

## In this newsletter:

1. Searching for new Board Members
2. Updated MARS logo
3. EMBS: Back to Helgoland
4. MARS travel awards
5. MARS poster prize
6. Daniel Jouvance Foundation, scientific awards

## Searching for new Board Members

During the last MARS Board Meeting it was discussed that according to art 3.3. of the statutes committee-members will be appointed for the period of two years and are at most only once eligible for re-election.

This means that for some Board members, the membership will expire at the end of this year, and so we are searching for new board members.

The following board members have served for one term of two years, and can be re-elected:

- Ferdinando Boero
- Herman Hummel

We are now looking for new candidates for five vacant positions. If you want to become a candidate, or nominate someone as a candidate, you can do so by mailing the secretariat, at: [mars@nioz.nl](mailto:mars@nioz.nl).

## Updated MARS logo

The MARS logo has been updated, and we are also working on a new style for letters and newsletters. The shown logo is the updated MARS logo, and from this newsletter on, we will also refresh the layout of the newsletter.



## EMBS: Back to Helgoland

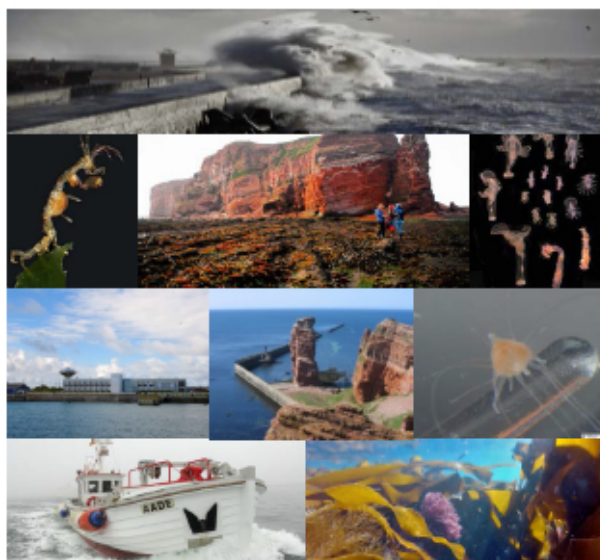
After 50 years the EMBS will return to its roots in Helgoland. More information on this symposium can be found soon at the website: [www.awi.de/embs50](http://www.awi.de/embs50).

# The 50<sup>th</sup> European Marine Biology Symposium

Helgoland, Germany  
September 19-26, 2015



Welcome back to Helgoland!  
With great pleasure we invite you to join us  
on Helgoland to celebrate the 50<sup>th</sup>  
Symposium.



More information will be  
available at the  
conference website:  
[www.awi.de/EMBS50](http://www.awi.de/EMBS50)



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UND MEERESFORSCHUNG



## MARS travel awards.

This year's MARS student travel awards have been awarded to Daniel Crespo, a PhD from the University of Coimbra, Portugal, and Alessia Dinoi, a Master student from the University of Salento, Italy. By now, they have both finished their travels. In this newsletter we present the first report, by Daniel Crespo, on research that was enabled by the MARS student travel award.

### ***Impact of the biodiversity compositional changes (due to global ecological changes) in the ecosystem functioning of transitional waters***

In the beginning of 2014 I was awarded with a Travel Award by the MARS network, which proved to be very important for my research activities, allowing me to travel for six weeks from the Centre for Functional Ecology (CFE) of the University of Coimbra, Portugal, to the National Oceanography Centre (NOC), University of Southampton, in the United Kingdom.

The submitted proposal addressed to the Biodiversity Ecosystem Functioning (BEF) on transitional marine waters, on which my PhD plan is focusing. The background is that anthropogenic activities are expected to lead to biodiversity changes, which can impair the efficiency in which ecosystems will function, regarding the provision of goods and services that ultimately underpin human wellbeing.

This travel grant allowed me to be involved in different tasks whose objectives were to contribute for a more holistic view and understanding of BEF in estuarine systems. In these tasks, I worked under the supervision of Dr. Martin Solan (NOC).



The first task was part of a project coordinated by Dr. Martin Solan within a large consortium, and consisted on exploring whether the relationship between biodiversity and nutrient generation in naturally assembled communities changed with scale, in an extensive mesocosm experiment. This included the participation in a 5-day fieldwork campaign in an extensive intertidal area of Morecambe (Northern England) to collect sediment cores with live fauna and analysed them in the laboratory at the National Oceanography Centre (NOC), Southampton. We faced the harsh winter of the Morecambe Bay, as sampling occurred in February. We collected 90 intertidal sediment cores spatially organized to test the effect of different scales in the ecosystem functioning. Those samples were collected and placed directly inside Perspex® aquaria, for latter incubation in the NOC facilities. In the laboratory, back at Southampton, several proxies for ecological functions were measured after a three-week incubation in a controlled temperature room, namely nutrients in the water, bioirrigation and bioturbation.

The second objective for this stay in Southampton was to learn how to analyse bioturbation data on experimental mesocosms. There are a fairly amount of ecosystem processes and functions that can be related to bioturbation (Schiffers et al. 2011), such as organic matter remineralisation and decomposition, nutrient cycling, pollutant release, sediment re-suspension and microbial activity (Solan and Herringshaw 2010). Bioturbation has been measured with the time lapse sediment profile imaging (t-SPI) method, described in Solan et al. (2004). This method is based on the detection of the movements of luminophores along a time period, detected with fluorescence in the presence of Ultra-Violet light. This technique provides multiple undisturbed cross sectional images of the benthos movements in the sediment, allowing the identification of the species present and simultaneously tracking and quantifying the infaunal activity.

