

RV METEOR

M179/2 FjordFlux (GPF 19-1-77)

15.01.2022 - 20.02.2022

Punta Arenas - Montevideo



4. Weekly Report (07.02. - 13.02.2022)

After reaching Cape Horn in the evening of 2nd February with good visibility and calm seas, a group photo was taken on the helideck against the backdrop of the cape (Fig. 1). The next day, work continued a little further north in Paso Goree and additionally on a historic station of RV VICTOR HENSEN from 1994 in the eastern Beagle Channel in very mild weather and temperatures up to 18 °C. The ROVOS fiber optic cable that was damaged last week could not be repaired on board. But via a replacement cable, which could only be wound up and unwound by hand winch, the ROVOS could again be deployed regularly albeit with increased time and four additional helping persons.



Fig.1: Scientific crew of the M179/2 off Cape Horn

In addition, we received the news that the overheating of the international freight traffic due to the Corona crisis also affects us, because our forwarder has not yet succeeded in booking our container from Montevideo to Bremerhaven. With freight costs increasing weekly, the only thing that seems certain is that our return cargo will probably not leave Montevideo in February or March.

On Tuesday, 8th February, we continued our work westward in the Beagle Channel. The first station at the southeast exit of Ushuaia Bay and another station further west just off the mouth of Yendegaia Fjord, and the following day off the fork of the north and south arms of the Beagle Channel and then just off Glacier Italia. There, the ROVOS managed to capture a spectacular image of an almost 2 m long ray, which is obviously not known for the area and morphologically similar animals, but with significantly smaller dimensions, are described only in Central America and the Northwest Atlantic. A photomontage composed of snapshots of several video sequences is shown in Fig. 2. A detailed analysis of the entire video material will contribute to the taxonomic characterization of the find in the future.

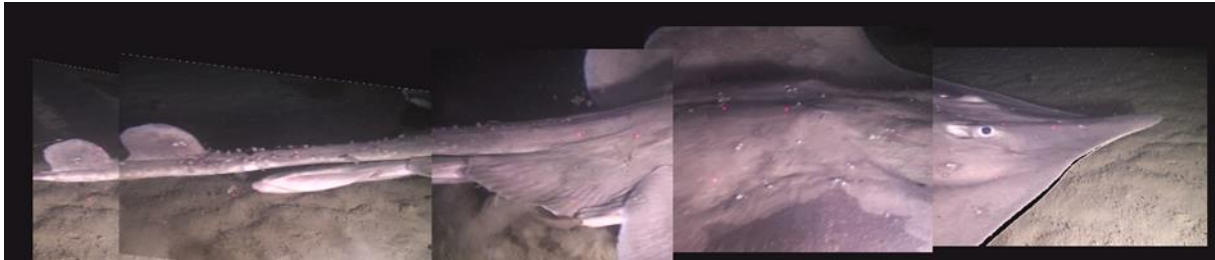


Fig.2: Photomontage of a ray species morphologically closest to the Clearnose ray (Raja eglanteria), taken by ROVOS in the Beagle Channel (Station 43). Normally found in Central American waters, it grows to a maximum length of 90 cm. This species measures a total length of about 2 m (laser dots mark 10 cm). Nils Owsianowski @ AWI/BPP

On 10th and 11th February, we sampled Garibaldi Fjord again, because the work there had to be interrupted due to scheduling commitments to pick up cruise participants in Ushuaia and pilot change in Puerto Williams and could not be surveyed completely. We first completed two outer stations and the following day two inner stations in the fjord, with the dinghy again being used at the innermost station to take water samples and plankton net hauls just off the drift ice edge.

