Welcome to lovely Menai!

Blog by Katharina Juliane Jacob, 25.08.2013



Menai Bridge seen from the Menai suspension bridge.

Menai Bridge is a small town located on the Isle of Anglesey, a place which is well-known for its outstanding natural beauty. It is named after the Menai suspension bridge that connects the mainland of Wales with the small island. The bridge was built in the 19th century by Thomas Telford to facilitate trade between the United Kingdom and Ireland. Today, Dublin can easily be reached by ferry from Holyhead, a town located at the west coast of Anglesey. The region where I live belongs to North Wales, which is part of the United Kingdom, but, however, the Welsh are pretty much independent and have their own government. Welsh is spoken by about 70 % of the population and every child is taught to read and write the Celtic language. Very famous are the place names and Llanfairpwll-gwyngyllgogery-chwyrndrobwll-llantysilio-gogogoch is the longest in Europe - the town is actually near Menai Bridge. The landscape in Wales is just beautiful. There are, for example, the high mountains of the Snowdonia National Park and the picturesque rocky and

sandy beaches along the Welsh coastline. It actually is the right place for studying benthic ecology!



Marine life in Wales: The common shore crab *Carcinus maenas* and a clam found at the beaches of Anglesey.

GAME has scientific partners at the School of Ocean Sciences of the University of Bangor who supervise the projects here in Wales. Actually, the School of Ocean Sciences (SOS) is famous for its marine biological research and I am very happy to be placed in this wellorganized institute, which offers excellent research facilities. Its director Chris Ridchardson describes it as follows: "At Bangor we are proud of our long-established tradition of excellence in research and teaching in marine science. The School of Ocean Science has well-resourced groups in the principal disciplines of biology, chemistry, geology and physics. However, our emphasis on multidisciplinary research effectively ensures ready access to expertise in all aspects of marine science." I never experienced such a heartily working atmosphere, which made me feel welcome and supported from the very first day on. It is like being part of a big team that consists of Master and PhD students, technicians and lecturers. You will never spend a day without the regular and chatty tea break at 11 am in the morning and a cheerful "are you all right?" from everybody you meet during the day. Andrew Davies is my supervisor at the SOS and he immensely helped and motivated me in my work so far which I did alone because I do not have a partner student.



Taking sediment cores at a beach on Anglesey and preparing rafts for the incubation of plastic pellets in Holyhead marina. Steve, a technician, is helping me.

For my project, I chose the lugworm *Arenicola marina* as the most suitable test organism and I am conducting feeding experiments with this infauna animal, which is robust and very abundant. Among other response variables, I am looking for changes in the behavior of the lugworm when it is exposed to sediment polluted with microplastic pellets. Additionally, I am investigating whether the accumulation of phenanthrene on the surface of the micropellets has a further detrimental effect on the worms. This very common persistent organic pollutant is a component of petroleum and is known to accumulate on plastic litter in the sea. To identify possible impacts, I am monitoring the wet weight, the digging- in speed and the feeding rates of the worms within a 2-month experiment. Afterwards, the lugworms will also

be exposed to hypoxic conditions to see if the plastic pollution is affecting their tolerance to environmental stress. *Arenicola marina* is a very suitable organism to test for the effects of microplastic, because it is easy to keep in the lab, it ingests sediment that is in the size range of the plastic pellets we use and changes in its performance are easy to measure. Furthermore, it is an important engineering species in sandy intertidal and subtidal habitats that strongly influences the abiotic conditions in the sediment by its bioturbation.

In addition to the experiments with the lugworms, I also measure the microplastic pollution at two beaches. One is located in the north of the Isle of Anglesey, while the other is near Liverpool. By this I want to get an impression about the pollution level at the place where I collected the lugworms and in a comparable environment near an industrial area. Of course, I expect more microplastic particles in the sediment from Liverpool, because it is a highly urbanized trade center with a large population and intense cargo shipping. However, in comparison to some of the other GAME locations in this project, such as Niteroi near Rio de Janeiro or Jakarta, I expect a lower pollution level at the coasts of Wales and west England – but you never know. This will be clarified during the analysis course in October, when all teams meet again at GEOMAR in Kiel. The possibility to compare my results to those from other countries is really a great feature of the programme.





The lugworm *Arenicola marina*. I found this specimen at Red Wharf Bay on Anglesey. Plastic litter beached near Liverpool harbor.

The work of a scientist is full of surprises – good and bad ones. You never stop learning and expanding your horizon. Therefore, it is phantastic to work in a network of scientist where it is possible to exchange experiences and discuss results. I am very happy to be in this international programme with such a great team. Lets go GAME XI!