# ANTARXXVII leg 2: Expedition Report

By *Louise Delhaye*[1]

The second phase of the 27th expedition of Peru to Antarctica (ANTARXXVII) on board the BAP Carrasco started on January 28, 2020 and ended on the 3rd of March 2020, lasting a total of 35 days. Participants to this leg were *Jacobus Engelbrecht* and *Louise Delhaye*, both MSc students in Oceans & Lakes at the Vrije Universiteit Brussel. They embarked on the vessel in the afternoon of the 28th of January in Punta Arenas (Chile), the ship left the port on the morning of the next day and reached King George Island on the evening of the 1st of February 2020. The scientific campaign stopped on the 26th of February. It was initially decided that all scientists of the expedition would return to Punta Arenas from the Chilean base Presidente Eduardo Frei Montalva in Fildes on board of a C130 plane from the Peruvian Air Force on the morning of the 29th of February. However, due to problems that were not clearly explained to us, it was not until the afternoon of the 3rd of March that we could board a C130 from the *Uruguayan* Air Force to return to Punta Arenas.

## I. Objectives

This expedition had two main objectives: to provide data for two master's thesis and to bring back samples that could be studied by other research groups in Belgium.

The first research topic, led by L. Delhaye is entitled: "Spatial distribution and monitoring of heavy metal bioaccumulation in the Bransfield Strait, Antarctica". The desired samples for this topic were surface sediments of each station associated with five individuals of *Odontaster validus* and five molluscs of one of the following species: *Laternula elliptica*, *Nacella concinna* or *Aequiyoldia eightsii*. The second master thesis is led by J. Engelbrecht and is entitled: "Community structure of benthic organisms in the Antarctic Peninsula". This topic required the sampling of benthos at a minimum of 12 stations.

In addition to this, students were responsible for bringing back samples for other groups, listed below:

1. At the Royal Belgian Institute for Natural Sciences, prof. Dr. Isabelle Schön and PhD student Louraine Salabao requested that we bring back amphipods, and particularly from the genus *Eusirus* for genetic analysis;
2. At the Vrije Universiteit Brussel, prof. Dr. Marc Kochzius and MSc student Jolien Claes requested brittle stars for genetic analysis;
3. At the University of Gent, Francesca Pasotti was interested in individuals from the species *Aequiyoldia eightsii* and *Laternula elliptica* for genetic analysis;
4. At the Katholieke Universiteit Leuven, Henrik Christiansen was interested in having any accidentally caught fish for genetic analysis;
5. Generally, all samples that could be collected would be used in the RECTO project and other future Belgian projects on Antarctica.

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## II. Work at sea

During the expedition, bathymetric and magnetic measurements were taken as well as biological, water, sediment or rock samples using a Van Veen grab, a Rosetta, a boxcore, a rock dredge and a Rauschert dredge. Videos were also taken using a ROV. The Belgian team only took samples from the Van Veen grab, as well as from the rock and Rauschert dredges; the latter were brought from Belgium. The stations from which samples were taken by the Belgian team are shown on the map below (Figure 1). In this report, when we refer to "the stations", we refer only to the stations sampled by our team and not to all the stations of the expedition.

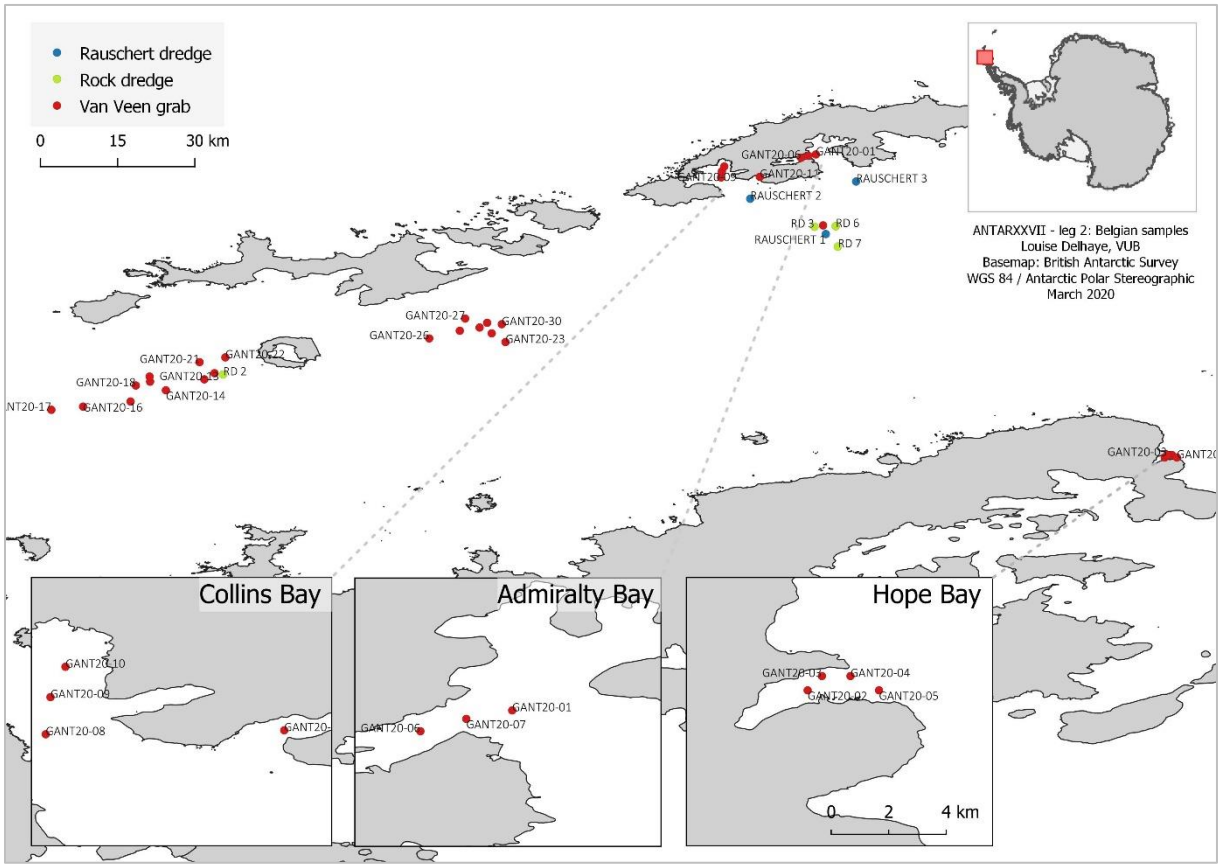


*Figure 1: stations where samples were taken by the Belgian team*

A total of 38 stations were sampled, details can be found in the table 1 below.
Sampling with a **Van Veen grab** was carried out at 30 stations. It was initially planned to use a large grab (W:48.5cm; W:47cm; H:25.5cm) but it broke off during the first use and was replaced by a smaller one (W:44cm; W:18.2cm; H:34.5cm) (figure2). It was therefore decided to increase the number of replicates per station in order to obtain enough samples for everyone on board. On February 11, while we were stopped at Potter Cove to take shelter from a storm, tests were conducted with the repaired large Van Veen. The maneuvers were successful and brought back various samples including several *Aequiyodlia eightsii*. The large Van Veen did not work in the stations afterwards due to their more prominent depths. Generally, sampling with the Van Veen was as follows: the first replicate was for all teams. Before opening the Van Veen, surface sediments were collected by different research groups for microbiology, microplastic and heavy metal studies. Around 200g of surface sediments for heavy metal research was taken by our team. The rest of the sediment was shared among the other research groups and the surplus was sieved in nets to keep only the benthos. The second grab was entirely given to a group from the Universidad Cientifica del Sur from Peru for benthos studies and the third grab

was reserved for us. The sediments were sieved and the benthic organisms thus found were sorted, photographed and then preserved in ethanol or frozen at -20°C (figure 3). Due to time constraints, it has not been possible to make a more in-depth sorting and listing of the benthos on board. Tissue samples for DNA analysis were taken from the brittle stars and preserved in 99% ethanol before stored in the freezer at -20°C.

