depth. The defaunated sediments were either enriched with the diatom *Thalassiossira weissflogii* or unenriched. Samples from the defaunated sediment were taken after 9 and 17 days. As controls, plastic containers containing the sediment with indigenous meiofauna, but without an internal cylinder, were also sampled at each time interval. After 9 days, nematodes had colonized both enriched and unenriched sediments and their density in the enriched treatment was significantly higher. Although the number of species did not differ between the treatments, the community structure in unenriched sediments was more variable. After 17 days, nematodes densities and number of species in the enriched sediment did not differ from 9 days, while in the unenriched sediment both measures had significantly decreased. Regardless of which treatment, the colonizers had a large body mass and were dominated by one species of *Sabatieria* and one of *Leptolaimus*. Over the course of the experiment, nematode densities and number of species in the controls did not differ from an a priori sediment sampling, nor did nematodes community structure, indicating the potential of short-term laboratory manipulative experiments with deep-sea nematodes. This study demonstrates that deep-sea nematodes can actively colonize defaunated sediments and that the presence of diatoms may enhance colonization rates. Our results also suggest that the size of the nematode may play an important role in their foraging success.

NEMATODE RICHNESS IN TWO TROPICAL DEEP-SEA AREAS FROM BRAZIL.

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Little is known about nematode richness in brazilian deep-sea tropical areas. The Brazilian Petroleum Company (Petrobras) coordinated two projects in deep-sea areas along the Brazilian coast: "Campos Basin Deep Sea Environmental Programme" and "Sergipe' Slope Characterization Project" focusing on Nematoda taxonomy and ecology. At Sergipe Basin (Northeast Brazil) samples were collected at 12 stations distributed along 3 isobaths (500, 900 and 1300m). At Campos Basin (Southeast Brazil) samples were collected at 44 stations sampled along 9 transects, considering 5 isobaths (750, 1050, 1350, 1650 and 1950m) for each one. At each station samples were collected using a box-corer USNEL SPADE Corer type - Ocean Instruments with 0.25m^2 surface area. On both areas nematodes dominated the samples over 13 to 17 other meiofaunal groups. The Nematoda association was characterized by a large pool of rare genera, showing low densities, low dominance and very high richness. At Sergipe Basin the association was composed by 165 Genera, 36 Families and 4 Orders. At Campos Basin 192 genera, 41 Families and 6 Orders were registered. Both lists are very expressives compared to others made to the Equatorial Pacific (68 genera), to the East Atlantic (79 genera), Atlantic Northeast (128 genera), Weddell Sea (158 genera) and Mediterranean (163 genera). The number of stations and depth range sampled in Brazilian areas are greater than in the other studied deep-sea and may partly account for these results.

Poster 16

MEIOFAUNISTIC COMMUNITY ASSOCIATED TO SEAWEEDS AT CUPE'S BEACH (PERNAMBUCO, BRAZIL).

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This study aimed to know the meiofaunistic community associated to the seaweeds *Halimeda opuntia*, *Sargassum polyceratium* and *Caulerpa racemosa* at Cupe`s beach, south coast of Pernambuco, Brazil. The samples had been carried out through the months of November and December of 2005, January, May, June and July of 2006, across 2 parallel transects to the beach line in the shallow subtidal, 50 m far one to another, with 3 points of sampling in each one. In laboratory, one measured the volume, height and maximum width and the amount of restrained sediment for each seaweed. The samples had been treated using routine techniques for meiofauna. *S. polyceratium* presented significantly bigger average height (16 cm), while *C. racemosa* had significantly bigger width (16.5 cm). *H.opuntia* presented greater capacity of sedimentary particle retention, reaching 0.14 g/ml, and the highest index of structural complexity (50). Twenty-one meiofaunistic taxa had been found. The Copepoda dominated in all situations, together with Nematoda and Anellida Polychaeta. The structure of the meiofaunistic community was considered typical for phytal ecosystems, in despite of the Loricifera and Kinorhyncha which were found here, being uncommon in these environments. The physical factors more important to the meiofaunistic community had been the width and volume of seaweeds. Amongst the Anellida Polychaeta, the dominant family was Syllidae. Amongst the 52 identified genera of Nematoda, *Euchromadora*, *Acanthonchus* and *Kraspedonema* had the biggest population densities. This study also gave us the first record of occurrence in the Brazilian coast for the genus *Gammarinema* Kinne & Gerlach, 1953 (Nematoda) and for 4 species of Tardigrada: *Batillipes dicrocercus* Pollock, 1970, *Wingstrandarctus intermedius* Renaud-Mornant, 1967, *Dipodarctus subterraneus* Renaud-Mornant, 1959 and *Pseudostygarctus intermedius* Renaud-Mornant, 1979.

THE DISTRIBUTION OF BENTHIC MEIOFAUNA COMMUNITIES IN RELATION TO EROSION–ACCRETION PROCESSES OFF ROSETTA PROMONTORY, EGYPT

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Rosetta estuary on the western coast of the Nile Delta is a good example of highly dynamic environment where hydrodynamic processes acting on a variety of time scales (short and long terms). Rosetta estuary displays both the erosion and accretion processes. The study area covers the eastern and western sides off Rosetta estuary. The current work aimed to evaluate the impact of hydrodynamic processes (erosion and accretion) and environmental parameters (temperature, salinity, pH, %organic matter and mean grain size). Four seasonal surveys were carried out from April 2000 to August 2001. Five profiles, five stations, and dupliate cores were taken each survey. Samples covered different depths (beach, 1m, 2m, 3m and 4meters). Changes of the Seabed ranged from -0.067 m/yr to +0.039m/yr (eastern side) and fluctuated between-0.094m/y to +0.078 m/y (westren side).The higest rate of erosion (-) and accretion (+) was recorded at the eastern side. Total meiofauna abundance ranged from 20 (winter) to 61910 (summer) individulas10cm^{-2}. Univariate analysis indicated significant variations in abundance of the total meiofauna over dates and within stations. The highest and the lowest abundances were recorded at station 1 and 5 respectively.Multivariate analysis revealed that temporal and spatial variations of meiofauna resulted from the interaction of different environmental and hydrodynamic factors. The highly dynamic environment in Rosetta estuary reduced the number of taxa and individuals. The meiofauna community structure composed of eight taxa. The order of dominance was ciliophora (88%) nematodes (6.4%) harpacticoida (2.1%) ostracodes (1.3%) foraminifera (1.1%) gastroricha (0.65%) turbellaria (0.42%) polychaetes (0.03%). High horizontal accretion and erosion rates at P1 and 2 respectively accompanied with high and low meiofauna abundance and *vise versa*. Moreover, the western side of Rosetta had higher meiofauna abundance than the eastern side probably due to the load of organic matter that in turn brought by the accretion process. Meiofauna taxa may respond differently to the hydrodynamic processes. Nematodes had higher abundance in accretion than erosion sites.

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FIRST QUOTES FOR THE IBERIAN PENINSULA OF MEIOFAUNA COLLECTED ON THE RÍA OF FERROL (GALICIA, NW SPAIN)

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We have studied the fauna composition and the distribution of the meiofauna from the *ría* of Ferrol in the period between the years 1993 and 2003, after the running aground at the entrance of the Coruña Gulf of the oil tanker 'Aegean Sea' that affected about 200 kms of the coast. The samples were collected in seven intertidal communities, located on both banks of the *ría* (Cariño, San Felipe, A Cabana, Maniños, Mugardos, Batel and Chanteiro). In each of the samplings carried out in every locality, we have collected four sediment samples with syringes: one of 100 cc and three of 50 cc for the study of the meiofauna. We have also used for the study of the vertical distribution a methacrylate cylinder of 30 cm x 4.6 cm, in which several sections with a length of 1 cm were separated along the first ten, of 2.5 cm between 10 and 15 and of 5 cm between 15 and 30 cm. We have studied a total of 126,142 specimens belonging to 26 taxa, for which we have taken into account the data concerning their ecologic preferences and geographic distribution. Among them, two species of Foraminifera are quoted for the first time for the Iberian Peninsula (*Reophax scotti* Chaster, 1892 and *Trochamina inflata* Montagu, 1808), two Ciliate (*Tracheloraphis longicollis* Dragesco, 1960), six Turbelaria (*Paromalostomum fusculum* Ax, 1952; *Monocelis lineata* O. F. Müller, 1774; *Duplominona longicirrus* Martens, 1984; *Parotoplana bicupa* Sopott-Ehlers, 1976; *Proxonetes fasciger* Ehlers, 1974; *Proschizorhynchella spiracirro* Schilke, 1970), a Kinorhynch (*Echinoderes dujardini* Clapared, 1863), a Gnatostomulid (*Austrognathia nannulifera* Sterrer, 1991), four Polychaeta (*Protodrilus purpureus* Schneider, 1868; *Dinophilus gyrociliatus* O. Schmidt, 1857; *Psammodrilus balanoglossoides* Swedmark, 1952; *Stygocapitella subterranea* Knöllner, 1934), a Tardigrad (*Chrysoarctus flabellatus* Grimalde de Zio, 1982) and an Acarus (*Halacarellus subterraneus* Schulz, 1933).

EFFECTS OF SMALL-SCALE TRAWLING ON THE ESTUARINE MEIOFAUNA OF VEGETATED AND UNVEGETATED AREAS

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The estuarine small-scale or artisanal fisheries are characterized by low degree of mechanization, production capacity and the catch per unit effort. Nonetheless, small-scale fisheries produce about 50% of the world capture fisheries` harvest. The *berimbau* trawling net is a recent technique used for shrimp captures in estuarine areas of the South Brazil. Although trawling in estuarine areas had been prohibited, it is still used widely. In this study, the effect of the artisanal fish trawling (*berimbau*) on the meiofaunal community structure in vegetated and non vegetated areas was analyzed. Experiments were accomplished by trawling application on vegetated and unvegetated areas in the 1st day of the experiment. Samples was collected in the treatment and control immediately after the trawling (D1), 24h (D2), 8 days (D8) and 15 days (D15) latter for analyzes of the faunal recovery. The results showed that trawling in estuarine areas decreases significantly the density of the meiofauna, the density of the organisms dominants and the number of nematodes, independent of the area to vegetated or not. However, the organic matter and the fraction of fine sand decreased significantly only in the vegetated area. Fifteen days after trawling the meiofauna did not show signs of recovery. Our results clearly indicated that estuarine trawling net used for the shrimp capture urgently need to be controlled to avoid losses of marine biodiversity in nursery grounds.

Poster 20

MEIOFAUNA IN OXYGEN-MINIMUM ZONES: THREE SITES OFF CHILE

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A quantitative study of metazoan meiofauna was carried out at continental shelf and slope stations affected by the oxygen minimum zone in the eastern South Pacific off Chile. Densities of meiobenthos at the investigated stations off Antofagasta (22 °S), Concepción (36 °S), and Chiloé (42 °S) ranged from 1282.1 to 8847.8 ind per 10 cm^2. Oxygen deficiency led only to average abundances, despite higher food availability and freshness at the corresponding sites. Sediment organic carbon, chlorophyll-*a*, and phaeopigment contents were used as measures of the input from water column primary production, which accumulated at the oxygen minimum zone stations. The highest abundances were found at a station with an oxygen content of 0.79 ml l^{-1}, which was slightly elevated from what is defined as oxygen minimum (0.5 ml l^{-1}). The most oxygenated site yielded the lowest densities. Meiofauna assemblages became more diverse with increasing bottom water oxygenation, whereas nematodes were the most abundant taxon at every station, followed by annelids, copepods, and nauplii.

TEMPORAL VARIABILITY OF SHELF MEIOFAUNAL COMMUNITIES INDUCED BY CHANGES OF THE OXYGEN MINIMUM ZONE OFF CENTRAL PERU

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Time-series of meiofaunal communities parameters, sediment properties and dissolved oxygen were analyzed from a station located at 94 m depth (12°02.8' S, 077°17.1' W), 10 miles off Callao, central Peru, in order to determine the changes of the abundance, biomass and diversity at higher taxonomic groups of meiofauna induced by changes in bottom oxygen contents during the 2002-2003 (under a weak El Niño) and 2004-2005 periods. Significantly higher contents of chlorophyll-a and total organic carbon were recorded in 2004-2005, as compared with 2002-2003. In parallel a reduction of bottom water dissolved oxygen concentrations were determined from 2002-2003 (O_2 values: 0.2 – 0.3 mL L^{-1}) to 2004-2005 (O_2 values: 0.0 – 0.2 mL L^{-1} near the bottom). The combined effect of high export primary production and strong oxygen deficiency and even anoxia resulted in chemically reducing sedimentary conditions such as was showed by profiles of redox potential. Major meiofaunal taxa diversity (mean ± standard deviations) was reduced from 5 ± 1 (range= 3 - 7 taxa) during 2002-2003 to 4 ± 1 (range= 2 - 6 taxa) in 2004-2005. Significant increases of meiofaunal abundance ($F=9.1$, $p< 0.05$) and biomass ($F=5.6$, $p< 0.05$) from 2002-03 to 2004-2005 were determined (89 ± 45 and 1256 ± 1303 ind.$10cm^{-2}$, respectively for abundance; and 0.08 ± 0.13 to 0.51 ± 0.10 gC.$10cm^{-2}$, respectively for biomass). Abundance and biomass were dominated by Nematoda in both periods, but during the weak 2002-2003 EN this dominance varied between 60 – 95%, whereas during 2004-2005 the dominance of Nematoda was almost 100%. Harpacoid copepods, Rotifera, Nemertinea, Ciliata were well represented during 2002-2003, but only Ciliata and Nemertinea during 2004-2005 period. We concluded that oxygenation and anoxic events are key for development of meiofaunal communities in the coastal shelf sediments off central Peru. Nearly or even total anoxic conditions are favorable for nematode populations, while oxygenation events change sedimentary conditions, allowing the development of other groups of meiobenthic communities.

Poster 22

STRUCTURE, ARRANGEMENT, COMPOSITION AND PROCESS OF SELF-DESTRUCTION OF THE SPICULAR SKELETON OF *Unela glandulifera* (KOWALEVSKY, 1901) (OPISTHOBRANCHIA, ACOCHLIDIOMORPHA).

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According to ARNAUD *et al.*, (1986), of the three families that make up the order Acochlidiomorpha, the Microhedylidae family includes the genera: *Unela*, *Pontohedyle* and *Microhedyle*. The systematics of the family is based on the morphology of the radular system, on some features of its external anatomy and on the presence, form and arrangement of the spicular skeleton of the mantle.In the studied specimens of *Unela glandulifera* from Galicia (Spain) three basic kinds of spicules, described also in other species of the family Microhedylidae, appear simultaneously. Those that are the most numerous and with the largest size are the typical very irregular, numerous and large monoaxons and triaxons; irregular plaque-granules and spherical catenate corpuscles organized in sinuous rows. In the observations made of the specimens alive of *Unela glandulifera* under the O.M. with DIC, it was shown that a self-destructive process of the spicular skeleton was starting in the dying specimens and practically ended up with their death. This fact becomes even more important, as in most of the described species the spicular morphology is used as a differentiating feature among them (MARCUS 1953; MARCUS & MARCUS, 1955). In this communication we present the study under optical microscope of the spicular skeleton in animals alive, by showing graphically their structure, arrangement, composition and the sequential self-destructive process of all the spicular types in the dying specimens and by quoting some considerations about this peculiar process.

MEIOFAUNAL COMMUNITIES OFF CENTRAL PERUVIAN COAST UNDER THE WEAK 2002/03 EL NIÑO PERIOD

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Sublittoral sediments off Central Peru favor the development of meiofaunal populations, mainly composed by Nematoda, as well as of giant bacterial mats (*Thioploca* spp.). In turn, the bacterial filaments offer a suitable microhabitat for several meiofaunal groups. Temporal changes in the vertical distribution of meiofaunal groups were examined in two sublittoral sites off Callao, Peru (12° S). Samples were collected in seasonal periods between September-2002 and June-2003 during the occurrence of the weak 2002/03 El Niño. Meiofaunal densities ranged from 33 ± 4 to 642 ± 75 individuals 10 cm^2 (Stn 1, 48 m) and 37 ± 7 to 164 ± 30 individuals 10 cm^2 (Stn 2, 94 m). In general, the results were comparables with estimates of meiofaunal abundance obtained in the continental slope of Peru within and beneath the oxygen minimum zone. Nematodes were dominant at the two sampling stations marked the meiofaunal density trends, although Rotifera, Nemertina, Copepoda + Nauplii also showed relevant abundances. The phyletic diversity and the vertical distribution of meiofauna tended to be greater in the shallower station 1, according to statistical tests. It is postulated that the formation of a flocculent layer, due to massive sedimentation events, conditions the development of a higher phyletic diversity and a deeper vertical penetration of the meiofauna during subsequent oxygenation events. Meiofaunal responses to oxygenation events were manifested as density peaks at the end of 2002 and beginning of 2003. The results suggest that even slight improvements in oxygenation conditions favor the larval settlement of some benthic species with a lower tolerante to hypoxia, which is reflected in the increases of taxa richness mainly in the shallow station.

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SPATIAL AND TEMPORAL DISTRIBUTION OF INTERSTITIAL MEIOFAUNA ON THE SIX BEACHES OF RIO DE JANEIRO CITY (BRAZIL)

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Spatial and temporal variations of the interstitial meiofauna composition were analysed in six beaches with different hydrodynamics levels on the six beaches of Rio de Janeiro city (Arpoador, Ipanema, Recreio, Macumba, Grumari e Macumba). Meiofauna samples and environmental variables were colleted during July 2005 (dry season) and February 2006 (rainy season) in saturation and retention zones. Fourteen meiofaunal taxa were observed in the beaches and Copepoda and Nematoda were the more abundant and frequent groups. The highest densities were observed in February and the Macumba beach presented values of total meiofauna more elevated on both sampling periods. The highest densities of meiofauna were observed on the retention zone in July, whereas in February they were observed on saturation zone. The study of vertical distribution showed that interstitial meiofauna densities were higher in layers below the first five centimetres of sediment especially on the retention zone.

