

## **Expedition SO287 – CONNECT**

11.12.2021 - 11.01.2022

Las Palmas-Guayaquil

### **Weekly report No. 3**

20.12. - 26.12.2021



### **In the Sargasso-Sea**

Now it is the evening of December 26, Sunday Boxing Day, and we are at Station 29, where in the middle of the night the water from the bottle-rosette sampler is again filled into the many sample containers. There are between 320 and 400 litres of water per station, which means that we have now collected, processed and filtered a total of about 10,000 L of water in quantities ranging from 2 ml to 12 L and are now storing the products at +4°C, at -20°C or even at -80°C. Kindly, our samples are allowed to stay on board during the next SO288 Sonne expedition and will only be transported to Germany by a logistics company specialized in cold transport at the final port of this voyage in Valparaiso and from there to the different laboratories for final analysis. Initially, all samples were to be picked up from Guayaquil, but since Corona, the entire logistics industry has become more complicated and expensive, and some things have become impossible, such as transporting our 400 L of frozen samples from Guayaquil. And so, once again, a quick solution to a new sudden challenge has to be sought and found, which is almost part of the daily bread of research work at sea. This makes the work exciting, but also quite exhausting at times, since plans and their changes often require many different stakeholders to be taken into account, notified and their consent obtained. However, the cooperation works very well in almost all cases and agreement is generally reached quickly.

Today, half of our days at sea have passed and we now have to tie up our plans for the return transports and voyages. The prepared plans are reconsidered, revised and concretized, but still the exciting second part of our expedition lies ahead of us. Two more night and two midday stations and then it's over with the station work in the Atlantic waters and we start to cross the Caribbean with ongoing underway measurements. As Christmas presents, the permits to conduct our research in the territorial waters of Haiti and Colombia arrived on December 23 and 24, respectively. Many thanks to the Leitstelle and the foreign offices in the respective countries for coordinating the permit requests and contacts with the local authorities. And so it has now worked out once again and we do not need to interrupt our measurements until the Panama Canal, which we will reach on January 3, as we now have the research permits for all the territorial waters in the Caribbean that we will pass through; for the Dominican Republic, Puerto Rico, Haiti, Jamaica, Colombia and Panama. We had also received the Spanish permit for the start of the voyage and so we were allowed to conduct our requested work within the 200 nautical mile exclusive economic zones.

But also the work in the international waters of the Atlantic, for which no individual research permits had to be obtained, continued to produce exciting results and samples. For example, early in the morning on December 23, Martin came to me excited and reported that he had spotted large patches of Sargassum on the water during his morning walk with a view of the ocean. As the patches (10 to 30 m long) are too small for the satellite image resolution (300m), we could only guess them, as they had to be here somewhere and now they were suddenly there. And until our station at noon it stayed like that and even now -although less- we find Sargassum in all samples collected with the Neuston catamaran.

But on the 23rd Philippe and Josi brought- on this day the weather was suitable for a boat operation - large quantities of the macroalgae *Sargassum natans* and *Sargassum fluitans*, typical for the Sargasso Sea, floating on the water, on deck (Fig.1).



Fig. 1: left) Philippe and Josi with Sargassum and Christmas tree on 23.12., right) on 24.12. our deck Christmas tree was now also decorated with our self-made decorations, which came from the individual laboratories, in addition to the heaving-line knots made by the crew of the Sonne (photo: Birgit Quack).

The Sargassum samples contained several larger pieces of plastic, which were immediately sampled by Lindsay to examine for bacterial colonization, which contributes to the long-term decomposition of plastic in the marine environment, although it may be tens to hundreds of years and the plastic remains a threat to marine life for that long.

Now the algae, sorted by species, are in several incubators on the aft deck of the Sonne (Fig.2) and are brought into the labs for different experiments. For example, we are using the mass spectrometer for halogenated hydrocarbons, which is working excellently on board on this voyage, to investigate whether the algae release these into the atmosphere.



Fig. 2: Philippe sorts *Sargassum natans* and *Sargassum fluitans* into two incubators and Martin congratulates him on his "catch". (Photo: Birgit Quack)



Lindsay collects about 1.5 km of water surface at each station with the Neuston catamaran, which collects flotsam on the ocean surface (Fig.3a). It is then sorted in the laboratory (Fig. 3b) and the plastic parts from a sample -sometimes frightening many- (Fig.3c) are preserved for later analysis and the diverse fauna washed into the net with the Sargassum is allowed back overboard. This fauna is often blue from the open waters or well hidden, like the nudibranch *Scyllaea pelagica* (Scyllaeidae) (Fig.3d), who is the winner of the 'best camouflage' contest, usually betrayed only by its motion. Along its back, the sea slug has growths called papillae that help its masterful disguise. The papillae resemble the Sargassum's own hydroids that these sea slugs love to graze. Seabird McKeon, <https://ocean.si.edu/ocean-life/invertebrates/world-adrift-life-sargassum>