*Figure 2: smaller Van Veen grab used during the second leg of the campaign. Picture: Jacobus Engelbrecht.*

The deployment of the Van Veen grab was carried out by the crew of the BAP Carrasco. Sometimes the grab did not bring back any sample due to an unsuitable substrate or a technical problem, in these cases, a maximum of two more tests were carried out. When they were unsuccessful, the station was abandoned. This happened at four stations: GANT20-12, GANT20-14, GANT20-16 and GANT20-25 where no samples could be taken.

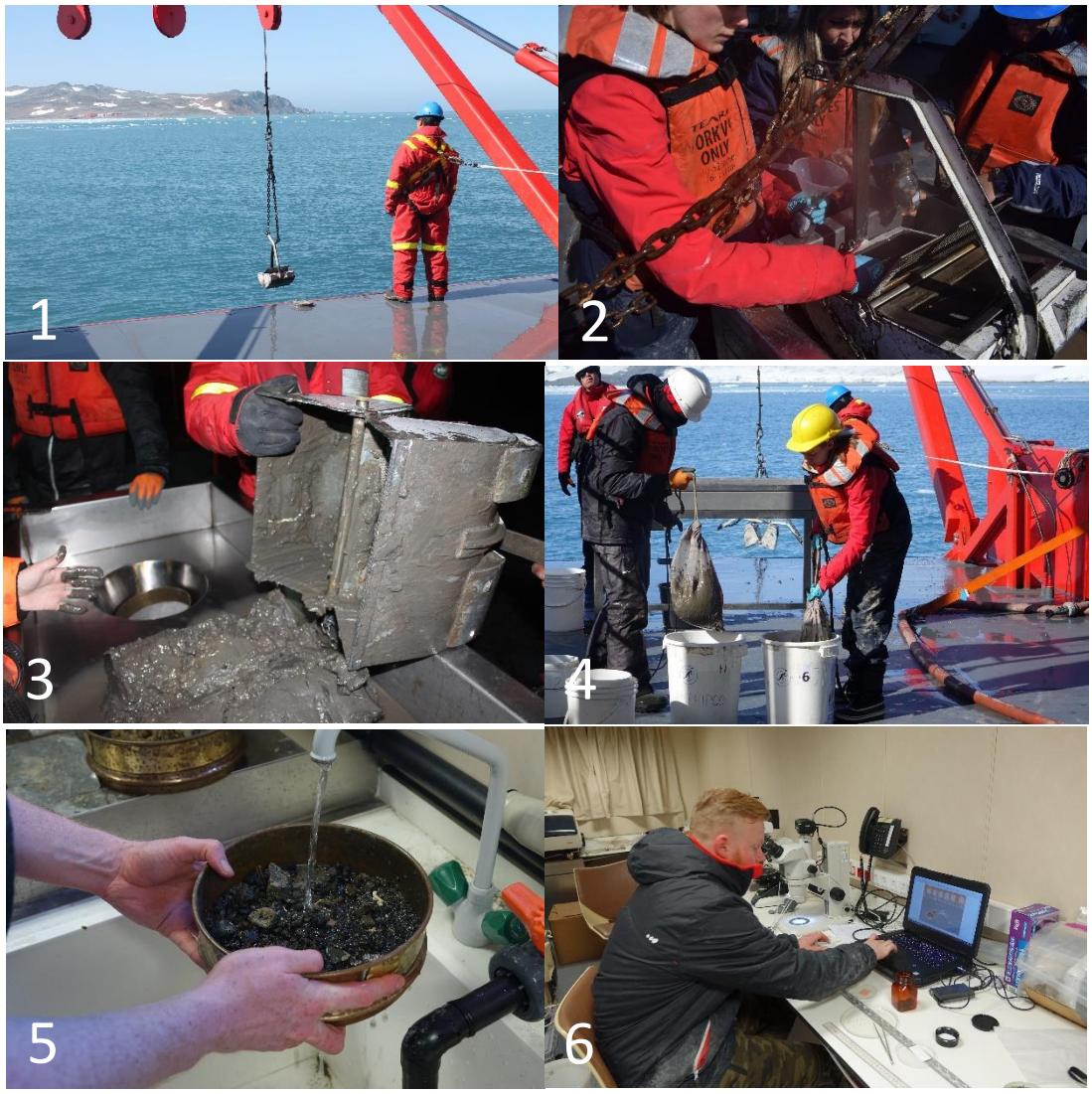


*Figure 3: deployment and processing of the Van Veen grab on board the BAP Carrasco. Picture 1) the Van Veen is brought back on board, 2) the Van Veen cap is opened to enable researchers to take the undisturbed surface sediments, 3) the Van Veen is opened and sediments are distributed amongst researchers, 4) the sediments are sieved using a sieving bag from the Universidad Cientifica del Sur, 5) the benthos is further sorted in the lab and 6) smaller organisms are being photographed using a stereomicroscope. Pictures: Jacobus Engelbrecht, Mauricio Faraone and Louise Delhaye.*

**Rock dredges** were dedicated to geological studies. Therefore, none of the groups involved were interested in the possible sediments or organisms found in them. Thanks to that, it was possible for us to keep the brittle stars, sea stars, fishes or sediments when they were accidentally brought on board by these dredges. A total of one fish, three sediment samples, three sea stars and five brittle stars were taken from the rock dredges.