EVALUATION OF THE MEIOFAUNA IN THE MONITORING PROGRAM OF ARTIFICIAL REEFS: BUILDING THE EX-NHI ORION MARINE BIOLOGICAL RESEARCH SITE

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The northeast coastal area of Rio de Janeiro state is mostly comprised of exposed, large sandy beaches. Fish stock in this area has become a serious problem for the local craft fishermen community due to overfishing and environmental degradation. In order to minimize this problem, a partnership between PETROBRAS and the Brazilian Navy has been set up. The main goal is to develop a preliminary project to build an artificial reef in the area, which will contribute to the preservation and increase of the marine fauna richness, therefore benefiting local fishermen. The study area comprised the region close to Quissamã county, located in the northeastern coast of Rio de Janeiro. The reference point of this region was the area where the ex-NHi Orion ship would be sunk. This area was denominated area A or Orion reef area (22°20.3`S & 041°25.1`W) and was the starting point to define 2 other areas — area B = CONTROL 1 (22°17.8`S & 041°25.1`W) and control site 2 (area C-22°20.3`S & 041°22.6`W). Each of the sampling areas was 27, 20 and 30m deep, respectively. Nine oceanographic cruises were carried out between July 2003 and July 2006. In each area, three replicates of pre-determined physical, chemical, biological, and geological variables were sampled. Ten cm^3 sediment samples were collected using PVC tubes (length: 10cm) and 10% neutral formaldehyde was added to the samples. Meiofauna was placed in Dolphus dishes and identified in larger groups using stereoscopic microscope. During the nine MOREOR project cruises, 83,071 individuals from 17 taxonomic groups were sampled in the 3 sites previously chosen (A, B and C). The most representative groups found in this study were Nematoda (50,178 individuals or 60.40% of the total meiofauna), Copepoda (19,881 individuals or 23.93% of the meiofauna), and Polychaeta (7,779 individuals or 9.36% of the meiofauna), respectively. Fauna composition was not different from other studies in sandy areas. It is suggested that the artificial reef did not modify the composition and abundance of meiofauna organisms, as there was not differences among the cruise results.

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EVALUTION OF THE MEIOFAUNA FROM THE MONITORING PROGRAM OF BIOPRODUCTION SUBAQUATIC SYSTEMS

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The northeast coast of Rio de Janeiro state is 800 km long and has a great variety of costal systems. This region is influenced by the Cabo Frio upwelling, a significant oceanographic feature of the Brazilian coast, which is responsible for the increase in nutrients in the water column and consequently an increase in primary productivity and fisheries stock. The local craft fishermen communities are affected by the decrease in fisheries stock in the area due to overfishing and environmental degradation. In order to minimize this problem, a partnership between PETROBRAS, the COPPE Laboratory of Subaquatic Technology and IEAPM has been set up. The main goal is to develop a preliminary project to build an artificial reef, which will contribute to the preservation and increase of the marine fauna richness, therefore benefiting local fishermen. In June 2003, artificial structures were placed next to the artificial reef, which was set approximately 6 miles from Rio das Ostras coastal region at 28 m deep. This area (area A - 22°32.048`S, 41°50.922`W) was the starting point to define 2 other areas — Control 1 (area B - 22°33.622`S, 41°51.931`W) and Control 2 (area C - 22°29.046`S, 41°47.985`W). Ten cm^3 sediment samples were collected using PVC tubes (length: 10cm) and 10% neutral formaldehyde was added to the samples. Meiofauna was placed in Dolphus dishes and identified in larger groups using stereoscopic microscope. During the seven oceanographic cruises carried out in the area, 13 meiofauna groups were identified. The most abundant group in all sites and throughout the entire study period was Nematoda, which comprised 97% of the total meiofauna sampled during the 5th monitoring cruise in area B. Fauna composition was not different from other studies in sandy areas. It is suggested that the artificial reef did not modify the structure of the meiofauna community.

LONG-TERM VARIATIONS OF MEIOFAUNAL COMMUNITY STRUCTURE IN FISH FARMS

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An environmental monitoring was carried out in two fish farms located in the northeast coast of Tenerife (Igueste de San Andrés). This study started in December 2002 and ten sampling campaigns were done (december 2002, april 2003, august 2003, august, 2004, april 2005, august 2005, april 2006, august 2006, march 2007 and june 2007). Nine stations were sampled, two of them under fish farms (impact group), five on the surroundings (influence group) and two stations located in another bay (Antequera bay) that constitute the control group. The study site is characterized by the presence of a high variety of soft bottoms (bare sandy bottoms, seagrass meadows, garden eel bottoms, caulerpa meadows, mixed communities, etc…).In general, very low meiofaunal densities are observed in sampling stations, specially on the influence and control group. However, the stations located under fish farms (Station 1 and Station 2) were characterized by the dominance of nematodes (> 90% of the overall abundance) due to the presence of finer sedimens in these sites. In the remaining stations, there is no clear dominance of a taxonomic group (nematodes, harpacticoids, polychaetes, etc…) and a high group diversity is encountered. During this study, no significant changes were observed in the meiofaunal community structure and the environmental impact of the fish farms is very low and limited to tens of meters under the farms. Furthermore, the analysis of abiotic parameters of the sediment (granulometry, organic matter, nitrogen and phosphorus) confirmed the absence of eutrophization (nitrogen or phosphorus) and levels of these parameters were stable during the study period (december 2002-june 2007).On the other hand, an important increase of the megafaunal polychaete *Hermodice carunculata* has been observed during the last campaigns under fish farms. This omnivorous species is present in "mountains" of 20-30 cm high and implications in the meiofaunal community structure of the impact group are not clear and need to be studied.

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COMPARISON BETWEEN LUDOX AND FRESH WATER METHODS FOR MEIOFAUNA EXTRACTION FROM SEDIMENT SAMPLES.

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Two methods of meiofauna extraction from sediment samples were compared through: density estimative, *taxa* number and faunal similarity found in additional samples collected in an environmental monitoring program of an oil-well production in ~145 meters depht. Eight oceanographic stations distributed in two sectors (NE and SW) and four distances from the oil-well (250, 500, 1000 and 3000 meters) were sampled. in each station one box-corer was released three times. from each one 2 sub-samples were removed with a corer of 2.6 cm of internal diameter where Ludox^{tm} 50 was used for meiofauna extraction, and another one with a corer of 4.6 cm of internal diameter where fresh water was used for elutriation. The three-way anova showed significant differences for total meiofauna density/10cm2 ($F=57.76$; $p < 0.001$) and *taxa* number ($F=14.62$; $p < 0.001$) between the tested methods. Higher values of density and richness were found for ludox method than for fresh water method. Considering that no significant differences were found in any of the interactions with the methods tested, the difference between the methods was independent of possible differences among the places sampled. The mds and similarity analysis applied on the composition of the meiofauna indicated significant differences among the methods ($Rglobal = 0.4$; $p=0.001$) and the groups that more contributed to this difference were Nematoda, Copepoda and Polychaeta respectively. The rarefaction curves built for high taxonomic levels (Phylum and/or Class and/or Order) indicated that the fresh water method underestimated the expected number of *taxa*. These results showed that the extraction with fresh water underestimated the total density as well as the richness that can be influencing the relative patterns of faunal similarities among samples.

INTERTIDAL MEIOFAUNA FROM A TROPICAL SANDY BEACH OF SALVADOR (BAHIA, BRAZIL).

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Studies about the meiofauna community in intertidal regions of tropical sandy beaches are scarce in the literature. The aim of this work was to study the meiofauna composition and the influence of the granulometry in its vertical and horizontal distribution at the Catussaba beach (Brazil). The research was carried out on 29th and 30th March 2006, in 2 transects perpendicular to the water line, where 3 stations were samples. In each station, three replicates were sampled with corers of 3.6 cm of diameter and 30 cm of length and subdivided vertically (0-10, 10-20 and 20-30cm). Samples were collected also to granulometry and the temperature was measured on the field. Meiofauna was composed by 17 groups and from those, Nematoda (43%), Copepoda (40.5%) and Ostracoda (9.7%) showed the highest relative abundance. The highest density (2368 ind.10cm^{-2}) was found at the deep layer and the smallest density (10 ind.10cm^{-2}.) at the superficial layer. ANOSIM test did not detect significant differences between transects, only among stations (R_{global}=0.28;p=0.01). Comparing the sediment stratification, significant differences were found between the most superficial layer (0-10cm) and the others (intermediate and deep layers). The SIMPER analyses pointed out Copepoda and Nematoda as the groups with major contribution. According to the BIO-ENV test, temperature showed the highest correlation value with meiofauna structure. The sediment grain characteristics, usually related to meiofauna, did not explain the variation in meiofauna community structure at the Catussaba sandy beach.

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SEASONAL DYNAMICS OF MEIOFAUNA IN AN INDIAN TEMPORARILY CLOSED /OPEN ESTUARY (GOSTHANI ESTUARY, EAST COAST OF INDIA).

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The higher taxonomic structure of meiofaunal community was investigated in the Gosthani estuary, east coast of India. Altogether 144 samples representing 4 stations in the Gosthani estuary were collected during March – April 2000, 2006 (Phase I), August – September 2000, 2006 (Phase II) and November - December 2000, 2006 (Phase III). The objective of the study was to carry out an environmental impact assessment on the spatial distribution of meiobenthic standing crop and variations in its composition and productivity vis-à-vis the anthropogenic interventions in that area. Stations within the estuary were found to support a maximum of 13 meiofaunal taxa with densities ranging from 147 to 1157 ind/10 cm^2. In general, nematodes, copepods, foraminiferans, ostracods and polychaets were the most dominant groups and contributed >80% of the total meiobenthic fauna. The sediment nature and physico – chemical parameters of the environment was also studied to explain spatial and temporal variations of the meiobenthos. Univariate and multivariate analysis were employed to study community structure. Numerically, meiobenthos abundance varied across the estuary and over the seasons. Meiofaunal distribution not clearly correlated to one environmental variable, but rather too many, and spatial and seasonal effects could be seen.

INTERTIDAL AND SHALLOW SUBTIDAL MEIOFAUNAL COMMUNITIES. THE IMPORTANCE OF TIDAL LEVEL *VS* SEDIMENT PROPERTIES

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This study was carried out in two localities of the south coast of Tenerife, Los Abrigos (SE) and Los Cristianos (SW), one station was sampled in the intertidal and another in the shallow subtidal level (3 m deep). Samples were collected monthly during a year, from May 2000 to April 2001. Los Abrigos was characterized by the presence of volcanic sands with a low percentage of carbonates (< 10%), the intertidal was dominated by medium sands and fine sands in the subtidal. Los Cristianos was characterized by the presence of organogenic sands with a high percentage of carbonates (> 15%), the intertidal and subtidal was dominated by fine sands. In terms of meiofaunal diversity, the intertidal of Los Abrigos was dominated by harpacticoid copepods (Ectinosomatidae sp.1) and the polychaete *Microphthalmus pseudoaberrans*. Los Abrigos subtidal was clearly dominated (95% of the overall abundance) by nematodes, being two previously undescribed of the genus *Siphonolaimus* (*Siphonolaimus* sp. 1 and *Siphonolaimus* sp. 2) the most abundant along the study year. Los Cristianos was dominated overwhelmingly by nematodes (92-95% of the total meiofauna abundance), the species *Odontophora* sp. 3 and *Theristus* sp. were the most abundant in the intertidal station. Los Cristianos subtidal was characterized by the species: *Daptonema hirsutum*, *Pomponema sedecima* and *Oncholaimellus calvadosicus*. A comparison between meiofaunal community structure and sediment properties of the sampled stations was conducted in a CCA (Correspondence Canonical Analysis). The intertidal of Los Abrigos was clearly separated by the remaining stations due to the dominance of medium sands and the presence of a particular meiofaunal community structure. The subtidal of Los Abrigos was separated from Los Cristianos stations due to the community structure (dominant species and higher diversity values). The two stations of Los Cristianos are represented together in the CCA due to the following reasons: meiofaunal community structure shared and an important number of species and sediment properties (granulometry, carbonates and organic matter content) are homogeneous along the study year.

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EVALUATION OF MEIOFAUNA DENSITY IN PARATI-MIRIM FOR A MICROCOSM EXPERIMENT WITH DRILLING ACTIVITY TRACES EXPOSURE.

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Parati-Mirim, located at Southeast Brazil, was prospected and evaluate if this area could be classified as a beach with low human interference, fine grain size and high meiofauna densities, for a microcosms experiment designed by ecotoxicologists from PETROBRAS. The objective of this experiment is to verify the impacts of drilling activity traces (Ba and fluids) of oil and gas industry, in meiofauna community structure and its recovery. On march 12 and 13, three samples were collected in the infralittoral (tidal high 0.3m), with a cylinder corer (10x10cm) and fixed with formalin (4%). The samples were gently washed with tap water over 0.5 and 0.044mm meshes, manually centrifuged and groups densities were estimated by taxonomists from UFPE. The meiofauna was composed by ten groups from which Nematoda was the dominant (74%) followed by Copepoda Harpacticoidea (18%). The mean meiofauna density in Parati-Mirim beach was about 35.26 ind.$10cm^{-2}$. Compared with other locations in Rio de Janeiro, as Arraial do Cabo (Farol beach) with densities values between 800 and 1300 ind.$10cm^{-2}$, and three Guanabara Bay beaches (Bananal, Bica and Coqueiros), with densities varying from 500 to 3000 ind.$10cm^{-2}$, Parati-Mirim provided the lowest meiofauna density. The results did not attend all those criteria and defined that Parati-Mirim is an inappropriate area to be used as a sediment supply for this microcosms experiment, which has an exposure time estimated of 45 days and 140 experiment units. Parati-Mirim was the first beach prospected and now other locations are being selected to be evaluated.

MEIOFAUNA VS MACROFAUNA: DEFINITIONS TO BE APPLIED IN ECOLOGICAL STUDIES

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Traditionally, meiofauna have been excluded from macrofaunal analysis, since there is a conceptual differentiation between these two groups and an underestimation of abundance of the former in sieves of mesh size established for the latter. Besides this, there are few taxonomists available for identification of meiofauna. Using size as a basic criterion for separating meiofauna from macrofauna, the sampling methods for these groups differ mainly in the size/area of the sampling gear and sieve mesh size. Nevertheless, some environmental studies in Brazil have been facing the challenge of dealing with this traditional approach as for the great representativeness of Nematoda in some macrofauna samples. Main reasons for such a pattern could be: 1) for Nematoda, there are some families of large sized animals (such as those from the order Enoplida), which can occur sometimes in great densities and frequency in macrofauna samples; 2) greater retention of meiofauna due to mesh colmatation because of high densities of macrofaunal (and meiofaunal) organisms in samples; 3) fixation method which induces muscular contraction and entangling causing retention in the sieve mesh; 4) environmental factors, such as hydrodynamics changes or increasing organic pollution can also alter benthic community structure and Nematoda densities. Here we present some case studies from the Brazilian coast (Guanabara Bay – Rio de Janeiro, São Sebastião Channel – São Paulo and estuaries of Santa Cruz Channel – Pernambuco) to exemplify these questions and concerns. Afterwards, comparative studies in different ecosystems, seasons and with different sampling strategies are suggested for a better assessment of the benthic communities in environmental studies.

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DIFFERENCES BETWEEN TWO EXTRACTION METHOD OF NEMATODA

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Due to the high cost of the products used to isolate the Nematoda from the sediment we tested two different meiobenthic proccess to extract the organisms from the soil samples. The first was protocol include the use of LUDOX 40HS and the second one used sucrose. An intertidal area of a sand beach in Guayas Province, Ecuador was in 2007. A one meter square cuadrant was used and 30 samples were obtained. Each sample was divided in two subsamples and procesed in the laboratory following either protocol indicated above. The Nematoda and other meiobenthonic groups were counted, but just the first was used to the statitical analysis. There was not significant differences ($p>0.01$) between either techniques. Nevertheless, the local cost of the used Ludox40HS techniques was ten times higher than the sucrose ones.

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NEMATODES COMMUNITY FROM GUANABARA BAY, RIO DE JANEIRO (BRAZIL)

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The nematode community from three sandy beaches was studied. These beaches are located at the polluted Guanabara Bay. The samples were taken in January and June of 2001 in two regions in the intertidal zone, representing the upper and low tide level. Univariate and Multivariate Analysis were used to investigate the community. The community of the upper tide levels of the three beaches had the highest diversity and were mainly represented by *Dracograllus* for Bica and Coqueiros beaches and *Metachromadora* was common on the three beaches, whereas the low tide level differed between the three locations; Coqueiros beach was characterized by an intermediary diversity and a high abundance of the species *Sabatieria celtica*, while Bica beach had the lowest diversity and showed a higher abundance of the scavengers *Metoncholaimus*, and Bananal beach a high dominance of *Theristus*. The higher diversity in the upper beach compared to the low tide level opposed the results of several researches in sandy beaches and it could be attributed to the permanent contact with the polluted water of Guanabara Bay at the low tide level.

Poster 36

NEMATODES DISTRIBUTION IN TWO TROPICAL ESTUARIES GRADIENT (PERNAMBUCO-BRAZIL)

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The estuary of Botafogo River and Carrapicho River, both at the Santa Cruz Channel in Pernambuco North coast, were studied between August 2003 and August 2004, in order to evaluate the meiofauna community in relation to a polluted gradient. This work was inserted on the RECOS-MILÊNIO project. In each river, 4 sub-littoral stations were prospected and 4 sediment replicates were collected. 10 meiofauna major groups were found at Botafogo River and 13 at Carrapicho River. On both, nematodes dominated over 90%.Twenty four genera were found in Botafogo River (sandy sediments) and twenty genera were found in Carrapicho River (muddy sediments) in August 2004. Only ten genera occurred on both rivers and among them *Terschellingia* and *Ptycholaimellus* were the most abundant. ANOSIM (two way- p=0.1%) showed significant differences on the community structure and the BIO-ENV analysis pointed out that sediment composition was the main factor that account to the differences in Nematode community among stations and Rivers.

