

# Rakkaat terveiset from Suomi

April 2013

Four weeks ago, I started my adventure at the Tvärminne Zoological Station, which is located in the most southern part of Finland. As it turned out it was a little too early, because there was still a lot of snow and an ice layer of more than 50 cm covered the Baltic. Due to these circumstances, I had a lot of time to think through the whole experimental set-up that we all developed in Kiel and to discuss it with my local supervisors and other scientists from the station.



View from the station over the "water"

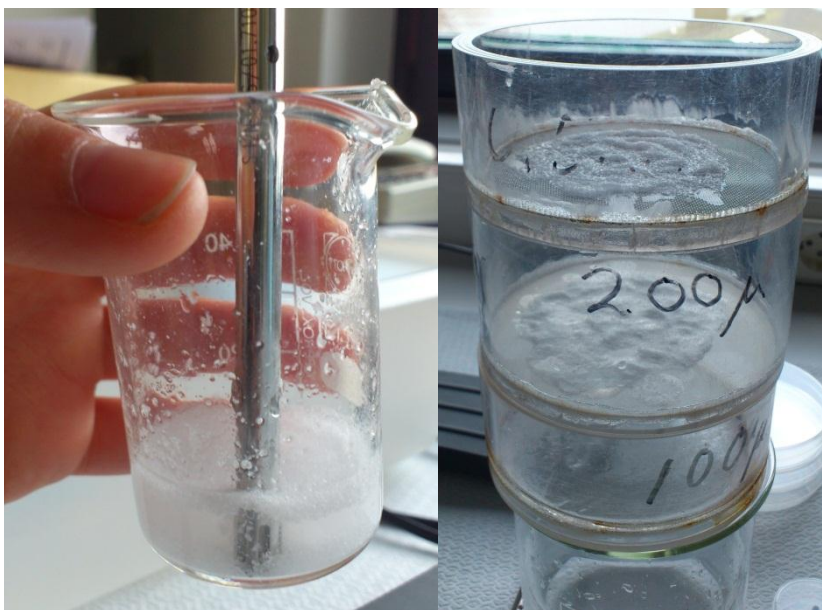
This year, the GAME project is focusing on micro plastics. The key aspects here are a) a monitoring for micro plastic particles (500  $\mu\text{m}$  - 5.000  $\mu\text{m}$ ) at the coasts near the different stations and b) a screening for organisms that actually ingest such particles with their food and a test whether micro plastic particles loaded with pollutants have a negative effect on their performance. The last mentioned aspect aims in answering



the question whether micro plastic particles function as a significant vector for organic pollutants (POPs) in marine deposit feeding invertebrates.

Winterwonderland in Tvaerminne

For these investigations, Finland is of particular interest, because, due to the low salinity (ca. 6 PSU), most marine organisms meet their distributional limit here. The few species that survive and reproduce in these waters have to invest a lot of energy into osmoregulation, what makes them potentially susceptible to additional stressors like pollution and chemical contamination. Furthermore, the stress caused by the low salinity is expressed in reduced body sizes. It turned out that this fact is a huge problem for my investigations, because the few deposit feeders here are all too small to ingest the particles that all teams agreed to use. To solve this problem, I started looking for a suitable method to reduce the size of the plastic particles.



Grinding and sieving

Shredding the plastics turned out to be pretty easy with the appropriate device. Unfortunately, the first euphoria evaporated when I realized that the shredded, smaller particles float, what reduces the chance of getting ingested by deposit feeding animals even more than a too big size. Accordingly, I have to use the particles as they are and hope that we manage to find large specimens of the test animals. However, the choice of test invertebrates was easy due to the very low diversity here in the Gulf of Finland. The most promising candidates are the clam *Macoma balthica*, the polychaetes *Marenzelleria* sp. and *Hediste* spp., as well as the isopod *Saduria entomon*. However, the isopod is not really a deposit feeder but a ground dwelling omnivore. The prompt sampling of these animals appeared to be a much bigger problem, because due to the ice the access to the sea and the sediment

was obviously impaired. But when we heard from other researchers that they keep a hole in the ice open to take water samples for their investigations, we decided to equip ourselves with an ekman-grab and to try to get some animals there. Whereas the other researchers are used to take the hydrocopter to reach this hole, we had to walk the distance while pulling our equipment in a "pulka" over the ice.



Left: Patrik Kraufvelin preparing the Ekman grab, right: me lowering it into the water

After taking three samples we decided to return to the station to examine our catch. The yield of this excursion: 15 living, but pretty small clams. I kept these in the lab and studied their feeding behavior for a couple of days. Hence, I was still without experimental animals and had certainty that I will not be able to start the pilot studies before the ice melts. But there were also other things to prepare. For instance to arrange the set-up in the lab what includes building a flow through system for 100 - 120 aquaria. This was also not an easy task as the laboratories had to be renovated due to little use during the winter months. Furthermore, the long distance to civilization for buying missing equipment did not make things easier. While waiting for the ice to melt, the lab to get renovated and people to bring equipment for the lab or to go shopping with me, I used the time for more literature research.



Boat trip with Patrik Kraufvelin and Eliecer Diaz

Since about one week, the way to open water is free. However, my supervisors and I were a little too hasty to go out for another sampling, because we had to find a trail through still surprisingly big and strong sheets of floating ice. But with a little help from a bigger boat running ahead of us, we finally made it and after all we could at least assure the presence of polychaetes by finding almost ten specimens, although pretty small, and we got more *Macoma balthica*.

Luckily also some other researches were busily sampling. Some of them went trawling for *Saduria entomon* and brought several hundreds of them back to the station. Therefore, I am, at least, well provided with this species. The polychaetes are still missing, which I think could be the most suitable organisms for our investigations. To find a sufficient amount of big, adult specimens is the last big task before I hole up in the lab for the pilot studies and some first sediment processings.



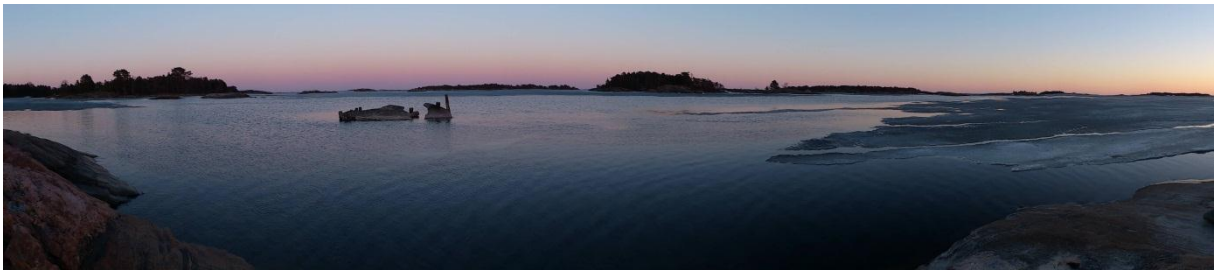
*Macoma balthica* and *Saduria entomon*

The long winter enabled me to discover the real Finnish life and manners like having a sauna with ice swimming afterwards. Furthermore, it offered me the possibility to

enjoy the silence of the almost empty station (especially on weekends) surrounded by a romantic winter wonderland. However, I am now exceedingly glad that due to the rising temperature more and more people are coming to Tvaerminne and I am finally able to do some fieldwork. I am looking forward to exciting (and hopefully more productive) months to come and I am curious about the results with which I will return to Germany in September.

Best wishes from the middle of nowhere,

Ulrike



Sunset over the Tvaerminne Archipelago