| Station name | x | y | Depth (m) | Equipment | Date | Nr of sampling bottles |
|---|---|---|---|---|---|---|
| *GANT20-01* | 58°26.80 | 62°08.18 | 434 | Small Van Veen | 02-02-20 | 3 |
| *GANT20-02* | 57°00.30 | 63°23.05 | 311.2 | Small Van Veen | 03-02-20 | 6 |
| *GANT20-03* | 57°58.78 | 63°22.89 | 331.8 | Small Van Veen | 03-02-20 | 4 |
| *GANT20-04* | 56°58.77 | 63°22.88 | 257 | Small Van Veen | 03-02-20 | 2 |
| *GANT20-05* | 56°57.62 | 63°23.14 | 258 | Small Van Veen | 04-02-20 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| *GANT20-06* | 58°30.68 | 62°90.24 | 210 | Small Van Veen | 05-02-20 | 7 |
| *GANT20-07* | 58°28.86 | 62°90.75 | 282 | Small Van Veen | 05-02-20 | 4 |
| *GANT20-08* | 58°50.05 | 62°14.01 | 435 | Small Van Veen | 06-02-20 | 4 |
| *GANT20-09* | 58°50.30 | 62°12.60 | 266 | Small Van Veen | 07-02-20 | 3 |
| *GANT20-10* | 58°49.69 | 62°11.38 | 152 | Small Van Veen | 07-02-20 | 3 |
| *GANT20-EXTRA-11* | 58°40.88 | 62°13.93 | 28 | Big Van Veen | 11-02-20 | 8 |
| *GANT20-13* | 60°58.49 | 63°04.06 | 170 | Small Van Veen | 17-02-20 | 1 |
| *GANT20-14* | 61°72.46 | 63°65.72 | 892 | Small Van Veen | 17-02-20 | 0 |
| *GANT20-15* | 61°16.73 | 63°09.54 | 482 | Small Van Veen | 17-02-20 | 6 |
| *GANT20-16* | 61°28.52 | 63°10.82 | 852 | Small Van Veen | 17-02-20 | 0 |
| *GANT20-17* | 61°11.61 | 63°36.37 | 475 | Small Van Veen | 17-02-20 | 2 |
| *GANT20-18* | 61°15.44 | 63°55.96 | 458 | Small Van Veen | 17-02-20 | 2 |
| *GANT20-19* | 61°11.91 | 63°46.31 | 594 | Small Van Veen | 17-02-20 | 2 |
| *GANT20-20* | 61°12.04 | 63°33.76 | 430 | Small Van Veen | 18-02-20 | 2 |
| *GANT20-21* | 60°59.66 | 62°58.81 | 321 | Small Van Veen | 18-02-20 | 2 |
| *GANT20-22* | 60°53.24 | 62°58.64 | 298 | Small Van Veen | 18-02-20 | 3 |
| *ROCK DRAGA 2* | 60°53.84 | 63°28.63 | 395 | Rock dredge | 18-02-20 | 4 |
| *GANT20-23* | 59°43.53 | 62°54.50 | 968 | Small Van Veen | 18-02-20 | 2 |
| *GANT20-24* | 59°47.29 | 62°52.67 | 670 | Small Van Veen | 19-02-20 | 2 |
| *GANT20-25* | 59°55.14 | 62°52.04 | 462 | Small Van Veen | 19-02-20 | 0 |
| *GANT20-26* | 60°27.74 | 62°53.94 | 919 | Small Van Veen | 19-02-20 | 2 |
| *GANT20-27* | 59°53.80 | 62°49.01 | 675 | Small Van Veen | 19-02-20 | 1 |
| *GANT20-28* | 59°50.30 | 62°51.24 | 542 | Small Van Veen | 19-02-20 | 3 |
| *GANT20-29* | 59°48.43 | 62°50.07 | 602 | Small Van Veen | 21-02-20 | 3 |
| *GANT20-30* | 59°44.80 | 62°50.41 | 900 | Small Van Veen | 21-02-20 | 5 |
| *ROCK DRAGA 3* | 58°26.81 | 62°25.77 | 667 | Rock dredge | 23-02-20 | 3 |
| *ROCK DRAGA 6* | 58°22.05 | 62°26.09 | 736 | Rock dredge | 25-02-20 | 8 |
| *ROCK DRAGA 7* | 58°21.34 | 62°30.72 | 1316 | Rock dredge | 25-02-20 | 2 |
| *GANT20-31* | 58°24.73 | 62°25.58 | 1092 | Small Van Veen | 26-02-20 | 1 |
| *RAUSCHERT 1* | 58°24.34 | 62°26.13 | 975 | Rauschert dredge | 26-02-20 | 2 |
| *RAUSCHERT 2* | 58°33.62 | 62°17.14 | 46 | Rauschert dredge | 26-02-20 | 28 |
| *RAUSCHERT 3* | 58°17.03' | 62°15.06 | 663 | Rauschert dredge | 26-02-20 | 13 |

*Table 1: list of sampling stations*

It was initially decided that we could use our **Rauschert dredge** in four stations during this leg, as the instrument had not arrived in time for the first leg. However, due to technical and weather issues, the campaign was very much delayed and only three stations could be sampled with the Rauschert dredge, all on February 26, 2020. The mesh size was 1mm. Once the dredge had reached the bottom, the vessel would start moving at 2 nm for 15, 17 and 13 minutes respectively before being brought back to the surface. To avoid damaging the instrument and wire, the crew gave 20m of cable per minute during the dredging and raised the dredge at a speed of 30m per minute. For pictures of the deployment, see figure 4. The first station was not a success because the weight available on board was not adapted and the depth at that location was too large (975m); the dredge only caught some plankton, amphipods and ostracods. Because we believed the failure was due to the unsuitable shape of the weight, we decided to remove it for the other stations, which proved to be a good decision. The second station, carried out at a shallow depth (46m), brought many interesting and diverse organisms such as

macroalgae, sponges, sea urchins and starfish, many of which we did not identify on site due to lack of time. The algae were not kept because they were not part of the permit we were given and some sponges as well as some other organisms were given to the group from the Universidad Cientifica del Sur as part of the agreement made on board prior to the sampling. The third station brought a large amount of sediment and benthos together with a big octopus which was carefully taken and immediately thrown overboard without being injured.


*Figure 4: sampling with the Rauschert dredge. Picture: 1) assembly of the dredge by the crew with the help of scientists, 2) weight used during the first deployment, 3) knot to close the net and 4) first deployment of the dredge with the weight. Pictures: Louise Delhaye.*

Although at the beginning of the campaign, we had asked to be able to deploy two **amphipod traps** and two **ostracod traps** in front of the Machu Picchu station in Admiralty Bay, the deployment was constantly postponed and in the end, due to technical and weather issues, we did not have time anymore to deploy them.

Pictures of selected organisms were taken using Louise Delhaye's camera (Sony RX10) and the camera generously loaned to us by Anton Van de Putte together with his camera set-up (figure 5) as well as the stereomicroscope equipped with its own camera available on board the BAP Carrasco. Unfortunately, the latter stopped working after a couple of weeks. Pictures taken using the different equipment for taking pictures can be found in figure 5.