DISPERSION PATTERNS OF NEMATODES IN AN UNVEGETATED TIDAL FLAT OF PARANAGUÁ BAY (PARANÁ, BRAZIL)

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This work is an experimental analysis of dispersion patterns of free-living nematodes, both in the sediment and in the water column, in an unvegetated tidal flat of Paranaguá Bay (S Brazil). Supravital Neutral Red staining was applied to the sediment inside 30-cm wide 30 cm-high PVC corers located in the center of two 50-m apart replicate areas of 3 per 3 m. The ebb-tide formed red plume was stratified in *near* (up to 60 cm from the corers), *middle* (from 60 to 140 cm) and *distant* (from 140 to 180 cm) strata. Five sediment replicates were randomly taken in each strata and checked for stained nematodes. Small 10-cm wide 30 cm-long sampling nets were installed at 5 and 10 cm from the water-sediment interface, at 60 and 140 cm from the stained corers. Dispersion rates were expressed as the number of stained captured nematodes in relation to average densities of nematodes at the stained corers sites. The local association was numerically dominated by the nematode genera *Comesa, Terschellingia, Microlaimus, Metachromadora, Sabatieria and Viscosia*. Stained individuals of only 4 (*Terschellingia, Metachromadora, Sabatieria* and *Viscosia*) of the 23 identified genera were recaptured in the sediment. Only *Sabatieria* was not recaptured in the nets. Tidal currents with average velocities of 9 cm/s were able to ressuspend the numerically dominant nematode taxa, dispersing them to distances up to 180 cm from the stained corers during a single tidal event. The experimental approach stresses that, besides local hydrodynamics, the morphology and life styles of nematodes themselves are determinant of the dispersal processes, since they define which genera are prone to be ressuspended and which ones tend to stay in the sediment during ebb- or flow-tides.

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NEMATODE ASSEMBLAGES IN THERMAIKOS GULF (AEGEAN SEA, GREECE): RESPONSE TO INTENSE TRAWLING PRESSURE

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Intense and chronic bottom trawling in commercial fishing grounds can cause widespread disturbance to the benthic environment as well as the community structure, due to direct and indirect impacts to the sea bed and the different faunal components. Meiofauna, contrary to larger macrofaunal organisms, is capable of resisting the effects of trawling as they are likely to be resuspended rather than killed by the trawls and because their short generation times allow their populations to withstand high mortality. In this study we determined the effects of trawling disturbance, season and sediment type on the population, feeding structure and diversity of nematode communities. Samples were collected from Thermaikos Gulf, which is located in north Aegean Sea in Greece. This area is trawled intensively from the beginning of October until the end of May, while for the remaining period any fishing activity is prohibited. Samples were collected from five nearshore stations along a north-south productivity gradient with an additional offshore station as a reference point, a month before as well as 1 and 4 months after the initiation of the trawling season. The faunal analyses combined with sediment chemistry showed that trawling had no effect on the composition of the dominant feeding types. On the other hand, there were mild changes in nematode community structure and genus diversity. In particular, changes were observed at stations 1 and 30, however these changes were more likely due to pollution and variability of sediment particle size, respectively. Our results also suggested that that trawling impacts were minor compared to seasonal changes and that chronic trawling activity in the area may not allow the ecosystem to recover during the non-fishing period, thus diversity and population structure remain almost stable.

SPATIAL DISTRIBUTION OF TARDIGRADES IN THE LITTORAL ZONE OF PEDREIRA BEACH, GUAIBA LAKE, BRAZIL

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Tardigrades comprise a micrometazoan phylum that is frequently found as a component of the meiobenthos in freshwater habitats. The purpose of this study was to investigate the spatial distribution of tardigrades in the littoral zone of Pedreira beach, Guaiba Lake, Brazil. The sampling design consisted in dividing the beach in three sections, two of them on the borders and one in the middle of the beach. In each section, four equidistant profiles with two sampling sites were outlined, one located on the shore of the section and the other 15 m offshore. Three meiofauna samples were taken from the botton in each site, using a core with a diameter of 2.6 cm and 10 cm height. The samples were fixed with ethanol 70% and the animals were extracted with a NaCl saturated solution and sieved by mashes with pore 0.5 and 0.064 mm. The retained animals were transferred to ethanol 30% with 5% of glycerin and after mounted in slices to be identified and quantified. The density data were analyzed by ANOVA bi-factorial. All the tardigrades found belong Hypsibiidae. It was significantly ($p = 0.0010$) more abundant in the offshore sites (mean = 1798.3 ind/10 cm^2). In theses sites, the tardigrades represented 60% of meiofauna composition. Comparing their densities among the sections, no significant difference was detected. The reason for the higher number of tardigrades offshore instead of in shore of the sampling sites seems to be related with hydrodynamics of the both habitats. Probably the wave action on the edges does not allow the development of a large population of tardigrades. Temporal studies are recommended in order to prove if the dominance of tardigrades is a regular pattern of the meiofauna community of Pedreira beach

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MARINE TARDIGRADES FROM PERNAMBUCO COAST, BRAZIL.

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The history of studies about marine tardigrades in Brazil is quite resumed. Thus, only six species were referred up to 2006: *Batillipes pennaki* Marcus, 1946 (single species recorded to Pernambuco coast), *B. mirus* Richters, 1909, *B. tubernatis* Pollock, 1971, *Opydorcus fonsecae*, Renaud-Mornant, 1990, *Echiniscoides sigismundi*, Schultze, 1865 and *Orzeliscus belopus* Marcus, 1952. In order to broaden the knowledge concerning the biodiversity and ecology of these animals, meiofaunistic samplings were carried out in sandy beach and phytal ecosystems from Pernambuco coast, resulting in the identification and recording of two genera and seven species still non-observed in the region: *Florarctus* sp. Delamare-Debouteville & Renaud-Mornant, 1965, *Raiarctus* sp. Renaud-Mornant, 1981, *Batillipes tubernatis* Pollock, 1971, *B. dicrocercus* Pollock, 1970, *B. annulatus* De Zio, 1963, *Mesostygarctus intermedius* Renaud-Mornant, 1979, *Dipodarctus subterraneus* Renaud-Mornant, 1959, *Stygarctus bradypus* Schulz, 1951 and *Wingstrandarctus intermedius* Renaud-Mornant, 1967. The present occurrence records broaden to 7 the number of marine tardigrades genera and species in the Pernambuco coast, to 10 the number of genera and to 12 the number of species in the Brazilian coast, which means a relevant contribution to knowledge of this fauna.

KINORHYNCHA FROM SOUTHEASTERN AND SOUTHERN BRAZIL: PRELIMINARY RESULTS

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The phylum Kinorhyncha is composed exclusively by free-living segmented and spined meiofaunal animals, less than 1 mm in length. They occur in marine sands or muds from the intertidal zone to a depth of several thousand meters throughout the world. Only one species, *Cateria stix* Gerlach (1956), belonging to family Cateriidae and order Cyclorhagida, discovered in the intertidal sand of the high-energy beach at Macaé (Rio de Janeiro State), is currently known from Brazil. This study carries out the first survey of Kinorhyncha in sandy beaches and muddy tidal flats from the Southeastern and Southern Brazilian coast. We have identified three different morphotypes. The first one is referred to the genus *Pycnophyes* Zellinka, 1907 and the second to *Condyloderes* Higgins, 1969, both colleted in Paranaguá Bay (Paraná). The third morphotype, from Navegantes Beach (Santa Catarina), is referred to *Echinoderes* Claparède, 1863. Descriptions and figures are provided for each of the morphotypes.

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MARINE GASTROTRICHA FROM THE STATE OF KUWAIT (ARABIAN GULF)

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Within the framework of a meiofauna monitoring programme endorsed by the EPA of Kuwait, we conducted a faunistic survey aimed at shedding light on the diversity of marine gastrotrichs along the coast of the State of Kuwait; results will also represent the first contribution to the knowledge of these microscopic protostomes from the Arabian Gulf. During three sampling campaigns carried out in the early spring of 2005-2007 we sampled twelve locations, seven along the central and south regions of the State and five on the islands of Failaka and Qarooh. Samples, consisting of fine to coarse sand, were collected during low tide from the littoral and/or the shallow sublittoral areas and brought ASAP to the EPA's laboratory in Salmiya (Kuwait) or to Modena (Italy); gastrotrichs were studied *in vivo* or surveyed after being prepared for Scanning Electron Microscopy. Faunistic analysis found 30 putative species from fifteen sites, yielding a total of 82 records (species x site) and an average of 6.0 ± 3.5 species per location. Higher species richness was found at the southern locations and at SE Failaka. Eighteen species in eleven genera and five families belong to the Macrodasyida and twelve species in seven genera and two families belong to the Chaetonotida. Apart from a handful of cosmopolitan taxa (e.g., *Urodasys viviparus*, *Draculiciteria tesselata*, *Chaetonotus apolemmus*) most of the Kuwaiti species appear undescribed taxa. The shallow sedimentary basin witch form the Arabic Gulf only re-flooded during the Holocene transgression, so that the present day marine biota is only of recent origin (ca 20000 y); therefore, it seems unlikely that the new species represent taxa endemic to the Gulf; future research in the Arabian Sea should unveil the original stock.

EFFECTS OF LUGWORM EXCLUSION ON INTERTIDAL MEIOFAUNA

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A large-scale lugworm exclusion experiment was initiated on an intertidal sand flat in Königshafen (Sylt, North Sea) in spring 2002. The lugworm *Arenicola marina* is a dominant member of the macrobenthos in sandy sediments of northwestern European coasts. It lives in 15 to 20 cm deep U-shaped burrows and has due to its way of life a strong influence on ecosystem functioning, e.g. sediment properties, biochemical processes and the benthic community. Lugworm exclusion was achieved by inserting a mesh into the sediment. In 2005 meiofauna was sampled from an exclusion, an ambient and a control plot. Statistical analysis revealed significant differences between the lugworm exclusion and the locations with *Arenicola*. Total abundance of meiofauna in the exclusion site was 17-22 % higher as compared to the overall abundance of meiofauna on the lugworm sites. Copepoda and Nematoda were distributed homogeneously over all experimental sites while Ostracoda and Nauplii reached their highest abundances in the sediment without lugworms correlated with an accumulation of organic material and chloroplastic pigments. The results of this study indicate that the presence of lugworms negatively affects meiofauna because of competition for food.

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EFFECTS OF THE BURROWING POLYCHAETE *Laeonereis acuta* AND THE SURFACE CRAWLER GASTROPOD *Heleobia australis* ON THE ASSOCIATED MEIOFAUNA.

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Studies on spatial and seasonal variability along the Laguna Estuarine System (S, Brazil) have shown temporal asynchronies between the meiofauna and macrofauna richness and abundance. Biological interactions between meiofauna and macrofauna could potentially contribute to the observed opposite seasonal variation exhibited by the benthic faunal components. A microcosm experiment was carried out to determine the effects of different densities of the burrowing polychaete *Laeonereis acuta* and the surface crawler gastropod *Heleobia australis* on the associated meiofauna. Microcosms consisted of 600 ml glass bottles filled 400 g of sieved sediment (500 mm) to remove any undesired macrofauna and macrodetritus, and topped up with filtered sea water. Individuals of *L. acuta* and *H. australis* were collected from the field and separately added to the bottles. Two treatments with high and low densities were tested against a control without individuals. High and low densities of the two macrobenthic species corresponded to approximately the maximum and minimal seasonal peaks of density in the field. After 20 days, meiofauna was sampled by coring the first 3 cm and vertically slicing into 1 cm layer (subsurface, subsurface and deep). High densities of *L. acuta* and *H. australis* significantly decreased nematode densities, number of species and diversity in the first centimeter of the sediment. Contrary, in deeper sediment layers, *Laeonereis* also affected the nematode assemblages in deeper sediment layers by significantly increasing nematode number of species and density. Changes in the top cm of the sediment by *L. acuta and H. australis* were mostly by disturbance. Predation by *Laeonereis* and competition for food with *Heleobia* in the top cm of the sediment may also have influenced the meiofauna. Particularly in *Laeonereis* experiment, the significant increase of nematode univariate measures in the deeper sediment layers is likely to be a result of the construction of tubes which enhance oxygenation in the sub layers. It is concluded that while macrobenthic species did affect the meiofauna structure, those effects are minor in relation to the observed seasonal and spatial asynchronies.

HARPACTICOIDS FROM THE RÍA DE FERROL (NW IBERIAN PENINSULA): PRELIMINARY RESEARCH AND SAMPLING METHODOLOGY.

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The geographical accidents known as *ría* are a common feature of the Galician coast (NW Spain). The Ría de Ferrol has the largest biological diversity among the Galician *rías* because of its particular hydrodynamics and sedimentary conditions. Its benthic fauna is well-known but there is a lack of researches about some zoological groups such as Copepoda Harpacticoida and meiofaunal taxa in general. Because of that, a joint research project of the Universidade de Santiago de Compostela (Galicia, Spain) and the Deutsches Zentrum für Marine Biodiversitätsforschung (Wilhelmshaven, Germany) was carried out in order to study the subtidal soft-bottom meiofauna, paying special attention to Copepoda Harpacticoida. The preliminary sampling programme began in December 2005 and showed huge abundances of harpacticoids and a remarkable diversity in families (e.g., Normanellidae, Diossaccidae, Cletodidae, Ameiridae, Tisbidae, Canuellidae, Canthocamptidae). During May and June 2006 samples were collected by means of SCUBA diving. Eight stations were chosen along the *ría*, of which 4 were sandy and 4 muddy, and covered a range of depths and different conditions of salinity and pollution levels. In each station, 3 sampling sites 50 meters away from each other were selected. In each site, two corers were taken, one of them for faunal studies and the other to determine physicochemical parameters. In this communication, the results on abundance and diversity of the most common harpacticoid families in two muddy sand stations are presented. Faunal data are also related to physicochemical features of the sediment. In addition, a description of a new corer to collect meiofaunal samples is provided.

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BENTHIC COPEPODS FROM ROCAS ATOLL

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The Rocas Atoll is the only atoll in the Southwestern Atlantic. It is located 144 nautical miles from the city of Natal, NE Brazil. This Biological Reserve comprises the reef and the surface of the top of the seamount where it rises from, to depths of 1000 m, and was the first Brazilian marine protected area. Four surveys were conducted from Oct., 2000 to Oct., 2001 as part of studies on the diversity of invertebrate benthic community. In a total of a hundred samples, individuals of three orders of Copepoda (Harpacticoida, Calanoida and Cyclopoida) were collected. Harpacticoida was the dominant group, being represented by members of the families Cletodidae, Harpacticidae, Laophontidae, Porcellidiidae, Tegastidae and Tetragonicipitidae from four different habitats: sublittoral, tidal flat, reef pools and lagoon. These results bring great contribution to the present knowledge of this group, expanding the known geographical range of families to Rio Grande do Norte State and increase the number of harpacticoid families from Brazil with the occurrence of Porcellidiidae. The only genus of Calanoida found was *Pseudocyclops* (Pseudocyclopidae), being the first record of this family in Brazil. *Euryte*, a cyclopoid, was very rare in the samples; this is the second record of the genus in Brazil, previously know only from the coastal of the state of São Paulo.

COPEPODA HARPACTICOIDA ASSEMBLAGES ON A TROPICAL SANDY BEACH (TAMANDARÉ-PERNAMBUCO-BRAZIL).

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The present study aims to characterize the Copepoda Harpacticoida assemblage on Tamandaré sandy beach (Pernambuco - Northeast Brazil). Two stations were fixed at the midlittoral lower and higher levels respectively and sampled monthly during the period October 1997 through September 1998. Meiofauna samples with four replicates were collected at each station using a corer stratified into two levels, superficial (0-10cm) and deep (10-20cm) within the sediment. Samples were also taken for microphytobenthic pigments, organic matter and sand granulometry. Temperature and salinity were registered during samplings. The identification of Harpacticoida species resulted in a list of sixteen taxa. Seven are new occurrences for the Brazilian coast and one is a new occurrence for Pernambuco. Alpha diversity measured by the Shannon index for each station/month was very low, with a maximum of 1.92 nats. The same pattern was observed for species numbers which in a single station attained the maximum number of six species (October 1997 at the lower level station). The interstitial habitat homogeneity of sandy beaches associated to the reduced average grain size were probably responsible for this pattern. There are significant differences of the diversity index among stations and also among layers of the higher station. Exposition to desiccation at the superficial layer of the higher level station and a greater chemical and physical stability at the lower level station because of the higher submersion time are factors that probably conditioned the alpha diversity. Harpacticoida densities were strongly reduced when the grain size diameter was lower than 0.250mm suggesting this value as the critical limit to harpacticoid species establishment at Tamandaré sandy beach.

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MEIOBENTHIC COMMUNITIES OF A DISTURBED TUNISIAN AREA: THE GABÈS GULF

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The coast of the Gabès gulf is an environment with a fragile equilibrium which has increasingly been modified by anthropogenic influences such as industrial disposal. In this disturbed ecosystem meiofauna samplings were carried out at 9 stations (from S1 to S9) during winter 2004. The abundances of major meiobenthic taxa were determined with nematodes and copepods being the most numerous. However, polychaetes, oligochaetes, achaetes and turbellaria were subdominant. Significant spatial fluctuation of copepod and nematode abundances was observed: The copepod abundances of the two most polluted stations with high hydrocarbon and metal loads were significantly different (HSD-Tukey multiple comparisons) from the rest of the sites. Significant differences were noted as well between nematode mean densities of the slightly polluted sites S1, S6, S7 and S9, and the remaining stations.

A NEW SPECIES OF THE FAMILY PARAMESOCHRIDAE (COPEPODA: HARPACTICOIDA) FROM THE GULF OF GABÈS (TUNISIA)

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During a study of benthic harpacticoid copepods from the gulf of Gabès at the south-eastern coast of Tunisia, several specimens belonging to the genus *Apodopsyllus* were found. They share the characteristics of the genus such as the lack of endopods from P2 to P4 and the soft and only slightly cuticularised body. However, only a few known species of *Apodopsyllus*, so far, are described to have comparably distinct patterns of dorsal and lateral cuticular plates and pores. Additionally, the specimens presented here are clearly distinguishable from closely related species by an elongated exopod at the P5 with four external setae (in the female in combination with a small baseoendopod) and a well developed P6 in the male. Including the new one the genus *Apodopsyllus* consists of 26 species

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REDESCRIPTION OF *HALECTINOSOMA ARENICOLA* ROUCH 1962 (COPEPODA: HARPACTICOIDA)

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Halectinosoma arenicola was first described by Rouch (1962) on Piedade beach sediments (Pernambuco, Brazil). However its descriptions and drawings were not detailed enough. Since its description, the species was only found by Itô (1973) in Japan. Despite the more detailed description by Itô, Clément & Moore (2000) suggested that the species observed in Japan is not the same described for Pernambuco and recommended the Brazilian population re-description to establish more clearly the populations' identity. The re-description of *Halectinosoma arenicola* from Northeast Brazil is the objective of this work. The studied specimens were collected from Tamandaré beach (1 female) and Maracaípe beach (1 female and 1 male), both located in Pernambuco south coast. In spite of the great similarity between the Japan described population to the original description, differences were observed between mouth parts, rostrum, antennas and furca. Morphological differences, especially in the mouth parts and cephalosomic region, confirm that the material found in Japan by Itô should not be included in the species described by Rouch. A new name will be suggested for the species from Japan when results presented at this work are published.

