

## Yōkoso to Hokkaido,

We are living now in Akkeshi on Japans northernmost main island Hokkaido for more than 1 month. Our new home is a rather small city in the east of Hokkaido. The majority of Akkeshi's 11 000 inhabitants are fishermen and it's not for nothing that Akkeshi is considered the "Oyster capital" of Japan. Its location at the estuary of the Chiraikabetsu River, which brings large loads of organic material, makes it a perfect place for aquacultures of several bivalve species. Over a huge area buoys mark the mussel farms in Akkeshi Bay. Together with my GAME partner Kento Matsuo, I will live in the guest house of the Akkeshi Marine station for the next 5 months.



Akkeshi marine station (left) and the guest house (right)

The station and the dormitory are located directly at the Pacific Ocean, 5 minutes by car away from the city of Akkeshi. Due to the location outside town it is a good place for bird and deer watching, but you have to be aware of brown bears, which are abundant on the entire island of Hokkaido.

### *The experiment*

Since the lab of the Akkeshi Marine station provides almost everything we need for our experiment, we were able to start our screening for possible target species early. The aim was to find deposit feeders, which are able to ingest our plastic particles (polystyrene spheres of 0.6-1.2 mm in diameter). For our first trial, we agreed on 3 species:



*Macoma contabulata*

*Abarenicola pacifica*, *Macoma contabulata* and *Battilaria attramentaria*. The first is the Pacific lugworm, which is morphologically very similar to the lugworm from the European Wadden Sea (*Arenicola marina*). *M. contabulata* is a bivalve living in the upper sediment layer. Interestingly it has the ability to switch between filter feeding and deposit feeding, using a long siphon to pipette organic material from the nearby sediment surface. The last species is a small snail inhabiting the sediment surface. It is not ingesting sediment, but grazes on the unicellular algae that grow on top of it. After sampling specimens from a tidal flat and from the bay of Akkeshi, we started our pilot study. Since our animals should feel comfortable, we took sediment from their habitat to the lab. There, to remove any other sediment dwelling organisms, the sediment was sieved through a 1 mm sieve. The experimental setup itself was simple: We use 2 L plastic bottles to keep our animals in the lab.



*Cucumaria chronhjelmi*

After 2 weeks we wanted to check if our test organisms had taken up the plastic beads, which we had mixed into sediment on beforehand. We were dissecting the specimens, expecting stomachs full of bad plastic and found: NOTHING. We were surprised. However, the reason was presumably simple: The density of our

plastic beads is so close to seawater that many particles, which were first buried in the sediment, later emerged and floated in the water column. There, they were not available for our organisms. So we decided to repeat our pilot study with a higher concentration of plastic beads to compensate for losses due to the buoyancy of particles. Furthermore, we included the new target species *Cucumaria chronhjelmi*. This sea cucumber lives in the rocky intertidal and referring to our supervisor Prof. Masahiro Nakaoka these animals can also switch their feeding behavior from filter feeding to deposit feeding.

### Free time

Besides the scientific problems we have to face, we are also able to gain a lot of cultural



The Gyoza: We prepared around 300 of them

experiences in our free time. So we already could spend some time in an onsen, a pool which uses the hot springs which are abundant on the Island of Hokkaido and we visited a wetland area for bird watching.

Last Saturday we could enjoy a tempura party in our dormitory. In Japan, having a party always means meeting somewhere and having a nice dinner. This time we prepared so called Gyoza, which are small turnovers filled with wild vegetables. These vegetables, basically wild garlic, were collected by some members of the lab on beforehand.



The collected wild garlic (left) and the team preparing the Gyoza (right)

Additionally, they were lucky to catch some rockfish in front of the marine station, so we could try a huge variety of Japanese meals at this day. It is a privilege to work in this great team, who is always inviting us for some awesome activities in our free time.

Sayonara

Markus & Kento

GAME XI



Sunset view from the guest house