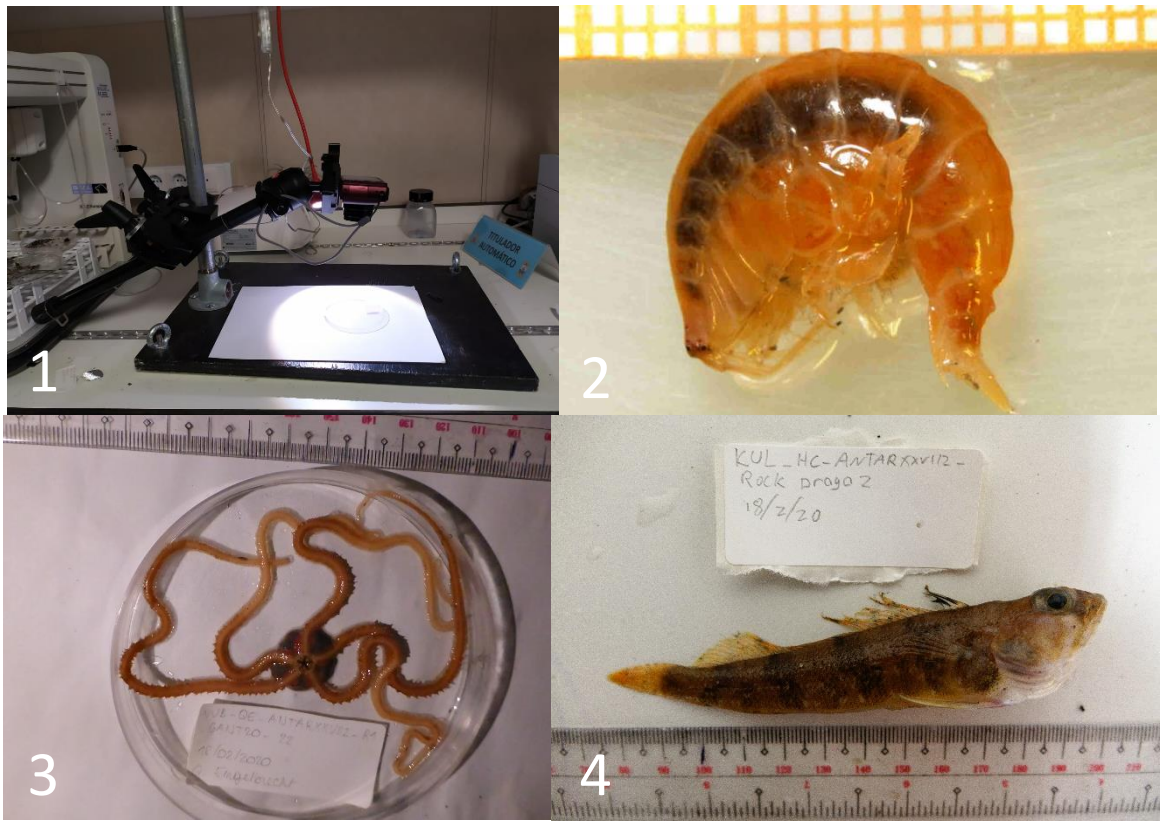


*Figure 5: 1) camera set-up, 2) picture of an amphipod taken with the camera of the stereomicroscope available on board, 3) picture of a brittle star taken with Anton Van de Putte's camera and 4) picture of a fish taken with the Sony RX10. Pictures: Louise Delhaye and Jacobus Engelbrecht.*

For each station, the characteristics (colour, grain size, possible sulphur smell) of the sediments were recorded (table 2). A total of 32 sediment samples were collected, on the surface whenever possible and using plastic tools to avoid heavy metal contamination. The bottles (decontaminated with HCl prior to the campaign) were directly placed at -20°C before the sediments were dried in a 45°C oven for a minimum of 24 hours. The dried sediments were then crushed and placed in zip bags with the corresponding labels. The process can be seen in figure 6 below.

| **Station name** | **Description of the sediments** |
|---|---|
| *GANT20-01* | Dark brown fine mud |
| *GANT20-02* | Dark brown fine mud |
| *GANT20-03* | Fine mud green-yellow |
| *GANT20-04* | Extremely fine mud, green-yellow, light sulfur smell |
| *GANT20-05* | Rocky |
| *GANT20-06* | Brown-kaki, very fine (clay), small smell of sulfur |
| *GANT20-07* | Dark brown, very fine (clay), light smell of sulfur |
| *GANT20-08* | Greenish, fine (clay) |
| *GANT20-09* | Brown-greenish, clay |
| *GANT20-10* | Brown-yellow, clay |

*Table 2: example of the sediment description for ten stations*

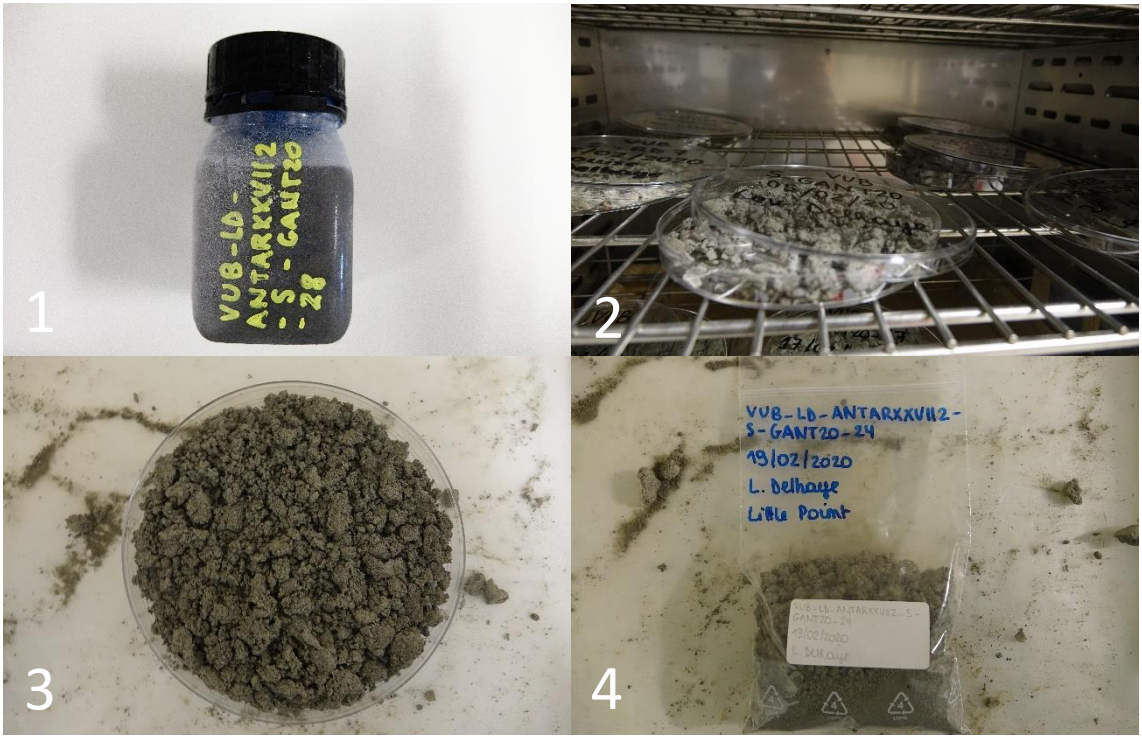


*Figure 6: process of sediment drying. Picture: 1) conservation of surface sediments in the freezer before drying, 2) drying of the sediments on cleaned petri dishes in the oven at 45°C during minimum 24h, 3) dried sediments and 4) crushed sediments conserved in zip bags. Pictures: Louise Delhaye.*

## III. Preliminary results

Recurrent storms as well as technical issues have strongly influenced the results of this expedition. In this section, it will be detailed whether the objectives of each research project were achieved.

1. Spatial distribution and monitoring of heavy metal bioaccumulation in the Bransfield Strait, Antarctica

A total of 32 sediment samples were collected, mostly from the undisturbed surface. As explained above, these samples were first stored in 100ml plastic bottles cleaned with HCl in the laboratory prior to the expedition, and then dried directly on board the ship so that they could be taken back with the participants. For more information on the drying process, refer to figure 6 above.