TETRAGONICIPITIDAE FROM NORTHERN COAST OF SÃO PAULO STATE, BRAZIL

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Tetragonicipitidae was erected by Lang to receive 5 genera, to these more were added totalizing 11 genera. The family was registered in Brazilian marine waters off Ubatuba and now in the region of São Sebastião channel in sand and gravel. The following taxa were found until now *Phyllopodopsyllus aegypticus* Nicholls, 1944, *P. longipalpatus* (Chappuis, 1954), *P. setouchiensis* Kitazima, 1987, *Laophontella horrida dentata* Mielke, 1992. *Oniscopsis* n. sp., *Tetragoniceps* n. sp., *Protogoniceps* n. sp., *Phyllopodopsyllus* n. sp. and a new genus also occurred in the Channel of São Sebastião and vicinity. The present work rises to 12 the number of genera of this family and also amplifies its distribution, with first occurrence of *Tetragoniceps* Brady, 1880, *Laophontella* Thompson & A. Scott, 1903 and *Protogoniceps* Por, 1964 in Brazilian waters. The nauplii of *P. setouchiensis*, *Laophontella horrida dentata* and of two new species of *Phyllopodopsyllus* T. Scott, 1906 were also found. Tetragonicipitidae nauplii were characterized.

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Argestes angolaensis sp. nov. INCERTA SEDIS, AN ARGESTIDAE POR, 1986 (COPEPODA, HARPACTICOIDA) FROM THE ANGOLA BASIN (SOUTH ATLANTIC)

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During expedition M48/1 DIVA 1 of RV METEOR in 2000 to the Angola deep-sea basin, in the northern sampling station # 346, 84 individuals of a new argestid species were collected, which therewith becomes the most abundant argestid species at the Angola basin. Morphological comparison points to a rather basal position inside Argestidae. A close affinity to the argestid type genus *Argestes* Sars, 1910 can be noted, basing primarily on the general body shape and ornamentation, and on the segmentation and setation of the swimming legs. However, the new species also shares some characteristics with *Parargestes* Lang, 1936, like e.g. the elongate furca, and an allobasis in the antenna. As the phylogeny of Argestidae is far from being resolved, the new species is placed into *Argestes* as *A. angolaensis* sp. nov. incerta sedis. An ongoing extensive phylogenetic study on basal Argestidae will resolve the phylogenetic relationships between *Argestes*, *Parargestes*, and *Fultonia* T. Scott, 1902. First preliminary comparison suggests the monophyly of the three mentioned taxa, being justified by the following synapomorphies: (i) whole body covered with small spinules, (ii) free thoracic somites dorsally with remarkably long sensilla, (iii) possession of peculiar brush-like paragnaths.

TWO NEW SPECIES OF *Parameiropsis* BECKER (COPEPODA, HARPACTICOIDA) FROM THE DEEP-SEA IN THE ANGOLA BASIN

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Two new species of the harpacticoid copepod genus *Parameiropsis* are described from deep-sea sites in the Angola Basin. The phylogenetic position of the genus within Har-pacticoida is briefly discussed. Males of *Parameiropsis poseidonicus* sp. n. differ from *Parameiropsis neptuni* sp. n. on the number of segments on antennule, development of the outermost seta of the antenna, development of bucal parts, proportional size of the inner spine of the basis of leg 1, shape of the furca and size of the body. The genus can be well defined by the following synapomorphic characters: antennule of female with aesthetasc on the third segment; antenna strong, upward curved and with outermost endopodal spine transformed in a flat and strong ornamented spine; labrum triangular; corpus mandibularis elongated, with very long gnathobasis; maxillule also prolonged, with flexible setae on the praecoxal arthrite, and maxilla with a strong modified claw on basis. The presence of an unmodified inner basal seta on first leg of males indicates that this genus cannot be included into the crown-group Ameiridae. The presence of 3 setae on third endopodal segment of leg 1, instead of one seta one claw and a minute setule even precludes the inclusion of this genus into the Podogenonta, therefore a new family is proposed to accommodate this genus.

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REVISION OF *Brasilibathynellocaris* JAKOBI, 1972 (COPEPODA: HARPACTICOIDA: ARASTENOCARIDIDAE) WITH REDEFINITION OF THE GENUS.

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Brasilibathynellocaris Jakobi, 1972 is a typical Neotropical genus of Parastenocarididae. It can be characterized and easily identified by the presence of 2 strong spinules on the anterior margin of the coxa of leg 4, first exopod of leg 4 reduced in length and with a proximal invagination on the inner margin and leg 3 with exopod inwardly curved, ending in a long forceps formed by the apophysis and the thumb (both with a hyaline margin). Here we redescribe all the species of *Brasilibathynellocaris* and favour the revalidation of the genus, arguing for its monophyly. *Pararemaneicaris cuscatalensis* (Noodt, 1962) and *Paraforficatocaris paranaensis* Jakobi, 1972 are transferred to the genus *Brasilibathynellocaris*. Thus the polyphyletic genus *Pararemaneicaris* Jakobi, 1972 and the monotypic genus *Paraforficatocaris* Jakobi, 1972 are rejected. The genus *Brasilibathynellocaris* can be divided in two monophyletic unities, with distinct geographical distribution. The *brasiliensis*-group nov., formed by the most austral species, viz. *Brasilibathynellocaris brasilibathynellae* (Jakobi and Silva, 1962) and *B. paranaensis* (Jakobi, 1972) comb. nov., is characterized by the presence of a leg 2 endopod as long as the exp 1 in males and the leg 4 exp 1 of males do not have the anterior row of strong spinules that can be seen in the species from the *equatoriensis*-group nov., viz. *Brasilibathynellocaris panamericana* (Noodt, 1962), *B. salvadorensis* (Noodt, 1962) and *B. cuscatalensis* (Noodt, 1962) comb. nov. Additionally, the *equatoriensis*-group nov. can be characterized by the presence of a hyaline lamella on leg 4 enp of males.

FIRST RECORD OF THE GENUS *Pseudomesochra* T. SCOTT, 1902 (HARPACTICOIDA: PSEUDOTACHIDIIDAE) IN THE SOUTH ATLANTIC WITH DESCRIPTION OF A NEW DEEP-SEA SPECIES.

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Samples collected during the Sergipe Continental Slope Environmental Characterization Project coordinated by PETROBRAS (The Brazilian Petroleum Company) revealed a new species of the family Pseudotachidiidae Lang, 1936 (Copepoda, Harpacticoida), *Pseudomesochra* n. sp. This is the first record of the genus *Pseudomesochra* for the South Atlantic. *Pseudomesochra* n. sp. can be distinguished from all species of the genus *Pseudomesochra* by the presence of four sensilla on the rostrum and a very long terminal "rat-tail" seta in the second segment of the antenna. It shares with *P. tamara* the addition of one inner seta in the first exopodal segment of the swimming legs 2-4 (P2-P4), a character absent in the other species of this genus. *Pseudomesochra* n. sp. is the fourth described species within this genus with two segments in the P2-P4 endopods. The inclusion of the new species in *Pseudomesochra* requires the modification of some autapomorphic characters of the genus, the most important being the presence of four sensilla on rostrum, a characteristic shared with other Pseudotachidiidae.

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FIRST RECORD OF THE GENUS *Kliopsyllus* KUNZ, 1962 (HARPACTICOIDA: PARAMESOCHRIDAE) FROM NORTHEASTERN BRAZIL WITH DESCRIPTION OF A NEW DEEP-SEA SPECIES.

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During the Sergipe Continental Slope Environmental Characterization Project coordinated by PETROBRAS (The Brazilian Petroleum Company) sediment samples of the deep sea adjacent to the State of Sergipe (Northeastern Brazil) revealed a new species of the family Paramesochridae (Copepoda, Harpacticoida). This *Kliopsyllus*-species is one of the smallest animals ever discovered for this genus, presenting a body length of 0.19 mm in the male. Additionally, it is one of the three so far registered *Kliopsyllus*-species from the deep sea. Almost all *Kliopsyllus*-species have a one-segmented endopod in the P4. Only *Kliopsyllus andeep* Veit-Köhler, 2004 from the abyssal Weddell Sea, a new species recently presented by Veit-Köhler and Thistle from the deep Pacific San Diego Trough and the species presented here show a two-segmented endopod in the P4. *Kliopsyllus andeep* carries strong, chitinous appendages at the telson, and additional setae at the endopods of P3 and P4 which can easily distinguish this species from the new Brazilian species. The Pacific species and the new animal from Brazil can be distinguished by the shape of the segments of the swimming legs and characteristics of their setae and spines.

A NEW SPECIES OF *Echinopsyllus* SARS, 1909 (COPEPODA, HARPACTICOIDA, ANCORABOLIDAE) COLLECTED FROM THE DEEP SEA OF CAMPOS BASIN (BRAZIL).

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A new species of *Echinopsyllus* Sars, 1909 (Copepoda, Harpacticoida, Ancorabolidae) is described from the continental slope of Campos Basin (Brazil) in the southwestern Atlantic. This work is part of the "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company. The new species differs from the known *E. normani* Sars, 1909 by several features, like (i) cephalothorax with 2 instead of 3 pairs of lateral processes, (ii) first pair of dorsal cephalothoracic processes smaller than second pair, (iii) second pair of dorsal cephalothoracic processes branched, (iv) outer seta in P1 exp2 geniculate, (v) all setae of P1 exp3 geniculate, (vi) female P3 enp 1-segmented, with 2 setae of equal size, (vii) seta on female P4 enp well developed, unipinnate, (viii) male P4 enp 2-segmented, enp2 terminally with 2 small bare setae and 1 longer bipinnate seta. The discovery of new species extends the distributional range of the taxon *Echinopsyllus* Sars, 1909 to the southern hemisphere. Both sexes are described and this is of particular interest, because members of the subfamily Ancorabolinae Sars, 1909 are generally collected in very low numbers with males being scarcer than females. As shown for other ancorabolin taxa (*Ancorabolus* Sars, 1909, *Ceratonotus* Sars, 1909, *Dorsiceratus* Drzycimski, 1967), the report of new species of genus *Echinopsyllus* is another evidence for the formerly unexpected wide distribution of Ancorabolidae in the world's oceans at generic level.

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MEIOFAUNAL STAGES IN THE DEVELOPMENT OF SIPUNCULANS *Thysanocardia nigra* AND *Themiste pyroides* FROM THE SEA OF JAPAN (SIPUNCULA: SIPUNCULIDEA)

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Meiofaunal stages of peanut worms, or supunculans, are very common in dirty sand communities. Disbalance in the knowledge about the differences between true meiofaunal species and meiofaunal juveniles of macrobentic sipunculans is still present in the current literature. Mostly it is connected with the fact that postlarval development of many species has been studied sporadically. The early sipunculan juveniles (about 0.3 mm) always have a spiny head with two horn-like protrusions developing into the first pair of tentacles. Contrary to adult worms characterized by peristaltic movement, meiofaunal juveniles also use eversible spiny head, or introvert, for their locomotion, similar to that described for cephalorhynch worms. The development and arrangement of the tentacular apparatus of *Thysanocardia nigra* (Ikeda, 1904) and *Themiste pyroides* (Chamberlin, 1920) were studied by scanning electron microscopy. In *T. nigra*, the tentacular apparatus is composed of two crowns: the nuchal arc enclosing the nuchal organ and a crown of numerous oral tentacles arranged in U-shaped festoons. A new oral tentacle appears directly on the base of the previous tentacle, thus giving rise to a typical sympodium with an alternating arrangement of tentacles. In *T. pyroides*, a second pair of tentacles develops from two ciliary lobes that are ventrolateral outgrowths of the circumoral ciliary field around the mouth opening. The third pair of tentacles appears from the dorsolateral lobes at the base of primary tentacles, between the first two pairs of tentacles. These six tentacles determine the position of six main stems of the tentacular apparatus designated the first tentacles in the corresponding stems. The second tentacle in every stem appears as a ventrolateral outgrowth at the base of the first tentacle. In both species, the distinct sympodial pattern in the arrangement of tentacles in the tentacular apparatus is well evidenced by the outlines of the ciliary oral grooves. The branched stems of *T. pyroides* may be homologized structurally and functionally to the oral festoons of *T. nigra*. One-year old juveniles with developed tentacular apparatus migrate from sandy sediments into mussel drusen and communities of sea grass rhizomes usually occupied by adult worms of these species.

MEIOFAUNAL POLYCHAETA FROM THE RÍAS OF O BARQUEIRO AND FOZ (GALICIA, NW SPAIN)

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We include the list of marine polychaeta species collected in the rías of O Barqueiro and Foz (Galicia, NW. Iberian Peninsula) as a result of a larger work devoted to its intertidal meiobenthos. Among these seventeen species *Microphthalmus listensis* Westheide, 1967 and *Protodriloides symbioticus* (Giard, 1904) were included, and they suppose the first record for the Iberian Peninsula. Moreover, for each species we showed the number of specimens found, some ecological notes and its vertical and geographical distribution. Finally, we compare the state of the art about marine meiofaunal polychaeta biodiversity in Iberian Peninsula with other European areas.

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FIRST RECORD OF *Austrognathia nannulifera* STERRER, 1991 AND THE PHYLUM GNATHOSTOMULIDA FOR THE IBERIAN PENINSULA

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In this work we study the marine Gnathostomulida species collected in the rías of Ferrol and Ares-Betanzos (Galicia, NW. Iberian Peninsula) as a result of a larger work devoted to its intertidal meiobenthos. The species *Austrognathia nannulifera* Sterrer, 1991 was included, and it supposes the first record for the Iberian Peninsula. Moreover, we showed the number of specimens found, some ecological notes and its geographical distribution.

FIRST RECORD OF *Orzeliscus belopus* DU BOIS-REYMOND MARCUS, 1952 FOR THE IBERIAN PENINSULA WITH NOTES OF OTHER TARDIGRADES FOUND IN THE RÍAS OF O BARQUEIRO AND FOZ (GALICIA, NW SPAIN)

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In this work we include the list of marine Tardigrada species collected in the rías of O Barqueiro and Foz (Galicia, NW. Iberian Peninsula) as a result of a larger work devoted to its intertidal meiobenthos. Among these species *Orzeliscus belopus* Du Bois-Reymond Marcus, 1952 was included, and it supposes the first record for the Iberian Peninsula whereas *Batillipes dicrocercus* Pollock, 1970 and *Batillipes phreaticus* Renaud-Debyser, 1959 were recorded for first time in Galicia. Moreover, for each species we showed the number of specimens found, some ecological notes and its geographical distribution. Finally, we compare the state of the art about marine Tardigrada biodiversity in Iberian Peninsula with other European areas.

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CONTRIBUTION TO MARINE BIODIVERSITY OF INTERSTITIAL PLATYHELMINTHES: ARE WE JUST SCRAPING THE SURFACE?

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A growing awareness is rising that present perception of marine biodiversity is inadequate, and based upon unrepresentative data. The inadequacy of knowledge on taxonomy and distribution of marine organisms is particularly acute for interstitial meiofauna, especially for 'soft bodied' taxa, which necessitate of observations on both living and fixed specimens. Among these groups, information on Platyhelminthes, a species-rich, ubiquitous and diverse taxon, is at present far from adequate, and is entirely absent for entire biogeographical regions. Under the sponsorship of the project PRIN-2004 BIOIMPA (Biodiversity of Inconspicuous Organisms in Marine Protected Areas), a series of sampling campaigns was carried out in marine protected areas, strategically located in biogeographically significant sectors of the Italian coasts (Porto Cesareo-Ionian sea, Miramare-Golfo di Trieste-Adriatic sea; Capo Caccia-Isola Piana-Tyrrhenian sea), as well as in areas of the Mediterranean (Alboran sea, Egyptian coasts) and neighbouring Atlantic (Galizia), never or very scarcely sampled before. The results of these campaigns are that 50% to 95% of the species of Platyhelminthes found in each station is constituted by new species. The almost total absence of species shared among central-east Mediterranean, the Alboran Sea and the west coast of Europe suggests that the 'traditional' biogeographical regions based on macrofaunal organisms might not be applicable to meiofaunal taxa. Furthermore, genetic analyses have revealed numerous complexes of sibling species, which may significantly contribute to local levels of marine biodiversity. These data confirm that the composition of interstitial Platyhelminthes is still far from being adequately known, and suggest that the contribution of the group to marine biodiversity might be much higher than hitherto suspected.

A NEW SPECIES OF DEEP-SEA TEGASTIDAE (COPEPODA: HARPACTICOIDA) FROM 9°50´N ON THE EAST PACIFIC RISE, WITH REMARKS ON ECOLOGY AND FAMILY PHYLOGENY

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Copepoda is one of the most diversified taxa at hydrothermal vents contributing with about 80 described species to more than 15% of total species described from vents worldwide. Most species belong to the family Dirivultidae of the order Siphonostomatoida, and only 8 species belong to the order Harpacticoida. One species of the family Tegastidae Sars, 1904, has been described from hydrothermal vents so far. All highly modified (laterally compressed, amphipod-like) tegastids till recently were found in shallow water often associated with bryozoans, cnidarians and algae, except for the primitive tegastid species *Smactigastes micheli* Ivanenko & Defaye, 2004 collected on the Mid Atlantic Ridge in 1700 meters depth (Lucky Strike, 37ºN) during *in situ* colonization experiments. The new *Smacigastes* species is the second one of the genus and was sampled from artificial substrates deployed in the vicinty of and one meter beside tubeworm aggregations at the 9°50´N region on the East Pacific Rise in 2500 meters depth. The derived features of the new species are the maxilla lacking coxal endite, and the swimming legs 2 and 3 with 2-segmented exopods resulting from fusion of 2 proximal segments. Results of phylogenetic analysis of the family Tegastidae are provided for the first time. Although collected nearby tubeworm aggregations, the new species of *Smacigastes* was never found within the flux region. This suggests that the species does not tolerate elevated temperatures and/or the presence of hydrogen sulfide or oxygen fluctuations. *Smacigastes micheli* and the new species sampled at deep-sea hydrothermal vents, as well as the findings of 2 other, yet undescribed members of tegastids found in Gulf of Mexico seeps communities and wood-fall communities from Gorda Ridge, point to an association of tegastids with chemosynthetic environments in the deep-sea.