One of the scientific questions of the FjordFlux cruise is to investigate geographic gradients of the benthic communities of the work area. To this end, selected geographic areas such as Garibaldi Fjord will be sampled at high resolution to explore the influence of different environmental factors such as glacial meltwater with a lot of sediment visible to the naked eye, also called glacial milk because of its bright color. For this purpose, underwater camera systems such as the ROVOS (see above) are used to determine the epifauna, i.e., the creatures that live on the surface of the seafloor, which are non-destructive but do not allow investigations beyond imaging techniques. A complement to this is provided by bottom samples from the box grab, which sample not only the epifauna, but also the infauna, i.e., all the creatures that live buried in the sediment and are not or barely visible on the seafloor surface. Processing box grab samples is very laborious because all larger organisms must be sorted out by hand and all smaller ones must be painstakingly separated from the sediment components by multiple sieving with different pore sizes (Fig. 3). The samples obtained in this way can then be fixed and examined for precise taxonomic determination in specialized laboratories, or their DNA extracted and used for phylogenetic studies.

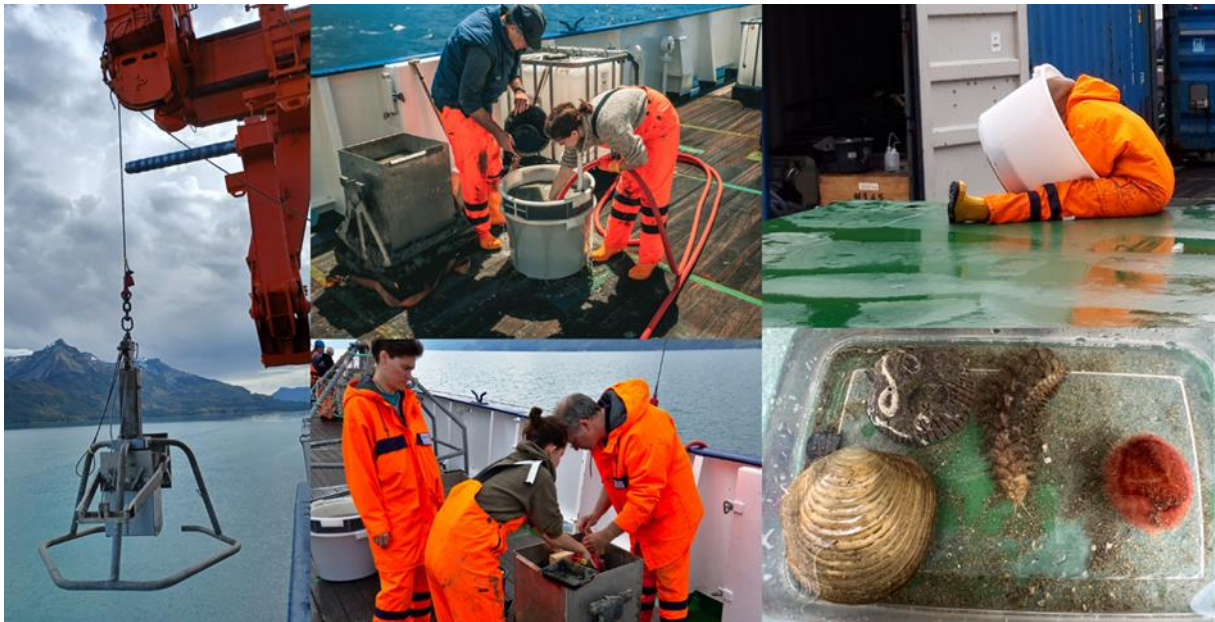


Fig.3: The large box grab before use and subsequent filtering and sorting work on deck.

Another scientific question is how benthic communities have changed over time with variable environmental conditions. To this end, georeferenced stations from a 1994 RV VICTOR HENSEN expedition in the area have been included in the FjordFlux station planning and can be directly compared to data collected at that time.

One such "historic" Victor Hensen station east of Canal Unión and in the direct influence of the open Pacific had to be moved slightly west into the sheltered Canal Unión on 12th February due to storms and very strong winds. Another station was completed slightly further east in the western Canal Ballenero.

February 13 marked the last working day with a station at the southeast corner of the Brunswick Peninsula, followed by a final station in the roadstead off Punta Arenas.

All participants are well and send greetings home. They also continue to inform about the research activities and life on board on Twitter (<https://twitter.com/ThoelenClaudia>) and in blog posts (<https://icbm-auf-see.uni-oldenburg.de/>).

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