The collection of molluscs and starfish samples was inconclusive, mainly due to the inadequacy of the sampling instrument. The Van Veen is not recommended for this type of sample and its small size further reduced the probability of catching the desired species. Only the rock and Rauschert dredges brought sea stars (figure 7). Because of their small numbers and lack of correlation with surface sediments, it was decided that all the starfish would be given to other research projects. The three starfish from the rock dredge were kept individually at -20°C while those from the Rauschert dredge were kept together in 70% ethanol. The reason for the inconsistency in the method of storage is that the first three were initially reserved for the study of heavy metals, while at the end of the campaign it was already decided that the starfish would no longer be part of the project.


*Figure 7: sea stars collected during ANTARXXVII- leg2. Picture 1) and 2) individuals found in rock dredge 2, 3) sea star found in rock dredge 6 and 4) sea stars found in Rauschert dredge 2. Pictures: Louise Delhaye.*

In total, it was possible to catch 14 molluscs of the species *Aequiyoldia eightsii* for this project: 5 at stations GANT20-02 and GANT20-11 and 4 at GANT20-03. They were photographed, measured (table 3), dissected and then conserved in a plastic bottle at -20°C.

| **GANT20-02** | Length | Width | **GANT20-03** | Length | Width | **GANT20-11** | Length | Width |
|---|---|---|---|---|---|---|---|---|
| *Y1* | 3 | 2 | *Y1* | 4.3 | 2.4 | *Y1* | 3.1 | 1.9 |
| *Y2* | 3.2 | 1.8 | *Y2* | 4 | 2.3 | *Y2* | 2.9 | 1.9 |
| *Y3* | 3.6 | 2.1 | *Y3* | 2.9 | 1.8 | *Y3* | 2.8 | 1.7 |
| *Y4* | 4.2 | 2.4 | *Y4* | 3.5 | 2.2 | *Y4* | 3.2 | 1.9 |
| *Y5* | 3.9 | 2.2 | | | | *Y5* | 3.5 | 2 |

*Table 3: length and width values of the Aequiyoldia eightsii for research project 1*

2. Community structure of benthic organisms in the Antarctic Peninsula

With a total of 26 stations where benthos samples could be taken meeting the criteria of this project, the objectives of this project were achieved. Due to lack of time, it was not possible to establish a list with determinations to the species or group levels of organisms collected while on board. All organisms were sieved, sorted, photographed in groups (figure 8) and conserved in ethanol 70% or 95%. Due to some issues during leg 1, the amount of ethanol 99% available for us was considerably reduced and we had to dilute it to 70% with milliQ water. Towards the end of the cruise, Natalia Venturini from the *Universidad de la República de Uruguay* generously gave us 5L of ethanol 95%. It has not yet been decided which stations would be kept for this project for more precise determinations.

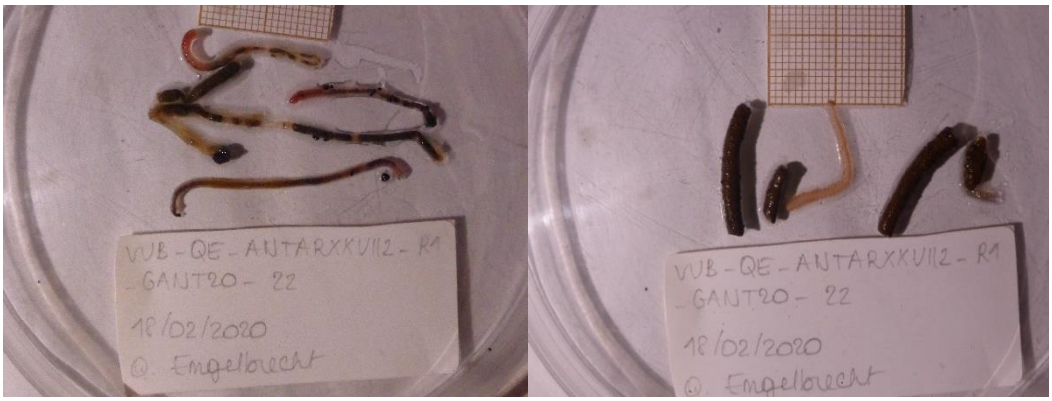


*Figure 8: examples of group picture for research project 2. Pictures: Jacobus Engelbrecht.*

3. Genetic analysis of amphipods, RBINS

As mentioned above, due to a constant rescheduling of the deployment of the amphipods and ostracods traps, followed by a delay in the campaign due to technical and weather issues, it was not possible to deploy the traps as initially expected. When amphipods were found in the Van Veen grab or in rock dredges, they were immediately photographed (figure 9) and preserved in the freezer (-20°C) in small tubes with 99% ethanol. The Rauschert dredges brought back some amphipods as well but these samples were taken half an hour apart on the last day of the campaign, so we did not have time to process them while packing in the meantime.

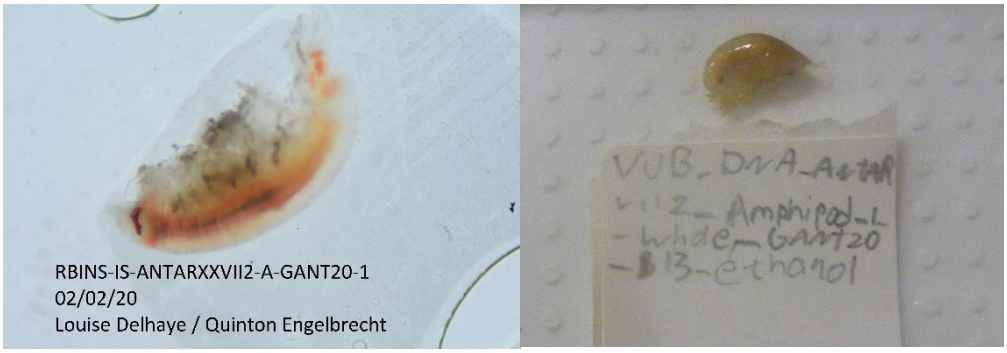


*Figure 9: examples of pictures of amphipods. Pictures: Louise Delhaye and Jacobus Engelbrecht.*

4. Genetic analysis of brittle stars, VUB

To complete the data collected for Jolien Claes during the first leg, we were asked to bring back tissue samples from brittle stars for genetic analysis. The brittle stars were immediately labelled individually, photographed (figure 10) and dissected before being stored at -20°C in 99% ethanol. When possible, a sample of the disc and arm as well as the rest of the body were kept with a label clearly linking them together (table 4). This process was done on a total of 13 brittle stars. Many brittle stars were also found in Rauschert dredge 2 but for the same reasons as mentioned above, it was not possible for us to process them on board.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | RD3 | 23-02-20 | ethanol 99% |
| VUB | DNA | ANTARXXVII2 | BS | 1 | Disk | GANT20 | RD3 | 23-02-20 | ethanol 99% |
| VUB | DNA | ANTARXXVII2 | BS | 1 | Rest | GANT20 | RD3 | 23-02-20 | ethanol 95% |

*Table 4: example of the labelling of the different parts of the same brittle star showing that they can clearly be linked to one another*