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THREE NEW NEMATODE SPECIES (MONHYSTERIDAE) FROM DEEP-SEA HYDROTHERMAL VENTS

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Mid-ocean ridges are sea-floor spreading centers with volcanic, tectonic, and hydrothermal activity. Extending more than 75.000 km around the globe, they are an almost continuous volcanic mountain chain situated at bathyal and abyssal depths (1500-4000 m) with hydrothermal vents scattered along their length. At soft-sedimented hydrothermal vents mostly located at back-arc basis, the occurrence of nematodes is well-known. However, even at hard substrate, basalt-hosted vents at mid-ocean ridges nematodes are a prominent part of meiobenthos. Associated with mega- and macrofaunal aggregations exposed to moderate to low hydrothermal vent emissions, three free-living species of nematodes belonging to the Monhysteridae were described. *Thalassomonhystera fisheri* and *Halomonhystera hickeyi* were collected from aggregations of the mussel *Bathymodiolus thermophilus* and the tubeworm *Riftia pachyptila* at the East Pacific Rise and *T. vandovera*e was collected within mussel beds of *B. puteoserpentis* from the Mid-Atlantic Ridge. The three species are primary consumers feeding on bacteria and small organic matter as inferred from their mouth structures. As quantitative samples were obtained from sites with well-known physico-chemical parameters, we could also estimate their abundance and habitat preference in terms of vent flux regime. *T. vandoverae* occurred in extremely high abundances and contributed with > 75% considerably to the total mussel bed associated nematode community thriving at temperatures between 2 and 4°C and low hydrogen sulfide emissions. *T. fisheri* appeared to be quite tolerant to different temperatures and sulfide concentrations and represented ~ 45% of nematodes at the mussel bed, but varied between 0-60% at one tubeworm aggregation at Riftia Field with low sulfide concentration (35 µM " H_2S) but > 80 % at another tubeworm aggregation at Tica characterized by higher sulfide concentrations (176 µM " H_2S). At both tubeworm aggregations temperatures were similar (18-23°C). *H. hickeyi* was restricted to tubeworm aggregations, but represented less than 5% at Tica, but between 40-100% at Riftia Field.

DISTRIBUTION OF *Halichoanolaimus* DE MAN, 1886 AT CAMPOS BASIN, RIO DE JANEIRO, BRAZIL.

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This taxonomical study is part of "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – where nematodes taxonomical and ecological results are focused. Sediments from Southeast of Brazil (Campos Basin continental slope) were considered to the study of the Family Selachinematidae Cobb, 1915. This family was represented by *Cheironchus* Cobb, 1917; *Choanolaimus* de Man 1880; *Gammanema* Cobb, 1920; *Latronema* Wieser, 1954, *Richtersia* Steiner, 1916, *Synonchiella* Cobb, 1933 and *Halichoanolaimus* de Man, 1886. *Halichoanolaimus* is one of the most abundant (about 200 individuals).The population was composed by 40% of males and 60% of females. 90% of the specimens were obtained from the North area in 0-2cm of the sediment profile, at 750m and 1350m. One new morphotype was distinguished, included in the group of species having at least two-thirds of the tail cylindrical. This morphotype resembles *H. consimilis* Algen 1933, presenting, however, longer spicules with a middle constriction also broader at the distal part.

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SPATIAL DISTRIBUTION OF *Linhystera* JUARIO, 1972 (XYALIDAE- NEMATODA) AT CAMPOS BASIN (RIO DE JANEIRO, BRAZIL).

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The continental slope of Campos Basin has a width varying from 120km to 150km, with the lowest limits between 2.400 m and 3.000 m. It is covered by fine continental sediment and a sandy fraction which is composed mainly by Foraminifera. This project is part of "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – and nematodes taxonomical and ecological results are focused. Sediment samples were collected in April, 2002 (OCEANPROF I) and September, 2002 (OCEANPROF II) in Campos Basin, on board of the Research Vessel Astro Garoupa. A total of 44 oceanographic stations were sampled along 9 transects, considering 5 depths (750 m, 1050 m, 1350 m, 1650 m and 1950 m) for each one, two sediment layers (0-2cm and 2-5cm), distributed in the north and south regions. Samples were collected using a box corer USNEL SPADE Corer type - ocean Instruments with 0.25m^2 surface area. *Linhystera* has only one valid species: *Linhystera problematica* (Juario, 1974) found previously in deep-sea. In Campos Basin the genus is represented by five new species with 23 individuals: 30% males, 21% females and 47% juveniles. Their horizontal distribution varied in relation to areas and depths, as follow: *Linhystera sp. nov.* 2 and *Linhystera sp. nov.* 4 in the upper slope (750m to 1050m); *Linhystera sp. nov.1* ; *Linhystera sp. nov .3 and*; *Linhystera sp. nov.* 5 in the deeper slope (1350m to 1650m). The morphotypes 1 and 4 occurred in both North and South areas, whereas the others only in the South. The vertical distribution also varies within species: *Linhystera sp. nov.* 1 in both sediment layer (0-2cm and 2-5 cm); *Linhystera sp. nov.3* only in the deeper layer and the others on the upper layer. The study of only one genus among 192 from this area showed that species biodiversity is very high and Campos Basin study represents a great contribution to Nematode taxonomy.

Syringolaimus DE MAN, 1888 (IRONIDAE - NEMATODA) AT CAMPOS BASIN (RIO DE JANEIRO, BRAZIL): IS WATER DEPTH A TREND TO BODY SIZE?

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PETROBRAS – The Brazilian Petroleum Company has sponsored prospective biodiversity projects in deep-sea, where nematodes taxonomical and ecological results are focused. The continental slope of Campos Basin has a width varying from 120km to 150km, with the lowest limits between 2.400 m and 3.000 m. It is covered by fine continental sediment and a sandy fraction. Sediment samples were collected in April, 2002 (OCEANPROF I) and September, 2002 (OCEANPROF II) in Campos Basin on board of the Research Vessel Astro Garoupa. A total of 43oceanographic stations were sampled along 9 transects considering 5 depths (750 m, 1050 m, 1350 m, 1650 m and 1950 m) for each one, distributed in the north and south regions. Samples were collected using a box corer USNEL SPADE Corer type - ocean Instruments with 0.25m^2 surface area. The family Ironidae de Man, 1876 is composed by four genera: *Syringolaimus* de Man, 1888, *Dolicholaimus* de Man, 1888, *Thalassironus* de Man, 1889 and *Trissonchulus* Cobb, 1920. *Syringolaimus* is the most representative, with 140 individuals integrating four new species. The four morphotypes presented different horizontal and vertical distributions: *Syringolaimus* sp.nov. 1 occurred at 1050m, *Syringolaimus* sp.nov. 2 at 750m and 1350m, *Syringolaimus* sp.nov. 3 from 750m to 1350m and *Syringolaimus* sp. nov. 4 were determined to all depths. The latter (male and female) showed the body length diminishing with depth: 1.9mm at the upper slop (63% of total population) to 0.8mm at mid slop (37%).Pearson Correlation test indicated a significant value (-0.42, $p < 0.05$). In oligotrophic water, depth, pressure and food depletion may play an important role on the size of nematodes even over those with predatory habits.

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SPATIAL DISTRIBUTION OF *Molgolaimus* DITLEVSEN,1921 (DESMODORIDAE-NEMATODA) AND *Microlaimus* DE MAN,1880 (MICROLAIMIDAE-NEMATODA) AT CAMPOS BASIN (BRAZIL).

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Desmodoridae and Microlaimidae, with *Molgolaimus* and *Microlaimus* as major components respectively, are usually found in ecological and taxonomical deep sea researches. *Molgolaimus* presents 34 valid species, while *Microlaimus* has 53 valid species. The few information about the Brazilian South Atlantic deep sea are restricted to the results in Campos Basin and the continental slope of Sergipe. This work is part of the "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – in partnership with "Laboratório de Meiofauna" (UFPE). The samplings were performed at Campos Basin (RJ) in November and December, 2002 (OCEANPROF I), and June and July, 2003 (OCEANPROF II). In each expedition 24 stations were sampled in South region, and 19 in North, with a corer of 2.0 cm. In OCEANPROF II a corer of 10 cm x 10 cm was also used, at five stations of each region. The samples were obtained with a Box corer at the depths of 750, 1050, 1350, 1650 and 1950 meters and two sediment layers (0-2 and 2-5 cm). In the laboratory, the nematodes were sorted out, mounted on slides and identified up to genus level, observing the life stage and sex. *Molgolaimus* and *Microlaimus* occurred in all depths and in both regions but were restricted to the upper sediment layer (0-2 cm). Both genera did not occur in OCEANPROF I, and only *Microlaimus* was found with the corer of 2,0 cm in OCEANPROF II. A total of 6 species of *Molgolaimus* were detected, from which only one is known, *M abyssorum*. This species was the most abundant (48%) and showed affinity with the deeper continental slope (1950 m). This depth was the only one that presented all the species of *Molgolaimus* and where the males were less abundant (34%). *Microlaimus* presented one known species, *M aequisetosus*, from a total of 9. Differently from *Molgolaimus*, none of the species of *Microlaimus* presented such high abundance, and the depth with greatest number of species (4) was 1650 m. The males comprised more than 50% in 1050m and 1650 m. The absence of the genera studied here in OCEANPROF I could be due to the mosaic distribution of nematofauna and the use of only the small corer.

A REVISION OF THE GENUS *Metadasynemella* (NEMATODA:CERAMONEMATIDAE) WITH A DESCRIPTION OF *Metadasynemella* SP. NOV. FROM BRAZILIAN DEEP SEA (CAMPOS BASIN, RIO DE JANEIRO).

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This work is part of the "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company. Benthic studies were held on Continental slope in which the biodiversity of Nematodes were considered. Some taxonomical problems within the already described species of the genus *Metadasynemella* are considered and a description of *Metadasynemella* sp. nov. is presented. The Nematoda studied were acquired from sediment samples which were collected in November/December 2002 (OCEANPROF I) and June/July 2003 (OCEANPROF II) in the Campos Basin on board of the Research Vessel Astro Garoupa. Samples were stored at plastic containers and fixed with 10% saline formaldehyde tampon with Borax. Nematodes were gently picked out with an inox stylet and permanent slides mounted following Seinhorst (1959). Drawings were made on an optic microscope OLYMPUS CX 31 with the aid of a camera lucida. Photos were carried out with an Olympus digital camera C-5050ZOOM.The specimen studied has all the characteristics of *Metadasynemella* and the presence of one cuticular pair of pore disposed symmetrically at both amphid sides is one of its main features which justify a new species description. Several morphological problems detected to the species already described to the genus *Metadasynemella* lead to suggest that *M.cassidinensis* should migrate to the genus *Ceramonema* and that *M. picrocephala* should be not considered as a valid species due to the lack of information. In this case *Metadasynemella* congregates only two valid species already described: *M. macrophallus* and *M. elegans* added to *Metadasynemella* sp. nov.

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NEW TAXA OF THE FAMILY THORACOSTOMOPSIDAE (LORENZEN, 1994) FROM SOUTHEAST AND NORTHEAST SEDIMENTARY BASINS OF BRAZIL.

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This work is part of "Campos Basin Deep Sea Environmental Programme" and Potiguar Basin Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – where nematodes taxonomical and ecological results are focused. Sediments from Southeast of Brazil (Campos Basin continental slope) and at Northeast of Brazil (Potiguar Basin continental shelf) were considered to the taxonomical study of the Family Thoracostomopsidae. It is represented by two genera: *Mesacanthion* Wieser, 1953 and *Epacanthion* (Wieser, 1953). The former is the most abundant with 35 individuals: 31% males, 18% females and 51% juveniles. Among them *Mesacanthion infantilis* Ditlevsen, 1930 was detected at Campos Basin and two new species were found at Potiguar Basin. Differences in the spicule shape and size are the main features. The latter showed 32 individuals: 40% males, 29% females and 31% juveniles. The two new species are also characterized by morphological differences in the spicule: morphotype 1 has a banana-like spicule and on morphotype 2 the spicule is long about 10% of total body size without gubernaculum. Among the Thoracostomopsidae of Potiguar Basin there is also a new genus with two species showing some affinities with *Trileptium* Cobb, 1933. The absence of three everted mandibules, the shape and size of the mandibules and of the three teeth make it a different taxon. On the other hand, the unique tubular supplement, the presence of three onchia and three mandibules indicate that the new genus belongs to this Family.

Spirobolbolaimus SOETAERT & VINCX 1988 FROM TWO SOUTHEAST AND NORTHEAST SEDIMENTARY BASINS OF BRAZIL.

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This work is part of "Campos Basin Deep Sea Environmental Programme" and Potiguar Basin Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – where nematodes taxonomical and ecological results are focused. Sediments from Southeast of Brazil (Campos Basin continental slope) and at Northeast of Brazil (Potiguar Basin continental shelf) were considered to the taxonomical study of the Family Microlaimidae. At Campos Basin it was composed by *Microlaimus* de Man, 1880, *Bolbolaimus* Cobb 1920, *Aponema* Jensen,1978 and *Spirobolbolaimus* Soetaert & Vincx 1988 and at Potiguar Basin only the last one occurred. Two new species was determined: morphotype1 (Campos Basin) showed only one testis which indicates a peculiar feature in relation to the two others species of this genus (*S. bathyalis* Soetaert & Vincx 1988 and *S. boucherorum* Gourbault & Vincx, 1990).The second new species (Potiguar Basin) has two testes but differs from the morphotype 1 by the number of supplements and gubernaculum with two pieces. Both new species present two types of sperm cells: the banana-like and the nail-like. The first one is common to the marine nematodes, but the second is flagellated and considered rare to them. The presence of one testis and the of a nail- like flagellated spermatozoa in both species, not known up to now, made necessary a genus emendation.

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A REMARKABLE NEW GENUS WITH ORNAMENTED CUTICLE FROM A BRAZILIAN TROPICAL SANDY BEACH AND ERECTION OF A NEW SUBFAMILY WITHIN THE ENCHELIDIIDAE (NEMATODA, ENOPLIDA).

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The new genus and new species was found in a Brazilian sandy beach (Tamandaré-PE). It possesses the main characteristics of the family Enchelidiidae (Nematoda, Enoplida), but is unique by the presence of a body cuticle ornamented with longitudinal ridges of small rods, different from all other members of the order Enoplida. Based upon this feature a new subfamily within the Enchelidiidae is erected. The new genus is also characterized by a long subdivided buccal cavity with two subventral teeth and numerous denticles and the arrangement of the anterior sensilla in two crowns: the anterior one papilliform, the posterior crown of 6 external labial and 4 cephalic sensilla setiform.

A NEW NEMATODE GENUS FROM BATHYAL OXYGEN MINIMUM ZONE SEDIMENT OFF PERU: A MISSING LINK BETWEEN CHROMADORIDA AND DESMODORIDA?

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Studies of deep sea nematofauna provide a wealth of taxa new for science. Currently, there is an increasing interest in benthic animals inhabiting reducing environments such as oxygen minimum zones (OMZs). Within a sample from 305 m depth from a bathyal OMZ area off Callao, Peru, a new genus resembling *Richtersia* was found. The new genus is characterized by a yellow-brownish colour in glycerin preparations, an annulated body cuticle with longitudinal rows of spines of various structure, a bilateral symmetrical head capsule, a thin-walled lip region with 12 tubular supports, a two circle arrangement of anterior sensilla, a flattened single spiral fovea at anterior border of capsule, a bipartite stoma structure armed with a well developed dorsal tooth, monorchic males and females with a didelphic-amphidelphic reproductive system. The discovery of an armed *Richtersia*-like taxon re-opens the discussion on the position of the genus either within the Chromadorida (Cyatholaimidae/Selachinematidae) or within the Desmodorida (Desmodoridae) as well as the validity of the subfamily Richtersiinae.

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Sabatieria (COMESOMATIDAE - NEMATODA) SPATIAL DISTRIBUTION AT CAMPOS BASIN (RIO DE JANEIRO, BRAZIL).

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The continental slope of Campos Basin has a width varying from 120km to 150km, with the lowest limits between 2.400 m and 3.000 m. It is covered by fine continental sediment and a sandy fraction which is composed mainly by Foraminifera. This project is part of "Campos Basin Deep Sea Environmental Programme" coordinated by PETROBRAS – The Brazilian Petroleum Company – and nematodes taxonomical and ecological results are focused. Samples were collected in April, 2002 (OCEANPROF I) and September, 2002 (OCEANPROF II) in Campos Basin, on board of the Research Vessel Astro Garoupa. A total of 44 oceanographic stations were sampled along 9 transects, considering 5 depths (750 m, 1050 m, 1350 m, 1650 m and 1950 m) for each one, two sediment layers (0-2cm and 2-5cm), distributed in the north and south regions. Samples were collected using a box corer USNEL SPADE Corer type - ocean Instruments with 0.25m^2 surface area. At Campos Basin the Sub-family Sabatierinae Filipjev 1934 is represented by *Cervonema* Wieser1954, *Laimella* Cobb 1920, *Pierrickia* Vitiello 1970 and *Sabatieria* Rouville1903.The last one is the most abundant genus (823 individuals) and presented the highest richness (7 species): *S.spiculata* Botelho et al., 2007, *S.paraspiculata* Botelho et al.,2007, *S.bitumen* Botelho et al., 2007, *S.subrotundicauda* Botelho et al., 2007 and 3 others morphotypes. The three morphotypes and *S.subrotundicauda* occurred on the upper slope and the others at all depth. *S. paraspiculata* was registered only on the South area and morphotypes 1 and 3 on the North. The others appeared at the two areas. All the species occurred at both sediment layers (0-2cm and 2-5 cm).This study indicates that to this genus richness drops with increasing depth.

Daptonema SP. NOV. (XYALIDAE – MONHYSTERINA): AN UNCOMMON REPRODUCTIVE STRATEGY IN FREE-LIVING MARINE NEMATODES?