As part of my PhD work, integrated in the BIOCHANGED project funded by the Portuguese Foundation for Science and Technology, I have done mesocosm experiments at the University of Coimbra to simulate biodiversity compositional changes representative of important global ecological changes. Several scenarios were tested for bioturbation (ecosystem process) and nutrient dynamics (ecosystem function) in benthic sediments. The scenarios included eutrophication and climate change events (heat waves and droughts) and also the effect of a non-native invasive species, *Corbicula fluminea*, in the context of BEF. A huge amount of data was generated and the next step was to analyse data, particularly regarding bioturbation, for which the contribution and advice from Martin Solan was essential. With such a large amount of data, we decided to analyse the data from the experiment with the invasive species as an initial step on the training on such analysis. For this experiment, we tested the effect of different combinations of temperature, salinity and faunal size on the ecological functions performed by the species. The training included the image analysis to acquire the data on bioturbation parameters using the ImageJ 1.48C software (Wayne Rasband, National Institute of Health, USA, (Ferreira and Rasband 2011)) followed by the statistical modelling with the R statistical and programming environment (R Core Team 2013) (library “nlme”, Pinheiro and Bates 2000). Using statistical mixed modelling – e.g. Generalized Least Squares, GLS (Pinheiro and Bates 2000), we were able to see that small and medium size faunal classes contributed more to the nutrient release than the larger sized individuals. For all nutrients, size was the most influential variable. Still, there were some differences due to salinity or temperature for some sizes (significant interactions). Concerning bioturbation, the *Corbicula fluminea* individuals achieved a maximum depth of 5.21 cm, and in terms of maximum luminophores depth, only size and salinity were significant. Again, size was the most influential parameter and, as well as for the nutrients, the smaller classes proved to have a larger impact on the bioturbation parameters.

The overall experience that the MARS Network Travel Award made possible was a fundamental stepping stone for my career. Besides the opportunity to be involved in a large U.K. project, in working and performing field work in a completely different system from the ones that I have worked on, the training received with the bioturbation data will provide the capability to perform autonomously the following tasks of my PhD. Bioturbation data and its relationship with nutrient dynamics and species composition from both systems (Mondego and Morecambe), hopefully, will be compared in order to detect predicted latitudinal differences on ecosystem functioning. The learning experience with Dr. Solan’s team was of uttermost importance, since the optimization of the methodology for bioturbation analysis (Solan et al. 2004) was performed under his supervision. Furthermore, it was a privilege to work with the pioneer of this methodology, and to have contacted with all steps of the research developed by his team. With the direct experience with this researcher, I gained further competences that would not have been possible in my present institution.

I acknowledge the MARS Network for this wonderful opportunity. Also, I am in debt with my supervisors at the University of Coimbra, Miguel Pardal and Marina Dolbeth who helped me with the proposal and all the previous work performed at this institution. Sara Leston and Filipe Martinho should also be included in this thanking note, as fundamental for the work that was performed. And of course, my host at the National Oceanography Center, University of Southampton, Martin Solan, who made me feel at home and for sharing his knowledge with such an ease, and his team and students Christina, Mathias, Louise and Marla.

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Solan M, Wigham B, Hudson I, et al. (2004) In situ quantification of bioturbation using time-lapse fluorescent sediment profile imaging (f-SPI), luminophore tracers and model simulation. Mar Ecol Prog Ser 271:1–12. doi: 10.3354/meps271001

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## MARS poster prizes

At the 49<sup>th</sup> EMBS organised in St. Petersburg, Russia, three MARS poster prizes were awarded. We congratulate all winners. The prizes went to:

1<sup>st</sup> prize: Alexei Rolskiy from the Knipovic Polar Research Institute of Marine Fisheries and Oceanography, Murmansk, Russia  
Title: Genetic diversity of beaked redfish (*Sebastes mentella*) populations in the North Atlantic and the Arctic Ocean

2<sup>nd</sup> prize: Penelope Wilson from the Joint Nature Conservation Committee, Peterborough, UK  
Title: Using ecological groupings to assess the impact of human activities

3<sup>rd</sup> prize: Anna Artemieva from the St. Petersburg State University, St. Petersburg, Russia  
Title: Predators mediate the effect of foundation species in subtidal barnacle clusters

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## Daniel Jouvance Foundation, scientific awards



The DANIEL JOUVANCE- Institut de France Foundation is yearly awarding a prize of 4000 € to a young scientist working in marine biology, marine chemistry, marine biotechnology or oceanography.

The topic for the 2014 prize is :

### Understanding Marine Ecosystems using Genomics

Applicants (less than 30 years old) should send before 31/10/2014:

- A CV Curriculum Vitae (2 pages maximum)
- A short but consistent abstract of the scientific work (4 pages maximum)
- A copy of the title page of published papers and thesis

To :

Daniel Jouvance Scientific Committee

c/o Prof. Y. LE GAL

Station de Biologie Marine du Muséum national d'Histoire naturelle

CONCARNEAU - France

The documents will be sent exclusively by E-mail

ylegal@mnhn.fr or y.legal2@orange.fr

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