*Figure 10: pictures of the above-mentioned brittle star. Pictures: Jacobus Engelbrecht.*

5. Genetic analysis of bivalves, UGent

Several *Aequiyoldia eightsii* were found in Potter Cover (station GANT20-11) using the big Van Veen grab at a depth of 28m. Twelve of them were measured (table 5), photographed (figure 11) and kept aside for UGent. The entire organisms were put in a ziplock bag and immediately stored at -20°C.

| **GANT20-11** | Length (cm) | Width (cm) |
|---|---|---|
| *Y1* | 2.4 | 1.5 |
| *Y2* | 3.2 | 1.9 |
| *Y3* | 2.6 | 1.6 |
| *Y4* | 2.9 | 1.8 |
| *Y5* | 2.8 | 1.7 |
| *Y6* | 2.5 | 1.6 |
| *Y7* | 2.6 | 1.6 |
| *Y8* | 2.6 | 1.7 |
| *Y9* | 2.5 | 1.6 |
| *Y10* | 2.8 | 1.8 |

| | | |
|---|---|---|
| *Y11* | 2.5 | 1.5 |
| *Y12* | 2.4 | 1.5 |

*Table 5: length and width values of the Aequiyoldia eightsii kept aside for UGent.*

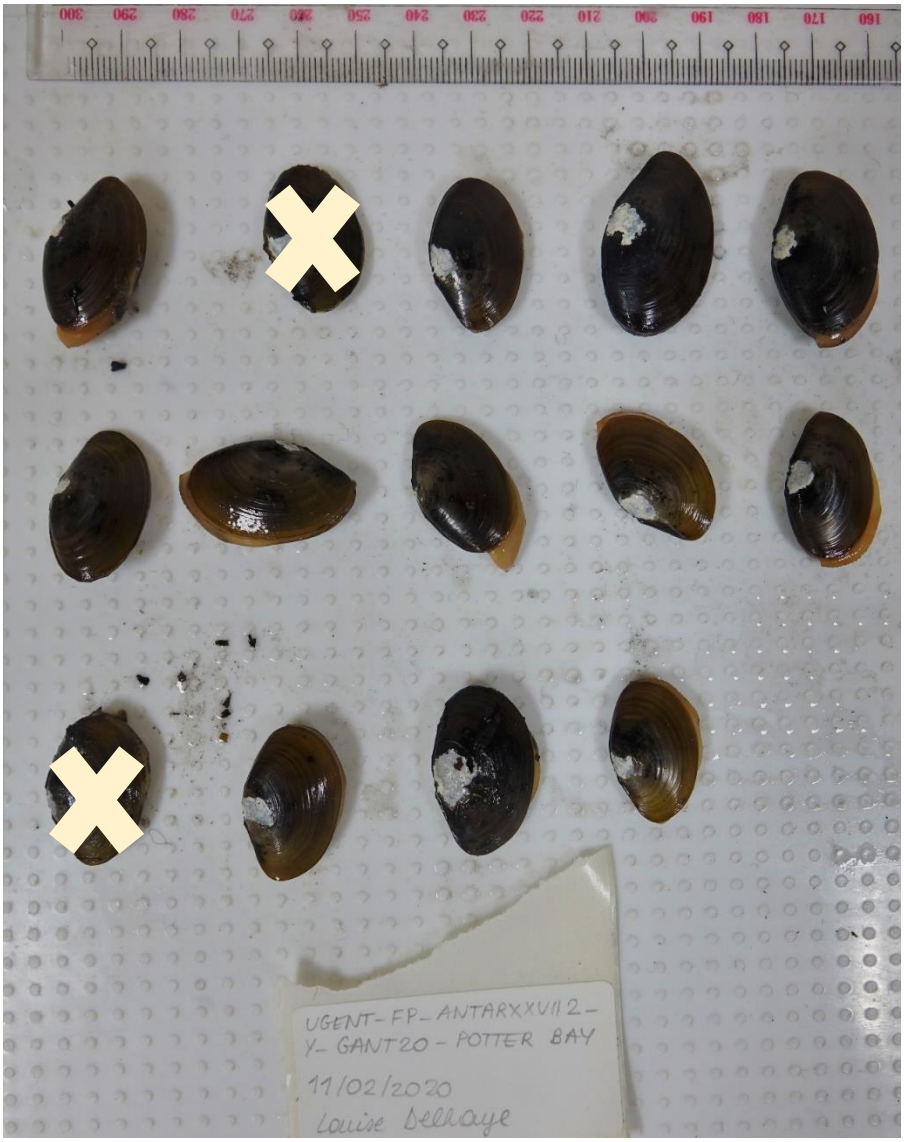


*Figure 11: group picture of Aequiyoldia eightsii reserved for UGent from station GANT20-11. The white crosses indicate shells that were empty. Picture: Louise Delhaye.*

7. Genetic analysis of fish, KUL

A total of 4 fishes were accidentally collected by dredges. Only one was brought back by rock dredge 2 while the second Rauschert dredge brought back three small fishes. Two of them were photographed (figure 12) and all of them were immediately placed in a zip bag in the freezer at -20°C.

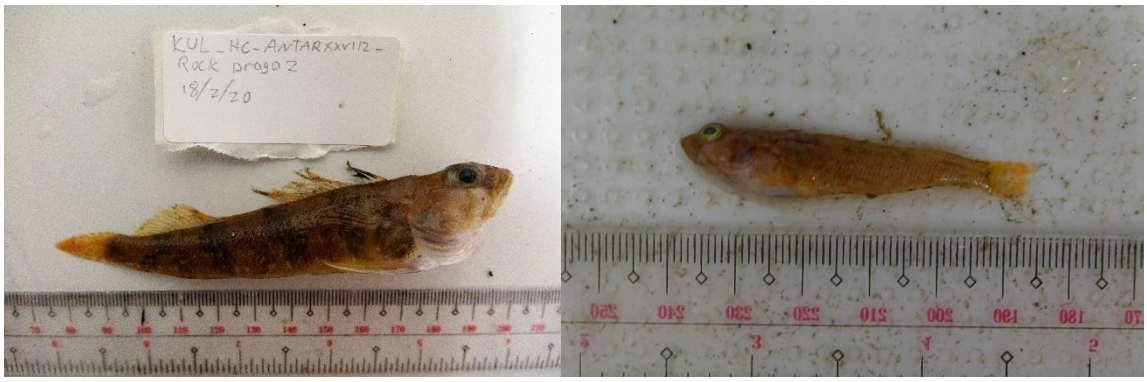


*Figure 12: pictures of the fishes. Pictures: Louise Delhaye.*

8. Summary of all samples

The table 6 below lists all the samples collected during this campaign. A more detailed report can be found in an Excel document in the appendix. All samples not mentioned above will be used by RECTO for other research questions.