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Recife is located on the coast of Pernambuco state, northeastern of Brazil, in an area with a warm wet tropical climate built up around the Pina Basin. It is a complex estuary, separated from the open ocean by a natural reef of calcareous sandstone, where the Capibaribe, Tejipió, Jiquiá, Jordão and Pina rivers flow. The Pina Basin is hypereutrophic and organically polluted. The rivers entering the basin flow through urban areas with none, or only poor sanitation. Samples were taken fortnightly during 3 months at the high wet season (June, July and August 2006) and during 3 months of dry season: (September, October and November 2006) in a fixed intertidal transect. Four random replications were sampled using a corer of 5.0 cm length and 2.5 cm of internal diameter. 27 nematode genera were found, among them a new *Daptonema* species appeared to be one of the most abundant species during the wet season. The majority of its females showed an expanded uterus with a great number of eggs and juveniles in different stages of development (1, 2 and 3) with up to 44 embryons and juveniles in one female. The ovary remain compressed toward the anterior region. Within a Petri dish two juveniles (stages 2 and 3) were observed exiting a living female that showed no destruction of inner organs. Since oviposition has not been observed, we might be dealing here either with viviparity or ovoviviparity in response to physico-chemical parameters causing stress conditions, as observed in *Monhystera*.

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MORPHOLOGICAL AND MOLECULAR SYSTEMATIC ANALYSES OF *Daptonema* SP. NOV. (XYALIDAE – NEMATODA)

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Daptonema sp.nov. was found at the Pina Basin, an estuary located on the central coast of Recife, PE, Northeastern Brazil. *Daptonema* species are separated from those from *Theristus* only by the tail shape and presence of two terminal setae. *Daptonema* sp.nov. differs from the other co-generic species based on the size of outer labial setae and cephalic setae, the size and position of the amphidial fovea and spicule shape and size. 18S sequences were used to analyze relationships and test monophyly of the taxa. A dataset comprising twenty-eight sequences was implemented and Neighbor-Joining (GTR distances) and Maximum Parsimony (unweighted) analyses was computed with *Monystera riemanni*, *Sphaerolaimus hirsutus*, and *Spirinia parasitifera* as outgroups. Both analyses supported the new *Daptonema* species as a distinct genetic lineage as well as a distinct evolutionary branch with the new species appearing as a sister group of the other *Daptonema* species. The analyses also revealed a well supported monophyletic unit of *Daptonema* with *Metadesmolaimus* sp. as a possible misidentification event. Yet, a second possible misidentification event may be observed involving the unit of *Theristus* and two *Daptonema* species. The analyses also suggest a synonymy involving *Daptonema hirsutum* and *D. setosum*. The present analyses suggest the necessity of increasing research efforts for a better understanding of the Xyalidae genera relationships and reinforce the use of 18S as barcoding DNA markers to nematodes.

THE PHYLOGENETIC STATUS OF *Spirinia elongata*: A MOLECULAR PERSPECTIVE (18S) REGARDING THE FAMILY DESMODORIDAE (NEMATODA, CHROMADORIDA)

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Molecular techniques have been increasingly applied to address the phylogenetic relationships and classification of many meiofaunal groups, including free-living marine nematode. Specimens of *Spirinia elongata* have been collected from Pina Basin, Recife-PE, Brazil, in order to test the monophyly of the species and determine its taxonomic position within the Desmodoridae. A data set comprising twenty 18S sequences was implemented including representatives from 4 Desmodoridae subfamilies (Spiriniinae, Desmodorinae, Stilbonematinae and Molgolaiminae). Neighbor Joining (NJ/GTR distances) and Maximum Parsimony (MP; unweighted) were performed with *Daptonema procerus* (Xyalidae) as outgroup. Majority rule and strict consensus were carried out for MP analysis. Despite NJ method showed the genetic identity of *S. elongata* the species arose as paraphyletic with *Metachromadora suecica*. Such unit seems to be the sister group of the remaining desmodorids. *Spirinia parasitifera* appears as a paraphyletic species since not all populations/specimens cluster together. Furthermore, *Spirinia elongata* appears as a sister group of only part of *S. parasitifera*. MP suggested a possible polyphyly of Spiriniinae while Stilbonematinae seams to be the single monophyletic group. *Catanema* clusters with *Leptonemella* and both together cluster with the *Eubostrichus* resulting in the Stilbonematinae as a clade, well supported *Desmodora* appears as paraphylletic due to *D. communis*, clustering with Stilbonematinae. No support is found for the clustering of *Xyzzors* with *Metachromadora* and for the genus *Desmodora* with *Metachromadora* (including *Xyzzors*). The present study suggest the necessity of increasing research efforts for a better understanding of the obscure internal relationships of Desmodoridae and reinforce the use of 18S for defining subfamily relationships of nematodes.

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COMPARISON OF TRADITIONAL FIXATION WITH MODERN SOLUTIONS FOR MOLECULAR STUDIES WITH MARINE NEMATODES: A STUDYCASE

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The goal of this study was tested the effects of different fixation solutions in molecular approach with marine nematodes, comparing the traditional methods of fixation (formalin and alcohol) and modern procedures, like DMSO solution. The nematodes were collected from Pina Basin, a hypereutrophic and organically polluted urban area in Recife city (PE, Brazil). Total samples from this area were treated according to four different treatments: formalin (4%), alcohol 70%, DMSO and without any fixation. Nematodes from these four treatments were selected from the total samples and used for DNA extraction with a sterile needle under a stereo miscroscope and finally placed into a four embryo dishes containing in each one formalin, alcool 70%, DMSO and in vivo. All specimens were treated as follows: nematodes were transferred into 25 ìl worm lysis buffer (50mM KCl, 10mM Tris, pH 8.3, 2.5mM MgCl2, 0.45% NP 40, 0.45% Tween 20, and 60 ìg/ml Proteinase K), cut into pieces and transferred into a 0.5ml tube. The tubes were incubated at 80 °C for 10 min, 65 °C for 1 h and 95 °C for 10min, consecutively. After centrifugation for 3min at 13.000rpm, 5ìl of the DNA suspension was added to the PCR mixture including primers 18S (F) and 18S (R). The PCR conditions were 30 s at 94 °C, 30 s at 54 °C and 2min at 72 °C for 40 cycles. Agarose gels were performed to visualized DNA bands. This study showed that in vivo, alcohol 70% and in DMSO were the best substances for fixation the samples for molecular techniques. It was found band in the gel in those treatments, showing that was possible to extracted DNA in those substances. Next step will be to looking at for the quality of DNA sequencing with these specimens in those treatments.

A FRESH LOOKAT GASTROTRICHA PHYLOGENY REVEALED BYA NEW SET OF MORPHOLOGICAL CHARACTERS

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A cladistic analysis of Gastrotricha based on morphological characters is presented. A novelty of this analysis is the usage of species as terminal taxa. The analysis comprises 80 ingroup taxa and 115 binary as well as many multistate characters in total. Character coding is based on a careful assessment of original species descriptions. Characters included cover general body organisation, internal and external features as, for example, data concerning the adhesive tubes, digestive tract or sensory devices. Character systems for which it was problematic to obtain data for a large set of the included taxa were not considered, even if they are of phylogenetic information. All characters were treated with equal weight and are unordered. Both search strategies, a heuristic search using the PAUP software and a ratchet search using the PRAP program and PAUP reveal a comparable scenario. Gastrotricha split into two sister taxa. One group (N.N.1) comprises *Neodasys* and monophyletic Macrodasyida s. str., the other (N.N.2) consists of a clade of the "freshwater macrodasyids" *Marinellina* and *Redudasys* as sister group of monophyletic Chaetonotida s. str. Several traditional families are supported by this analysis. Possible key events during phylogenesis of Gastrotricha could be the evolution of serially lateral adhesive organs in the stem linage of N.N.1 and the singular loss of both accessory reproductive organs in the stem linage of N.N.2.

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MUSCULAR SYSTEM OF GASTROTRICHA PAUCITUBULATINA IN AN EVOLUTIONARY PERSPECTIVE

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The muscular system of gastrotrichs consists of circular, longitudinal and helicoidal bands that when analysed with confocal Laser Scanning Microscopy permits new insights into their functional organisation and phylogenetic importance. Along these lines, we undertook a comparative study of the muscle organisation in several species and genera belonging to the families Chaetonotidae and Xenotrichulidae, aiming at shed some light on the evolutionary relationships within the suborder Paucitubulatina. Under cLSM, the circular muscles were seen in the splanchnic position as incomplete circular rings in *M. delamarei* and *Xenotrichula intermedia* and as dorsoventral bands in *X. punctata*, *Heteroxenotrichula squamosa* and *Draculiciteria tesselata*; in the somatic position *M. delamarei* shares the presence of dorsoventral muscles with all the Xenotrichulidae, in contrast with the remaining Chaetonotidae that lack these muscles. MP analysis of the muscular traits found the Paucitubulatina and Xenotrichulidae to be monophyletic while the Chaetonotidae resulted paraphyletic with the exclusion of the Xenotrichulidae. *Musellifer* was found to be the most basal genus within the suborder with the Xenotrichulidae being sister to the remaining Chaetonotidae, which in turn show *Polymerurus* as the most basal taxon. The results agree in general with the recent phylogenetic inferences based on molecular characters and supports the hypothesis that within Paucitubulatina dorsoventral muscles should be regarded as a plesiomorphy retained in marine, interstitial, hermaphroditic gastrotrichs but reduced and finally lost during changes in life style and reproduction modality that took place with the invasion of the freshwater environment. The new information prompted us to reconsider the systematisation of the Chaetonotidae, proposing the establishment of a new family to include the genera *Musellifer* and *Diuronotus*.

SPERMIOGENESIS AND SPERM CELL MORPHOLOGY IN *Copidognathus floridensis* (NEWELL, 1947) (HALACARIDAE, ACARI).

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Initial spermatids have electrondense cytoplasm with scattered small mitochondria, a well-developed Golgi complex, and nuclei with patches of heterochromatin. The cytoplasm and nuclei of these cells undergo an intense swelling. The second spermatids are large and electron-translucid cells, with mitochondria in row along the remains of endoplasmatic reticulum. In the following stage, heterochromatin and mitochondria have disappeared. Nuclei and cells elongate and chromatin starts to condense near to the nuclear envelop. An acrosomal complex appears at the tip of nucleus. The acrosomal filament is thick and crosses the nucleus length Plasmalemmal invaginations at cell surface give rise to tubules filled with an electron-dense material. Sperm cell maturation is completed at the ventral portion of the germinal part, close to testicular lumen. As a final step in spermiogenesis, cytoplasm of later spermatid undergoes a moderate condensation and the carioteca disappears. Mature sperm cells were found in a matrix of globular and "complex" bodies of secretion, latter consisting in flattened and spindle shaped. Rather than sperm aggregates, spermatozoa were contained in a single droplet inside the *Vas Deferens*, on a large mass of secretion, structured as heaps of elongated bodies. All mature sperm cells are covered by a thick individual coat of secretion. If contrasted with genera *Rhombognathus* and other Actinotrichida, *Copidognathus* displays a set of features that must be regarded as apomorphic. The absence of usual mitochondria, presence of electrodense tubules and secretions similar to those present in *Thalassarachna*, *Halacaroides* and *Halacarellus*, and the pattern of nuclear condensation are possibly shared apomorphies.

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PHYLOGENY OF DICRANOPHORIDAE (ROTIFERA: MONOGONONTA)

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A cladistic analysis of Dicranophoridae (Rotifera: Monogononta) based on morphological characters with species as terminal taxa is presented. The analysis includes 223 ingroup and 4 outgroup taxa (*Notommata glyphura*, *Itura aurita*, *Cephalodella gibba*, *Dorria dalecarlica*). The data matrix in total comprises 73 binary and multistate characters. Character coding is based on personal observations and on a broad survey of the literature. Characters included cover general body organisation (rotatory apparatus, trunk, foot), internal morphology and the fine structure of the jaw apparatus revealed by SEM. Examples of SEM preparations are given. All charaters are given equal weight, character states are unordered. Representatives of the paraphyletic genus *Dicranophorus* are probably early split-offs in the evolution of Dicranophoridae. Representatives of the polyphyletic genus *Encentrum* turn out to be the most strongly derived representatives of Dicranophoridae. Possible key events in the evolution of the taxon Dicranophoridae such as the development of accessory jaw elements and modification of the gastric tract are indicated.

ULTRASTRUCTURE AND FUNCTION OF A ROTIFER JAW APPARATUS: SEM AND TEM STUDIES OF THE MASTAX OF *Dicranophorus forcipatus* (ROTIFERA: MONOGONONTA)

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Rotifers are characterised by a complex set of cuticularised jaw elements in the pharynx. The jaw elements process food items in various different ways, the most common being grinding, sucking and grasping. The fine structure of the jaw elements has for some time been the subject of SEM studies, but only very limited information exists on how these elements are embedded in the surrounding tissue and interact with the pharynx musculature. Thus, our understanding of the functional basis of the rotifer jaw apparatus is seriously deficient. The present study presents a detailed analysis of the jaw apparatus in *Dicranophorus forcipatus* drawing on SEM and TEM techniques. *Dicranophorus forcipatus* is a carnivorous monogonont rotifer species from freshwater habitats characterised by an extrusible, grasping mastax. The fine structure of the jaw elements is presented based on SEM. Additionally, a reconstruction of the musculature based on ultrathin serial sections and TEM is given. Individual muscles are identified, possible homologues in other rotifer species indicated and functional considerations suggested.

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MEIOFAUNA IN THE CONTINENTAL SHELF UNDER THE INFLUENCE OF THE SANTOS ESTUARINE COMPLEX, SÃO PAULO, SE BRAZIL

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Meiofauna community in Santos Bay and the adjacent continental shelf under the influence of one of the most degraded estuarine area in Brazil was analyzed in the winter 2005, at 26 stations, between 9 and 97 m depth. Sampling was done with a box-corer, in triplicate, and sediment samples were taken to meiofauna (10 cm deep), chlorophyll *a* and phaeopigments biomasses, sediments and organic matter content analysis. Nematodes were the most abundant meiofauna taxa, representing more than 90 % of the total, followed by polychaetes and copepods. Densities ranged from 82 to 5561 ind.10 cm^{-2}, and were higher in the stations off the entrance of Santos Bay, in depths lower than 32 m. The lowest densities were found in the area where dredged sediments from Santos Harbor are disposed, and at stations deeper than 50 m. The MDS analysis showed that three groups of stations could be recognized. Two groups were related to fine sands and higher chlorophyll *a* biomasses, and depths lower than 32 m: one of them presented the highest meiofauna and nematodes densities, higher densities of Gastrotricha, and was situated off the entrance of the bay; the other one was composed by the station under the influence of a sewage outfall and the stations situated at the east side of the bay, and seven coastal stations. The third group, with lower densities, was formed by the deeper stations, with muddy sediments and high organic matter content, the stations in the area of the dredged disposal, as two coastal stations very distant from the bay entrance. Metals or hydrocarbons levels are very high in sediments inside the estuary but are low in the bay and in the shelf sediments. As the estuarine system does not export sediments to the coastal zone, possibly the nutrient enrichment of the water column derived from continental sources and a higher primary production have a positive effect on the meiofauna off the bay entrance, through microphytobenthic or bacterial biomass in the sediments. Analysis of the summer sampling and the identification of nematodes are in progress and will permit to better understand the obtained results.

MEIOFAUNA AND NEMATODE ASSEMBLAGES STRUCTURE IN A TROPICAL SUBLITTORAL AREA IN TODOS OS SANTOS BAY, NE BRAZIL

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Meiofauna and nematodes from an estuarine inner area in Todos os Santos Bay, Bahia, Northeastern Brazil, under an influence of an oil refinery, were investigated at 12 to 14 stations, between 1 and 15 m depth, in two winters and summers, from 2003 to 2005. A corer of 4.9 cm^{-2} of area and 5 cm deep was utilized in triplicate. A two-way analysis of variance, the Shannon diversity and Pielou´s eveness indexes, the Spearman correlation analysis, the Twinspan classification and an MDS ordination were utilized. Meiofauna densities ranged from 153 to 4,629 ind. 10 cm^{-2}. A high spatial variability in densities was recorded, probably reflecting the spatial heterogeneity of sediments (from clay to very coarse sand) in the area. The range of variability of densities falls within the recorded in other sublittoral coastal ecosystems in Brazil. Lower densities were observed only in station 4, the closest to the effluent discharge (100 to 200 m). Nematoda dominated at most stations, contributing to 80% of the total. 76 nematode genera were recorded and four different groups of assemblages were distinguished, mostly related to sediment characteristics. Except for one stations (St. 6), all stations had *Daptonema*, *Gomphionema*, *Terschellingia* and *Viscosia* in common. The first year was separated from the second by the occurrence of *Elzalia*, *Dorylaimopsis* and *Richtersia.* Station 6, with medium to coarse sand, was characterized by *Rhynchonema*, *Prorhynchonema*, *Tricoma* and *Perepsilonema. Spirinia,* a seletive deposit feeder found in silt coastal areas, was the most abundant genus at the station closest to the refinery (St. 4). Diversity index was lower at this station, and was higher at the more distant stations what seems to reflect an environmental gradient stress on nematodes assemblages. Deposit feeder nematodes dominated, in general, but herbivores/epistrate feeders were also well represented reflecting the kind of food available.

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MORPHOMETRICS PATTERN RESPONSE OF ESTUARINE NEMATODES TO THE SUGAR-CANE MONOCULTURE FERTILIZER ENRICHMENT EFFECT.

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In-situ application of inorganic fertilizer was used to simulate environmental eutrophication due to sugar-cane monoculture. The morphometric variation of estuarine nematodes is herein used to evaluate this experimental impact. Six square areas (4m² each) were randomly defined in estuarine mid-tidal level. Three of these areas received sugar-cane monoculture most used fertilizer enrichment (375 g/m² of Nitrogen-Phosphorus-Potassium), the other three represent control areas. The fertilizer was applied in weekly intervals. Two replicate cores were collected three times at each area: 1-Day 0 (before first fertilizer application); 2-Day 34; 3-Day 118. Samples were washed through a 63µm sieve and fixed in 4% formol and stained with Rose Bengal. From each replicate, 30 nematodes were randomly selected and then, the length and the maximum width, measured. The occurrence of stout Nematoda showed significant differences between the enriched areas and the control ones (Chi-square=14.75, df=2, $p<0.05$) as well as a significance variation through the experiment period in the enriched areas (Chi-square=12.84, df=2, $p<0.05$). There was no significant differences in the control areas through the experiment time (Chi-square=5.02, df=2, $p>0.05$). A reduction in the Nematoda density was also observed along the sampling days. These results indicate an increase of the stout Nematode frequency in the enriched areas with a little reduction of these numbers at the 118th day. These results point out to the use of stout Nematode frequency pattern as a good bioindicator of eutrophication processes.