| | Institution | | Expedition | Type | ID Organism | Body part | Name | #Station | #Bottle | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 1 | - | 02-02-20 |
| **2** | RBINS | IS | ANTARXXVII2 | A | - | - | GANT20 | 1 | - | 02-02-20 |
| **3** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 1 | - | 02-02-20 |
| **4** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 2 | - | 03-02-20 |
| **5** | VUB | LD | ANTARXXVII2 | Y | - | - | GANT20 | 2 | - | 03-02-20 |
| **6** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 2 | - | 03-02-20 |
| **7** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 2 | - | 03-02-20 |
| **8** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 2 | - | 03-02-20 |
| **9** | RBINS | IS | ANTARXXVII2 | A | - | - | GANT20 | 2 | - | 03-02-20 |
| **10** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 3 | - | 03-02-20 |
| **11** | VUB | LD | ANTARXXVII2 | Y | - | - | GANT20 | 3 | - | 03-02-20 |
| **12** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 3 | - | 03-02-20 |
| **13** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 3 | - | 03-02-20 |
| **14** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 4 | - | 03-02-20 |
| **15** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 4 | - | 03-02-20 |
| **16** | VUB | | ANTARXXVII2 | R1 | - | - | GANT20 | 5 | - | 04-02-20 |
| **17** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 5 | - | 04-02-20 |
| **18** | VUB | QE | ANTARXXVII2 | R2bis | - | - | GANT20 | 5 | - | 04-02-20 |
| **19** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 5 | - | 04-02-20 |
| **17** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 6 | - | 05-02-20 |
| **18** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 6 | - | 05-02-20 |
| **19** | VUB | QE | ANTARXXVII2 | R1bis | - | - | GANT20 | 6 | - | 05-02-20 |

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|---|---|---|---|---|---|---|---|---|---|---|
| **20** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 6 | - | 05-02-20 |
| **21** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 6 | - | 05-02-20 |
| **22** | VUB | QE | ANTARXXVII2 | R3bis | - | - | GANT20 | 6 | - | 05-02-20 |
| **23** | RBINS | IS | ANTARXXVII2 | A | - | - | GANT20 | 6 | - | 05-02-20 |
| **24** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 7 | - | 05-02-20 |
| **25** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 7 | - | 05-02-20 |
| **26** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 7 | - | 05-02-20 |
| **27** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 7 | - | 05-02-20 |
| **28** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 8 | - | 06-02-20 |
| **29** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 8 | - | 06-02-20 |
| **30** | VUB | QE | ANTARXXVII2 | R1bis | - | - | GANT20 | 8 | - | 06-02-20 |
| **31** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 8 | - | 06-02-20 |
| **32** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 9 | - | 07-02-20 |
| **33** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 9 | - | 07-02-20 |
| **34** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 9 | - | 07-02-20 |
| **35** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 10 | - | 07-02-20 |
| **36** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 10 | - | 07-02-20 |
| **37** | VUB | QE | ANTARXXVII2 | R3 | - | - | GANT20 | 10 | - | 07-02-20 |
| **38** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 11 | - | 11-02-20 |
| **39** | VUB | LD | ANTARXXVII2 | Y | - | - | GANT20 | 11 | - | 11-02-20 |
| **40** | UGENT | FP | ANTARXXVII2 | Y | - | - | GANT20 | 11 | - | 11-02-20 |
| **41** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 11 | - | 11-02-20 |
| **42** | VUB | DNA | ANTARXXVII2 | BS | 1 | Disk | GANT20 | 11 | - | 11-02-20 |
| **43** | VUB | DNA | ANTARXXVII2 | BS | 2 | Disk | GANT20 | 11 | - | 11-02-20 |
| **44** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | 11 | - | 11-02-20 |
| **45** | VUB | DNA | ANTARXXVII2 | BS | 2 | Arm | GANT20 | 11 | - | 11-02-20 |
| **46** | VUB | DNA | ANTARXXVII2 | A | - | - | GANT20 | 13 | - | 14-02-20 |
| **47** | VUB | LD | ANTARXXVII2 | S1 | - | - | GANT20 | 15 | - | 17-02-20 |
| **48** | VUB | LD | ANTARXXVII2 | S2 | - | - | GANT20 | 15 | - | 17-02-20 |
| **49** | VUB | LD | ANTARXXVII2 | S3 | - | - | GANT20 | 15 | - | 17-02-20 |
| **50** | VUB | LD | ANTARXXVII2 | S4 | - | - | GANT20 | 15 | - | 17-02-20 |
| **51** | VUB | LD | ANTARXXVII2 | S5 | - | - | GANT20 | 15 | - | 17-02-20 |
| **52** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 15 | - | 17-02-20 |
| **53** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 17 | - | 17-02-20 |
| **54** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 17 | - | 17-02-20 |
| **55** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 18 | - | 17-02-20 |
| **56** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 18 | - | 17-02-20 |
| **57** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 19 | - | 17-02-20 |
| **58** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 19 | - | 17-02-20 |
| **59** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 20 | - | 18-02-20 |
| **60** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 20 | - | 18-02-20 |
| **61** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 21 | - | 18-02-20 |
| **62** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 21 | - | 18-02-20 |
| **63** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 22 | - | 18-02-20 |
| **64** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 22 | - | 18-02-20 |
| **65** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | 22 | - | 18-02-20 |

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| **66** | KUL | HC | ANTARXXVII2 | Fish | - | - | GANT20 | RD2 | - | 18-02-20 |
| **67** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | RD2 | - | 18-02-20 |
| **68** | VUB | LD | ANTARXXVII2 | SS | 1 | - | GANT20 | RD2 | - | 18-02-20 |
| **69** | VUB | LD | ANTARXXVII2 | SS | 2 | - | GANT20 | RD2 | - | 18-02-20 |
| **70** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 23 | - | 18-02-20 |
| **71** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 23 | - | 18-02-20 |
| **72** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 24 | - | 19-02-20 |
| **73** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 24 | - | 19-02-20 |
| **74** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 26 | - | 19-02-20 |
| **75** | VUB | QE | ANTARXXVII2 | R2 | - | - | GANT20 | 26 | - | 19-02-20 |
| **76** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 27 | - | 19-02-20 |
| **77** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 28 | - | 19-02-20 |
| **78** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 28 | - | 19-02-20 |
| **79** | VUB | QE | ANTARXXVII2 | R1bis | - | - | GANT20 | 28 | - | 19-02-20 |
| **80** | VUB | DNA | ANTARXXVII2 | BS | 1 | Whole | GANT20 | 29 | - | 21-02-20 |
| **81** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | 29 | - | 21-02-20 |
| **82** | RBINS | IS | ANTARXXVII2 | A | - | - | GANT20 | 29 | - | 21-02-20 |
| **83** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 30 | - | 21-02-20 |
| **84** | VUB | DNA | ANTARXXVII2 | BS | 1 | Whole | GANT20 | 30 | - | 21-02-20 |
| **85** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | 30 | - | 21-02-20 |
| **86** | VUB | DNA | ANTARXXVII2 | BS | 2 | Rest | GANT20 | 30 | - | 21-02-20 |
| **87** | VUB | QE | ANTARXXVII2 | R1 | - | - | GANT20 | 30 | - | 21-02-20 |
| **88** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | RD3 | - | 23-02-20 |
| **89** | VUB | DNA | ANTARXXVII2 | BS | 1 | Disk | GANT20 | RD3 | - | 23-02-20 |
| **90** | VUB | DNA | ANTARXXVII2 | BS | - | Rest | GANT20 | RD3 | - | 23-02-20 |
| **91** | VUB | DNA | ANTARXXVII2 | BS | 2 | Whole | GANT20 | RD6 | - | 25-02-20 |
| **92** | VUB | QE | ANTARXXVII2 | - | - | - | GANT20 | RD6 | - | 25-02-20 |
| **93** | VUB | DNA | ANTARXXVII2 | BS | 1 | Whole | GANT20 | RD6 | - | 25-02-20 |
| **94** | VUB | DNA | ANTARXXVII2 | BS | 3 | Whole | GANT20 | RD6 | - | 25-02-20 |
| **95** | VUB | DNA | ANTARXXVII2 | BS | 4 | Whole | GANT20 | RD6 | - | 25-02-20 |
| **96** | VUB | DNA | ANTARXXVII2 | BS | 4bis | Whole | GANT20 | RD6 | - | 25-02-20 |
| **97** | VUB | LD | ANTARXXVII2 | SS | 1 | - | GANT20 | RD6 | - | 25-02-20 |
| **98** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | RD6 | - | 25-02-20 |
| **99** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | RD7 | - | 25-02-20 |
| **100** | VUB | - | ANTARXXVII2 | - | - | - | GANT20 | RD7 | - | 25-02-20 |
| **101** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | 31 | - | 26-02-20 |
| **102** | RBINS | IS | ANTARXXVII2 | Os | - | - | GANT20 | RAUSCHERT 1 | - | 26-02-20 |
| **103** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 1 | - | 26-02-20 |
| **104** | RECTO | - | ANTARXXVII2 | SS | - | - | GANT20 | RAUSCHERT 2 | 6 | 26-02-20 |
| **105** | RECTO | - | ANTARXXVII2 | Snails | - | - | GANT20 | RAUSCHERT 2 | 7 | 26-02-20 |
| **106** | RECTO | - | ANTARXXVII2 | Molluscs | - | - | GANT20 | RAUSCHERT 2 | 8 | 26-02-20 |
| **107** | RECTO | - | ANTARXXVII2 | Polychaetes | - | - | GANT20 | RAUSCHERT 2 | 9 | 26-02-20 |
| **108** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 10 | 26-02-20 |
| **109** | RECTO | - | ANTARXXVII2 | Unidentified | - | - | GANT20 | RAUSCHERT 2 | 11 | 26-02-20 |
| **110** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 12 | 26-02-20 |
| **111** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 13 | 26-02-20 |

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| **112** | RECTO | - | ANTARXXVII2 | Sponges | - | - | GANT20 | RAUSCHERT 2 | 14 | 26-02-20 |
| **113** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 15 | 26-02-20 |
| **114** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 16 | 26-02-20 |
| **115** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 17 | 26-02-20 |
| **116** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 18 | 26-02-20 |
| **117** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 19 | 26-02-20 |
| **118** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 20 | 26-02-20 |
| **119** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 21 | 26-02-20 |
| **120** | RECTO | - | ANTARXXVII2 | Unidentified | - | - | GANT20 | RAUSCHERT 2 | 22 | 26-02-20 |
| **121** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 23 | 26-02-20 |
| **122** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 2 | 24 | 26-02-20 |
| **123** | RECTO | - | ANTARXXVII2 | Sea urchins | - | - | GANT20 | RAUSCHERT 2 | 25 | 26-02-20 |
| **124** | RECTO | - | ANTARXXVII2 | BS + 1 SS | - | - | GANT20 | RAUSCHERT 2 | 26 | 26-02-20 |
| **125** | RECTO | - | ANTARXXVII2 | Ascidians | - | - | GANT20 | RAUSCHERT 2 | 27 | 26-02-20 |
| **126** | RECTO | - | ANTARXXVII2 | Ascidians | - | - | GANT20 | RAUSCHERT 2 | 28 | 26-02-20 |
| **127** | RECTO | - | ANTARXXVII2 | Ascidians | - | - | GANT20 | RAUSCHERT 2 | 29 | 26-02-20 |
| **128** | RECTO | - | ANTARXXVII2 | A + C | - | - | GANT20 | RAUSCHERT 2 | 30 | 26-02-20 |
| **129** | RECTO | - | ANTARXXVII2 | Sponge | - | - | GANT20 | RAUSCHERT 2 | 31 | 26-02-20 |
| **130** | KUL | HC | ANTARXXVII2 | Fish | 1 | - | GANT20 | RAUSCHERT 2 | - | 26-02-20 |
| **131** | KUL | HC | ANTARXXVII2 | Fish | 2 | - | GANT20 | RAUSCHERT 2 | - | 26-02-20 |
| **132** | VUB | DNA | ANTARXXVII2 | BS | 1 | Arm | GANT20 | RAUSCHERT 3 | - | 26-02-20 |
| **133** | VUB | DNA | ANTARXXVII2 | BS | 1 | Whole | GANT20 | RAUSCHERT 3 | - | 26-02-20 |
| **134** | VUB | DNA | ANTARXXVII2 | BS | 2 | Arm | GANT20 | RAUSCHERT 3 | - | 26-02-20 |
| **135** | VUB | DNA | ANTARXXVII2 | BS | 2 | Whole | GANT20 | RAUSCHERT 3 | - | 26-02-20 |
| **136** | RECTO | DNA | ANTARXXVII2 | C | 1 | - | GANT20 | RAUSCHERT 3 | 1 | 26-02-20 |
| **137** | RECTO | DNA | ANTARXXVII2 | C | 2 | - | GANT20 | RAUSCHERT 3 | 2 | 26-02-20 |
| **138** | RECTO | DNA | ANTARXXVII2 | C | 3 | - | GANT20 | RAUSCHERT 3 | 3 | 26-02-20 |
| **139** | RECTO | DNA | ANTARXXVII2 | C | 4 | - | GANT20 | RAUSCHERT 3 | 4 | 26-02-20 |
| **140** | RECTO | DNA | ANTARXXVII2 | C | 5 | - | GANT20 | RAUSCHERT 3 | 5 | 26-02-20 |
| **141** | RECTO | DNA | ANTARXXVII2 | C | 6 | - | GANT20 | RAUSCHERT 3 | 6 | 26-02-20 |
| **142** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 3 | 1 | 26-02-20 |
| **143** | RECTO | - | ANTARXXVII2 | - | - | - | GANT20 | RAUSCHERT 3 | 2 | 26-02-20 |
| **144** | VUB | LD | ANTARXXVII2 | S | - | - | GANT20 | RAUSCHERT 3 | - | 26-02-20 |

*Table 6: list of all the samples taken during this campaign. The column "type" refers to the species or type of sample (S=sediments; A=amphipods; R=unsorted benthos (R1=benthos for first replicate of Van Veen, R2=benthos for the second Van Veen at the same station); Y=Aequiyodlia eightsii; BS=brittle stars; SS=sea stars; Os=ostracods; C=crustaceans); the column "ID organism" is used to identify organisms individually and the column "#Bottle" is used to identify each sampling bottle individually, this was only used for Rauschert 2 and 3 for which it has not been possible to sort or identify the species with certainty. The reason why bottles 1 to 5 are missing in Rauschert 2 is because they contained algae which we did not keep due to the limitations of our permit. In the column "#Station": RD=rock dredge and a number without letters means the sampling was made with a Van Veen grab.*