METAL CONCENTRATIONS IN NEMATODE BIOMASS OF THE SOUTH-WEST LAGOON OF NEW CALEDONIA

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The concentrations of 7 metals (Ni, Co, Cr, Mn, Cu, Zn and Pb) were analyzed in nematodes biomass at the five bays of the South-west lagoon of New Caledonia in May 2003. Nematode biomass was extracted of the sediment through by migration method. The results demonstrate that nematodes were highly concentrated in metals, especially Ni, Cr, Mn and Co (1000 $\mu g.g\ PS^{-1}$). High concentrations were observed in nematodes biomass of Grande Rade and Boulari Bay, the similar concentrations were observed in the sediment samples of a precedent study realised in July and December 2002. Ni, Co, Cr and Mn concentrations in sediment and nematodes biomass were significantly correlated. This was not observed for Cu and Pb, commonly associates to organic matter. These results suggest a possible existence of different contamination ways for Cu and Pb. Bioaccumulation factors were differs among the bays, especially for Cu and Pb, they were tended to be higher in Bays where metal concentrations in sediment were very low. The results suggest that the differences between the bioaccumulation factors can result, in part, through lack of adaptation of the nematodes to the presence of determined metals in environment.

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DENSITY AND DIVERSITY OF THE BENTHIC COPEPODS IN A POLLUTED COASTAL SYSTEM FROM EASTERN GULF OF CALIFORNIA

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The temporal and spatial variation of the density and diversity of benthic copepods during February, August and December 2005, and its relationship with bottom water salinity, sediment temperature, bottom water dissolved oxygen concentration and biochemical oxygen demand, organic carbon content, and sediment grain size was analyzed along the Urías Estuary, a heavily polluted brackish system in southern Sinaloa, north-western Mexico. A total of 47 species of benthic copepods were recorded. Of these, 81% belongs to Harpacticoida, 15% to Cyclopoida and 4% belong to polyarthran families. Species richness was higher in December (S= 36), followed by February (S= 28) and August (S= 16). Density values ranged from 0 to 33.49 ind 10cm^{-2} in February, from 0 to 172.19 ind 10cm^{-2} in August, and from 1.94 to 40.18 ind 10cm^{-2} in December. Three zones were found based on environmental variables and on the density and diversity of benthic copepods: a) two areas were defined as poorly polluted zone (PPZ): i) the upper part of the system characterized by silty-sand sediments, medium content of organic carbon (from 3.51 to 4.51 %) probably from mangrove forests and shrimp farms, high diversity (H' from 0 to 3.02) and low dominance (J' from 0 to 0.83); ii) the area close to the mouth where the sediment ranges from silty-sand to sandy, low contents of organic carbon (from 3.23 to 4.04 %), high diversity (H' from 0 to 3.38) and low dominance (J' from 0 to 0.94); b) polluted zone (PZ), located in the upper area of the estuary where the influence of shrimp farms promotes values of organic matter content from 3.56 to 4.19 %, with silty-sand sediments, low diversity (H' from 0.87 to 2.28) and high dominance (J' from 0.29 to 0.68); c) very polluted zone (VPZ), located in front of a fish processing factory and close to the Infiernillo Estuary, characterized by muddy sediments, high contents of organic carbon (from 4.3 to 4.68 %), and the lowest values of both density (0 to 4.41 ind 10cm^{-2}) and diversity (H' from 0 to 1.88).

SENSITIVITY OF *Tigriopus fulvus* (COPEPODA, HARPACTICOIDA) TOWARDS DIETHILENE GLYCOL (DEG) AND PRODUCED FORMATION WATER (PFW)

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Tigriopus fulvus (Fisher, 1860) is a well-distributed copepod species in the Mediterranean Sea, used in marine ecotoxicological studies because of its ease of culturing, sensitivity and adaptability to laboratory conditions.The present work investigates the toxicity of DEG, a compound that results from the extraction processes of offshore gas platforms, and that of some types of PFW and of mixtures of both DEG and PFW. Lethal and sublethal (growth in terms of the release of moults) end-points were considered for organisms at the naupliar stage, known to be more sensitive than adults (Faraponova *et al.*, 2003). The sensitivity of *T. fulvus* to DEG at 96h as mortality rates was quite high: EC_{50} 6.0 g/L, LOEC 1.3 g/L, NOEC 0.5 g/L. As for the alterations in growth, with 1.9 g/L of DEG the release of moults percentage decreased by 40%.Tests with PFW yielded 96hEC_{50} between 23% and 77%. A synergistic effect was found when using both DEG and PFW, in that a significant reduction in the release of moults was observed.

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STUDY INTENSIFICATION OF *Tigriopus fulvus* (COPEPODA, HARPACTICOIDA) AS A TARGET SPECIES IN BIOASSAYS

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With the aim of developing and standardizing methods that use copepods in bioassays for ecotoxicological evaluations applied to the marine environment, a sub-lethal endpoint was tested for the species *Tigriopus fulvus* (Fisher, 1860), namely the release of moults (Faraponova *et al.*, 2005). The present study investigates the release of moults natural variability in artificial or natural sea water, so that a toxicity threshold could be estimated. Results with artificial seawater showed that natural oscillations can account for up to 20% of the observed release of moults, and this percentage can be used as an effect threshold for such endpoint. Bioassays performed with field samples showed up to 60% of release of moults. The effect observed was not accompanied by later mortality; it therefore can be considered as a valid sub-lethal endpoint particularly useful in low toxicity-highly diluted environmental samples, when mortality cannot be used as an endpoint even with nauplii, known to be more sensitive than adults (Faraponova *et al.*, 2003).

THE TOLERANCE OF HARPACTICOID COPEPOD *Tisbe biminiensis* TO POTASSIUM DICHROMATE, SODIUM DODECYL SULFATE - SDS AND AMMONIUM CHLORIDE.

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This study aimed to compare the sensibility of *T. biminiensis* with other organisms-test used in ecotoxicological tests of sediment. Toxicity tests were made with ovigerous females of benthic copepod *Tisbe biminiensis* to estimate the lethal concentration that kills 50% of the population (LC_{50}) of potassium dichromate ($K_2CR_2O_7$), sodium dodecyl sulfate - SDS ($C_{12}H_{25}NaO_4S$) and ammonium chloride (NH_4Cl) in different periods (24, 48, 72 e 96 h). Stock solutions of each substance at 1000 mg/ L were prepared and tested concentrations were made by dilutions. At each tested concentration 5 replicates groups of 10 ovigerous females were stocked in 20 mL diatom suspension of 0.2 µg Chl-a ml^{-1}. The conditions during the tests were pH 8.0 ± 0.2; salinity 35 ± 1 and temperature of 25 ± 0.5ºC. The LC50 were estimated through the statistical method of Trimmed Spearman – Karber. The LC50-96h (mean ± SD) was 11.2 ± 3.1 mg/L for K2CR2O7 , 8.7 ± 4.4 mg/L for SDS; 108.38 ± 39.52 mg/L for NH4Cl. The results indicated that *T. biminiensis* was more tolerant to the K2CR2O7 when compared to the species *Tiburonella viscana* and *Gammarus aequicauda*, however, when compared to *Palaemon elegans*, it was less tolerant. In relation to SDS, *T. biminiensis* tolerance was similar to *G. aequicauda* but greater than *M.gryllopalta* and *T. viscana*. *T. biminiensis* showed higher tolerance to ammonia levels in relation the species *G. aequicauda*, *M.gryllopalta*, *Litopenaeus vanamei*. Although *T. biminiensis* was more tolerant to these toxic substances than some other organisms-test usually used in toxicological test of sediments; the differences were not enough large to discard its use in ecotoxicology. The higher tolerance of *T. biminiensis* to ammonia represents a great advantage to toxicological tests, since it decreases the possibility of a false positive result.

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SEDIMENT TOXICITY OF THE PINA BASIN (RECIFE – PERNAMBUCO -BRAZIL) USING THE BENTHIC COPEPOD *Tisbe biminiensis*

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The Pina Basin is situated in the estuarine area near to Recife harbour (08º 04' 03" and 08º 05' 06"˜ 58" S and 34º 52' 16" and 34º 53 W). It is formed by the confluence of the rivers Capibaribe (its south arm), Tejipió, Jiquiá, Jordão and Pina and receives lots of industrial discharges and domestic effluents. This study had as objective to investigate the whole sediment toxicity of the Pina Basin using the benthic harpacticoid copepod *Tisbe biminiensis*. The samples were made at six stations in June 2006 and January 2007 representing the rainy and dry periods, respectively. The sampling was carried on the mediolitoral area and in each station three samples were made. The control sediment was collected in the Maracaípe Estuary. In laboratory, the sediment was 64 µm sieved and left to deposition for 24h, after that the water excess was removed. Each container-test received 2g from sediment and 20mL of diatom suspension at 0,2 ìgChl-a/ mL. After 24h, ten ovigerous females had been placed in the containers, three groups of females were used for each sample. The containers were kept at 25ºC during one week and every other day more food was added. It was observed significantly higher mortality at the stations A, B and F. The total fecundity (nauplii +copepodites) and the number of nauplii were significantly decreased at stations E and F. The number of copepodites significantly increased between June and January at all stations and also in the control. At the stations A, B and D, there was higher production of copepodites in relation to the control. In such a way, it was observed that sediment of the Pina Basin are causing lethality to *T. biminiensis* females at three of the six stations and sub-lethality in one more station, which indicates contamination. The sub-lethal endpoint more sensible in the rainy period was not the same in the dry period.

SEDIMENT TOXICITY OF SÃO PAULO RIVER ESTUARY (BAHIA, BRAZIL) USING THE COPEPOD *Tisbe biminiensis* AND THE SHRIMP *Litopenaeus vannamei*

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The Todos os Santos Bay (Bahia, Brazil) has been an area with intense activity of the petroleum industry since more than 40 years. In this area, there are extraction, transportation and refining of petroleum. In the estuary of the São Paulo River the presence of oil can be easily seen in the sediment surface, probably due to some spill from the petroleum ducts of this production area. This study had as objective to evaluate the sediment toxicity in the estuary of the São Paulo River using the benthic copepod, *Tisbe biminiensis*, and the marine shrimp postlarva, *Litopenaeus vannamei*. Samples of superficial sediment were colleted at four fixed stations in March and October 2006. The control sediment was collected at Maracaípe Estuary (Pernambuco-Brazil) far way from urban centers and industries. At each station, three samples were collected. In laboratory, the sediments were sieved through 63 mm mesh size. For bioassay using copepod, test containers were prepared with 2g of sediment and 20 mL of diatom suspension (0.2 mg Chl-a mL^{-1}). After 24 h, for sediment deposition, ten ovigerous female were added to each container and every other day 1 mL of the diatom suspension was added. Three groups of females were used for each replicate sample. The test containers of the bioassay with postlarvae received 20 g of sediment and 300mL of aerated seawater. After 24h, 10 postlarvae (PL VII and VIII) were added in each container and were fed twice a day with *Artemia* sp. nauplii. The bioassays were made at controlled conditions and lasted 7 and 10 days for copepod and postlarvae, respectively. At the end of experiments, the content of containers were stained and fixed for counting live females and the offspring of copepod and to measure and weigh shrimp larvae. After statistical comparison using ANOVA, no lethal or sub-lethal effects were detected using the shrimp postlarvae. When copepod was used, there was no lethal effect also, but sub-lethal effects were observed at three stations in March and at one station in October. Therefore, the copepod *Tisbe biminiensis* is more sensitive than shrimp postlarva *Litopenaeus vanname.*

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EFFECT OF SEDIMENT GRAIN SIZE IN THE SURVIVAL, REPRODUCTION AND DEVELOPMENT OF BENTHIC HARPACTICOID COPEPOD *TISBE BIMINIENSIS*

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Several marine environmental quality studies focused on marine sediments which are recognized as the most important reservoir of toxic substances. Toxicological tests can show the ecological meaning of the contamination levels. Organisms used in toxicological tests of whole sediment must present specific characteristics, among them, to be generalist in relation to grain size. Thus, the objective of this work was to study the effect of sediment grain size on the survival, fecundity and development of the copepod *Tisbe biminiensis*. The sediment was collected at Maracaípe Estuary (Pernambuco-Brazil) far way from urban centers and industries. In laboratory, the sediment was sieved resulting in four grain size fractions: smaller than 63mm (silt and clay), between 63 and 125mm (very fine sand), between 125 and 250mm (fine sand) and between 250mm and 2mm (medium and coarse sand). Four replicate test containers received sediment fractions (2 g) and 20 mL of diatom *Thallassiosira fluviatilis* suspension (0.2 mg Chl-a mL^{-1}) and were incubated at 25 ºC and 12/12 h light/dark photoperiods. After 24 h, for sediment deposition, ten ovigerous female were added to each container. The test lasted 7 days and every other day 1 mL of the diatom suspension (± 2 µg Chl-a mL^{-1}) was added. At the end of the experiments, the contents of the test containers were stained with Rose-Bengal and fixed in 4% formaldehyde. The survival of the ovigerous females, the number of nauplii, number of copepodites and the total fecundity were analyzed. After statistical comparison using ANOVA, it was observed that none of the endpoints varied significantly among the treatments. Therefore, it was concluded that the benthic harpacticoid copepod *Tisbe biminiensis* is very generalist regarding to grain size and satisfy this pre-requisite to whole sediment toxicological tests.

ASSESSING THE EFFECTS OF SUAPE HARBOR ACTIVITIES ON MEIOFAUNA AND COPEPODA HARPACTICOIDA, PERNAMBUCO, BRAZIL.

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The effects of oil processing and storing activities on meiofauna densities and Copepoda Harpacticoida species were investigated in stations of the Suape Harbor Complex-SHC (Pernambuco, Brazil) and compared to other estuarine sites in Pernambuco and São Paulo river estuary located in the Bahia State, where an oil-spill has occurred. Meiofauna groups and Harpacticoida species observed in the stations of SHC were the same ever found by authors in other Pernambuco estuaries; however, average densities were considerably lower if compared to these studies. Nevertheless, this situation seems not related to hydrocarbon effects. Previous PAHs data obtained in Suape were in general very low. In addition, there was a clear dominance of the Family Ectinosomatidae in Suape, through the species *Halectinosoma oblongum*, a common species in other Pernambuco estuarine areas. Despite ectinosomatids are frequent in several benthic habitats occurring with high densities on muddy and sandy sediments, they are also extremely sensitive to hydrocarbon disturbance. This statement is in accordance with the absence of Ectinosomatidae in São Paulo river estuary where PAHs attain higher concentrations and the Acenaphthene and Fluorene values exceed those minimum ones (ELR) established by the National Oceanic and Atmospheric Administration (NOAA). Such information corroborate the hypothesis that other activities carried out in the Suape Harbor, as dredging, are the responsible for density and diversity reduction effects both observed on meiofauna and Copepoda Harpacticoida.

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DIVERSITY OF THE BENTHIC COPEPODS (COPEPODA: HARPACTICOIDA, CYCLOPOIDA) FROM AN UNPOLLUTED COASTAL SYSTEM IN THE SOUTH-EASTERN GULF OF CALIFORNIA

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The effects of temperature, bottom water dissolved oxygen content and biochemical oxygen demand (BDO), bottom water salinity, organic carbon content in the sediment, sediment settlement rate and grain size on the temporal and spatial variation of density, species richness and diversity of benthic copepods were analyzed from February to December 2005 in a unpolluted coastal system in the south-eastern Gulf of California. Fourteen species of benthic copepods (Harpacticoida, 71%; Cyclopoida, 29%) were recorded throughout the study period. Density was positively correlated to oxygen content, temperature and BDO (r=0.8), and to organic matter content (r=0.9). Species richness showed to be poorly correlated to oxygen content and clay content in sediments (r=-0.4) and temperature (r=-0.5). Shannon-Wiener diversity index and Pielou evenness index were poorly correlated to BDO (r=-0.4), sediment settlement rate (r=-0.5) and silt and clay content in sediments (r=-0.5, r=-0.4, respectively). The cluster and MDS analysis based on the taxonomic composition of benthic copepods showed the presence of three groups of sampling stations. Station 1 and 10 constituted the first group. These stations are located in the southernmost and northernmost parts of the estuary. Stn. 2, 3, 4, 5, 6 and 7 constituted the second group. These stations are located in the southern (stn. 2, 3, 4, and 5) part of the estuary and close to the mouth of the system (stn. 6 and 7). The stations of the last group (stn. 8 and 9) are located in the northern part of the estuary.

COPEPOD CRUSTACEAN DIVERSITY IN SOUTH FLORIDA KARST, U.S.A.

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Southern Florida is mostly occupied by the Everglades. Hydrologically, karst systems in South Florida are very open, and numerous epigean invertebrates often penetrate the aquifer by means of sinkholes, some of them establishing permanent populations in the aquifer. The inventory of free-living freshwater copepods recorded from peninsular Florida includes a total of 65 taxa: 9 calanoids, 41 cyclopoids, and 15 harpacticoids. Two-thirds (44) of these are known from Everglades National Park and adjacent areas, partly as a result of more intensive sampling in this area; 10 have so far been found only in the Everglades. Of the species collected in central and northern Florida, 2 calanoids and 1 cyclopoid have been found only in the state, whereas all the others are widespread in North America and beyond. South of the Everglades, in the Florida Keys, recent collections from small permanent or ephemeral surface waterbodies, some of them brackish, yielded 2 species of calanoids, 27 cyclopoids, and 11 harpacticoids, adding 1 calanoid, 2 cyclopoids and 9 harpacticoids to the list for Florida. Ten species of cyclopoids and 1 harpacticoid collected in the Florida Keys were already known from the Everglades. In peninsular Florida, the Nearctic fauna is predominant, but a small Neotropical component is present (1 calanoid, 6 cyclopoids, and 5 harpacticoids); 1 cyclopoid species is considered to be introduced. In the Florida Keys, the assemblage consists mainly of cosmopolitan or Neotropical continental cyclopoids (1 introduced), and Neotropical, coastal harpacticoids, with only 2, Neotropical continental calanoids. Because the Florida peninsula is relatively young geologically, we did not expect that a diverse endemic groundwater fauna would be present. However, several taxa that are usually known elsewhere from surface waters, were collected in subterranean waters in the Florida Everglades during the dry season, likely an adaptation to survive drought. The species occurring in groundwater in the Everglades are either widely distributed elsewhere in North America or in the neotropics, members of speciose genera with both epigean and hypogean species, or members of predominantly marine groups.

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COMMUNITY STRUCTURE AND MICROHABITAT PREFERENCES OF HARPACTICOID COPEPODS IN A TROPICAL REEF LAGOON (ZANZIBAR, TANZANIA)

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The community structure, habitat preferences and biodiversity of the harpacticoid copepod fauna associated with different coral substrates in a tropical lagoon (Zanzibar, Tanzania) was investigated. Three microhabitat types were distinguished, namely dead coral fragments, coral gravel and coral sand, which were sampled at two locations (Matemwe and Makunduchi). The harpacticoid fauna appears to be affected by sediment granulometry and by the structural differences between coral and both gravel and sediment. The coral fragments contained a specific assemblage composed of typical 'phytal' taxa (such as *Tisbe*, *Paradactylopodia*, *Dactylopusia*) with an addition of eurytopic and sediment-dwelling forms (*Ameira*, *Ectinosoma*, *Amphiascus*), which could be attracted by the sediment retained between the coral branches. The assemblages of coral gravel and upper sediment layer did not differ significantly from each other with mostly the same dominant genera. The sediment was dominated by the interstitial Paramesochridae at Matemwe and by Tetragonicipitidae at Makunduchi. Especially at Makunduchi, the coral fragments sustained a more diverse assemblage than gravel and the different sediment layers. It was assumed that coral form and complexity, with implications for habitable space, nutritional resources and level of predation, are important in structuring diversity of the associated assemblage.

MEIOFAUNA AT THE POLES - COPING WITH CHANGE

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Our planet is changing. Warming of our climate might eventually also affect the marine meiobenthos. The Belgian BIANZO II (Biodiversity of three representative groups of the Antarctic zoobenthos - Coping with change) project, coordinated at the Marine Biology Section of Ghent University, investigates biodiversity patterns and their causal processes for three representative groups of the Antarctic zoobenthos: nematodes, amphipods and echinoids (WP 1: NOWBIO). Trophodynamic aspects and their ability to cope with temperature and temperature-related changes will be studied mainly in an experimental approach (WP 2: DYNABIO). Information collected in previous studies and in the first two work packages will be used to initiate the development of a model about possible changes in the benthic communities due to global environmental change (WP 3: FOREBIO). A series of laboratory experiments with incubated sediments will be carried out at Jubany Station later this year. The experimental set-up shall first be tested in the Arctic (Spitsbergen). In a first experiment (with incubated sediment cores), benthic respiration will be measured at different temperatures. In this way, we are able to investigate how the sediment fauna reacts to changes in temperature. In a second experiment (with incubated sediment in glass beakers), the direct link between supplied food and the meiofaunal (nematode) community will be investigated, as well as changes in food selection as a result of changes in temperature. Different types and quantities of labeled food will be added to the sediment, and food uptake will be investigated by means of stable isotope analysis. Within the framework of BIANZO II and ANDEEP-SYSTCO (ANtarctic benthic DEEP-sea biodiversity: colonisation history and recent community patterns - SYSTem COupling), the trophic interactions between meiobenthic taxa and their potential food sources will be studied, based on stable isotope and fatty acid analyses. This will be done by means of an *in vitro* experiment on board the FS Polarstern. Different ^{13}C-labeled food sources will be added to sediment cores which are incubated in cool containers at *in situ* temperatures.

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BASE LINE STUDYOF NEMATODES FROM A PATAGONIAN SALT MARSH

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Free-living marine nematodes are abundant and diverse in the coastal benthos, especially in salt marsh or estuaries areas. Salt marshes are environments where marine and land features conjugate producing areas with rich productivity and high biodiversity. In Argentina little is known about nematodes in salt marshes. The aim of this research was to study the biodiversity and vertical distribution of the Nematoda community in a salt marsh of the Fuerte San José beach (Patagonia, Argentina) during two seasons of the year (summer and winter). Three samples were collected each season with a Plexiglas corer (2.9 cm inner diameter) along a parallel line to the salt marsh edge. Each sample was dividing in 10 sub-samples of 1 cm of thickness each. Separation of sediment was done using the decantation method. Then samples were sieved (mesh=500 and 50 μm) and Nematoda were quantified and mounted in glycerine. Individuals were identified at taxonomic level of genera. Abundance, distribution and diversity in Nematoda were different between seasons. The total average density found in summer was 9470 ind.10 cm^{-2}. The first centimetre (the closer to the surface) presented the peak of abundance. Abundance diminished with depth. During winter the scenario was inverse. The total average density was 291 ind.10 cm^{-2}. Summer presented higher values than winter. There also was a great difference in the genera found during each season. During summer, *Paramonohystera* was the most abundant taxa in the oxic zone, *Oncholaimellus* in the RPD layer and *Theristus* in the anoxic zone. On the contrary, during winter *Paraethmolaimus*, *Cobbia* and *Odontophora* were dominant in the three zones.

TEMPORAL VARIABILITY IN CARBON SOURCES AND TROPHIC POSITION OF DOMINANT NEMATODE GENERA ON AND ESTUARINE TIDAL FLAT SEDIMENTS

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The benthos in coastal and estuarine intertidal habitats typically receives a variety of carbon and energy inputs. On bare tidal flats, microphytobenthos (MPB) and suspended particulate matter (SPOM) of different origins serve as potential food sources. In vegetated habitats such as salt marshes, the local vascular plant production additionally generates important inputs of detritus. Meiobenthos, and their predominant taxon, nematodes, have often been suggested to play an important role in benthic mineralization processes. However, lack of empirical information on the feeding behaviour and even trophic position of many nematodes hampers proper assessment of their roles in benthic food webs. Stable isotope ratios of carbon and nitrogen offer good analytical tools to trace food sources and trophic position of organisms. Information on endobenthic consumers in general, and on meiofauna in particular, is however scant. We have sampled the nematode fauna of an intertidal flat, adjacent to a small *Spartina*-dominated salt marsh, in the Schelde Estuary (SW Netherlands) on a bimonthly basis for analysis of stable carbon and nitrogen isotopes of their dominant genera. We have also sampled and analysed isotopic signatures of bulk sediment organic matter, MPB, SPOM, and salt marsh vegetation. Carbon isotopic signatures generally support the view that on fine sandy intertidal sediments with low silt content, MPB is the predominant basal carbon source for nematode communities throughout most of the year. Nitrogen and carbon isotopic signatures confirm suspected diatom-feeding behaviour of genera such as *Daptonema*, *Praeacanthonchus* and *Metachromadora*, as well as predatory trophic level of genera like *Enoplus* and *Sphaerolaimus*. Several nematode genera, however, did not, or not consistently, follow expectations about trophic level based on mouth morphology. Most strikingly, the well-studied predacious genus *Enoploides* shifted trophic level from predator in spring-summer to – presumably – microvore in winter. These results highlight the importance of further study on nematode feeding ecology under natural aconditions for a better understanding of their trophic position and roles in benthic food webs.

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SELECTIVITY ON THE DIET OF COPEPODA HARPACTICOIDA FEED ON MICROALGAE SPECIES PRESENT IN THEIR NATURAL ENVIRONMENT

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Specific interactions between primary producers and Copepoda Harpacticoida are not well known yet. In this way, the present work aims to verify the trophic relation among species of Harpacticoida and microalgae naturally co-occurring in the field, using laboratory experiments. The Harpacticoida species *Cletocamptus deitersi*,*Mesochra* sp., *Robertsonia mourei* and *Metis holothuriae* and 24 microalgae species were cultivated from sediment samples collected in August 2006 on the midlittoral of Santa Cruz Canal, Northeast Brazil. Ten animals for each Harpacticoida species and 10 ml of re-suspended microalgae were added to vials with 10ml of filtered water from the study area. Initial and final (without Harpacticoida) controls were established for an experiment period of 24 hours. Significant differences (Mann-Whitney, p=0.01) were observed for the densities of *Diploneis bombus* and *Navicula longa* in the presence of *Mesochra* sp. compared to the final control. In the presence of *R. mourei*, significant differences were observed (M-W, p=0.01) for *Navicula* sp., *Tryblionella coarctata* and *Tryblionella punctata*. Significant differences (M-W, p=0.01) were also observed for *Cymbella* sp.1, *Cymbella* sp.2 and *Gomphonema* sp. in the presence of *C. deitersi*. *Metis. holothuriae* didn't determine significant differences for any microalgae species. *Mesochra* sp., *R. mourei* and *C. deitersi* presented active selectivity for microalgae with ingestion non-related only to higher food availability. Besides, the size of these species seems to influence on this selection, with no overlapping in relation to the size of microalgae ingested among the Harpacticoida species. Other factors (ex. absence of certain biochemical and the presence of grazing-inhibiting substances) may explain why some microalgae were not ingested.

ARE MEIOBENTHOS AND HARPACTICOIDA SPATIAL PATTERNS INFLUENCED BY THEIR TROPHIC INTERACTIONS WITH MICROALGAE?

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Although many studies relating the spatial microdistribution of meiobenthos to the microphytobenthos distribution have been carried out such observations were mainly based on measures of photosynthetic pigment concentrations. In spite of being an important evidence of the primary production source, those results didn't evidenced specific interactions. In this way, the present work aims to determine whether the meiobenthos and Copepoda species microscale distributions are influenced by the benthic microalgae species distribution due to determined trophic interaction established on a previous experiment. Samples were collected with 25 contiguous syringes (1.3cm^2 to 1 cm depth) in August 2006 on the midlittoral of Santa Cruz Canal, Northeast Brazil. Spearman's correlation analysis between meiobenthic groups and benthic microalgae showed that only Harpacticoida density was significant correlated to *Gomphonema* sp. (r_s=0.542; n=25; p=0.005). Considering Harpacticoid species, only the species *Cletocamptus deitersi* presented significant correlation, being positively associated also to *Gomphonema* sp. (r_s=0.572; n=25; p=0.003). Despite the fact that Harpacticoida species clearly select microalgae on their diets, the correlations did not show in an unequivocal way the influence of this selectivity on their spatial distribution. Factors such as food abundance, vertical distribution of microalgae and Harpacticoida in the sediment, predation by higher trophic levels and other may obscure or overwhelm the influence of microalgae distribution over Harpacticoida microscale spatial pattern.

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Tisbe biminiensis (HARPACTICOIDA: COPEPODA) MASS CULTURE IN VOLUMES OF FIVE LITERS

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Several papers have already demonstrated the importance of copepods as first live food in cultures of marine larval fishes. The main restriction to use of copepods in larvicultures is the development of intensive mass culture technique Thus the aim of this study was to contribute to the development of the mass culture of the harpacticoid copepod *Tisbe biminiensis*. The culture was made in plastic boxes (32 x 47 x 14.5cm) of 20 L containing 5L of filtered and aerated seawater, at room temperature (29°C) and salinity of 35°/oo. The copepods were fed on commercially available ornamental fish food and the diatom *Phaeodactylum tricornutum* or *Thalassiosira fluviatilis* suspension. Every other day, water was completely renewed by passing all cultures in sieves of 64 μm mesh size. Once a week, the total number of copepods was estimated by sub-sampling. A first experiment demonstrated that the offspring harvesting once a week using sieves of 64 and 250 μm did not affect the copepod population. A second experiment showed that the presence of sediment in the cultures was not important to this copepod species. A third experiment lasted four months and demonstrated that the population reached a stable density of 30,609 ± 2,831ind.L^{-1} and a stable offspring production of 24,782 ± 2,063 ind. $L.^{-1}day^{-1}$. A fourth experiment lasted two months and demonstrated that the population reached a stable density of 51,288 ± 8,537 ind.L^{-1} and a stable offspring production of 28,668 ± 11,169 ind.$L.^{-1}day^{-1}$. A fifth experiment studied the population recovery after the offspring harvesting and indicated that in 4 days the population density returned to the same levels before offspring harvesting. These results indicated that *Tisbe biminiensis* population was stable for long periods in cultures and that the offspring harvesting can be done every four days without disturb this stability. The offspring produced by this methodology can now be tested as live food for fish and crustacean larva in small scale experiments of performance.

INGESTION RATE OF *Litopenaeus vannamei* SHRIMP LARVAE AS A FUNCTION OF *Tisbe biminiensis* COPEPOD CONCENTRATION

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The production of *Artemia* cysts not always reaches the increasing demand of aquaculture. Thus, alternative diets need to be tested. This study aimed to determine the ingestion rate of the *Litopenaeus vannamei* larva fed on different offspring concentrations of *Tisbe biminiensis*, composed by nauplii and copepodites, and to estimate the best food concentration. Two types of ingestion rate experiments were made. In the first type, larvae in the mysis (M) 2 and 3 stages and postlarvae (PL) 1, 3, 5 and 7 were stocked individually in flat bottom flasks without aeration containing 50 mL of seawater. In the other type, groups of 6 larvae in the stages M 2 and 3 were stocked in conic bottom flasks with aeration vessels containing 300 mL of seawater. In both experiments, the flasks containing seawater of salinity 31-33 were incubated for 24 h, at 25-30ºC and the photoperiod of 13h light/11 h dark. Four treatments were tested with different copepod offspring concentrations as well as controls without larvae. Besides, controls using *Artemia* nauplii as food were also used to verify the physiological condition of tested larvae. The larval survival was observed at the end of incubation period, and the flasks contents were preserved for further counting. In experiments using conic bottom flasks with aeration, the best concentration of copepods varied from 5 copepod mL^{-1} for M 2 and 3, respectively. The mean ingestion rate was 56.7 ± 9 and 188 ± 203 copepod $larva^{-1}$ day^{-1} for M 2 and 3, in that order. In the other type of experiment, M 2 did not ingest copepods and M 3 ingested only 24.5± 10 copepod $larva^{-1}$ day^{-1}. In postlarval stages, the best concentration was about 10 copepod mL^{-1} for PL 1 to 3 and 20 copepod mL^{-1} for PL 5 to 7. The mean ingestion rate was 185 ± 69 copepod $larva^{-1}$ day^{-1} for PL 1, 229 ± 45 copepod $larva^{-1}$ day^{-1} for PL 3, 342.8 ± 98 copepod $larva^{-1}$ day^{-1} for PL 5 and 293 ± 45 copepod $larva^{-1}$ day^{-1} for PL 7. As conclusion, the offspring of *T. biminiensis* copepod was ingested by *L. vannamei* larva in the stage mysis and postlarva and the ingestion rate increased with larval development. Thus, the offspring of *T. biminiensis* copepod is a potential live food to be tested in larviculture of *L. vannamei*.

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PRELIMINARY PERFORMANCE TESTS OF *Litopenaeus vannamei* SHRIMP LARVAE FEEDING ON THE HARPACTICOID COPEPOD, *Tisbe biminiensis*

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Artemia nauplius is the food most used in the larvicultures of marine shrimps, but sometimes the *Artemia* cyst production do not supply the real demand of aquaculture, once it depends on natural environmental extraction. The object of this study was to test the partial or complete replacement of *Artemia* nauplii by the harpacticoid copepod *T. biminiensis* offspring as food for *Litopenaeus vannamei* larvae. Two preliminary tests were performed. In the first test, larvae at the stage mysis 1 were reared in 5 L conic bottom flasks at initial density of 60/L. In the second one, postlarvae 2 were reared in 1 L flat bottom flasks at initial density of 65/L. Level replacement of *Artemia* nauplii by copepod offspring were: 0% (control), 50% (T1) and 100% (T2). The flasks were maintained at a photoperiod 13 h light\11 h dark, 32 ± 1 salinity, 28 ± 1ºC with aeration. The first test was finished at postlarva 8 and the survival was not significantly different among treatments, although a high mortality occurred during the first 24 h. In this test, the final length of the larvae varied from 5.9 to 6.3 mm and it was not significantly different among treatments. The final dry weight of the larvae was not different significantly in the T2 (158 µg) and T1 (150 µg), but it was smaller in the control (118 µg). The second test was finished at postlarva 9 and the survival was not significantly different in the T2 (40 %) and T1 (37%) treatments but it was significantly smaller in the control (18%). The final length of the larvae was significantly greater in T2 (7.4 mm) compared to other treatments. The final dry weight varied from 218 to 235 µg but it was not significantly different among treatments. More experiments must be done once there were high mortalities, mainly in controls, but up to now the results indicate that copepod *T. biminiensis* is a potential live food item to be used in the larviculture of *L. vannamei* shrimp.

FREE-LIVING NEMATODES FROM A COLONIZATION EXPERIMENT IN THE UPWELLING AREA OF ARRAIAL DO CABO, RIO DE JANEIRO, BRAZIL – I: *Lavareda decraemerae* GEN. N., SP. N. AND AN EMENDATION OF THE GENUS *Cricolaimus* SOUTHERN, 1914 (RHADINEMATIDAE, PLECTIDA).

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Lavareda decraemerae gen. et sp. nov is characterized by a cheilostom with sclerotized ring bearing 4 anterior projections, a funnel-shaped to tubiform stegostom, a large unispiral amphid with wide groove, a leptolaimoid pharynx, males with a single precloacal papilla with seta and 19 tubiform supplements in continues series. The new species shows a close relation to *Cricolaimus coronatus* Ditlevsen, 1930. Reexamination of *Cricolaimus elongatus* Southern, 1914 sensu Boucher & Helléouët (1997) revealed clear differences to the new species. Therefore the genus *Lavareda* gen. n. is erected to accomodate the new species found in Brazil and *C. coronatus* which is transferred to the new genus. An overview of the genera within the family Rhadinematidae is presented with emended diagnosis of the genus *Cricolaimus* Southern, 1914. This is the first record of a species belonging to the family Rhadinematidae colonizing an artificial substrate.

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