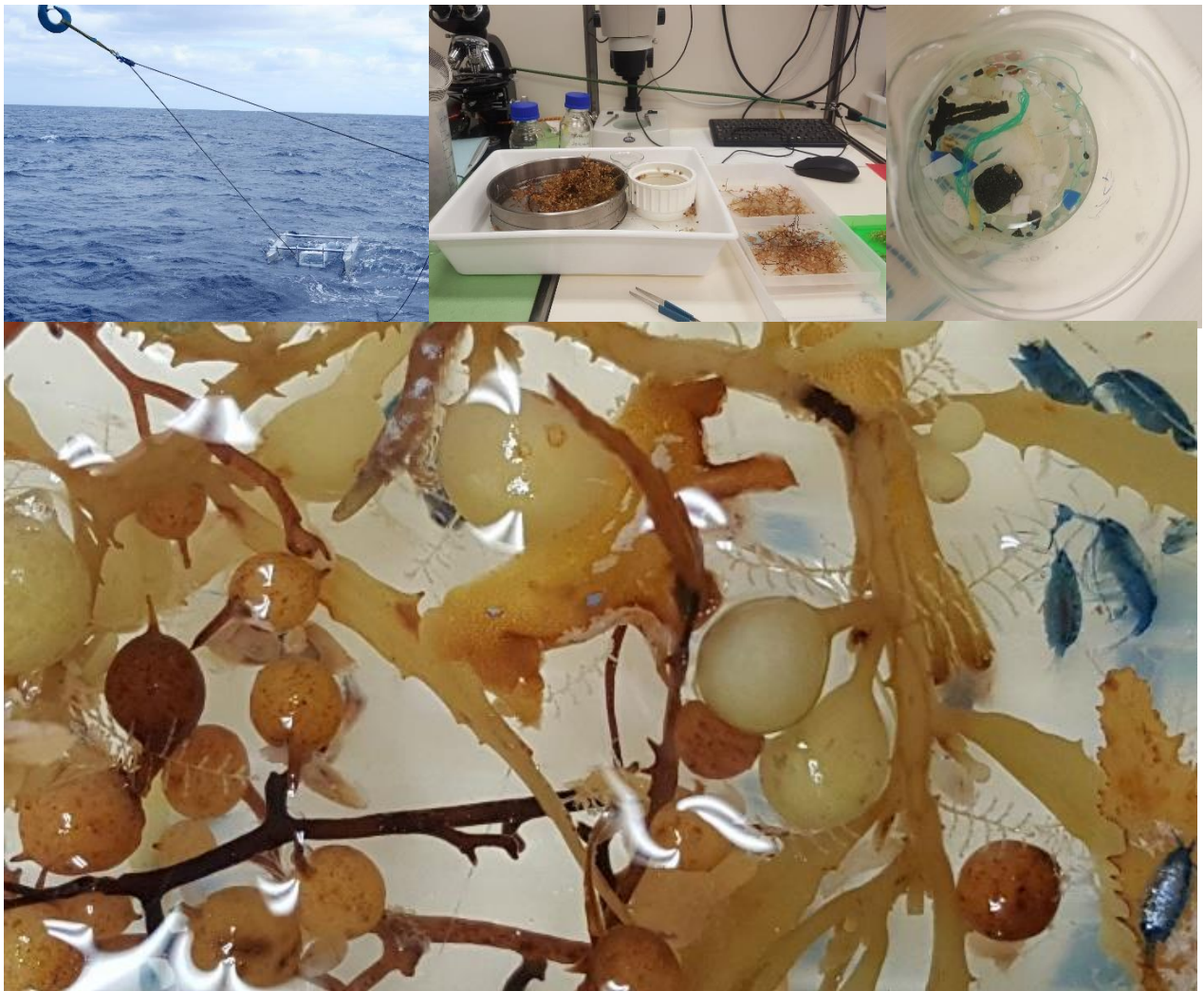


Fig 3: a) Neuston catamaran (Photo: Jon Roa), b) Sorting the collected flotsam, c) Plastic in the flotsam, d) Life in the Sargassum: Who recognizes the snail... it has blue dots (Photos: Lindsay Scheidemann).

Oh yes..., and then there was Christmas during the stations. After potato salad and sausages, the celebration with dress code was on 24<sup>th</sup> evening in the well-attended lounge. Andre from the crew surprised with a very nice classical Piano-piece and had to give immediately an encore. After the speeches by the captain and the chief scientist, Christmas carols were sung together in German, English, Portuguese and French, Sigrid read a Norwegian Christmas fairy tale, Peihang from China shared with us her very personal relationship to Christmas, then there were a few rounds of the charades usual in Great Britain at Christmas, a last poem and then it was the giving of presents from the shipping company and GEOMAR. Many thanks to all who contributed...it was very nice. Afterwards, there was a little Christmas cake and the Christmas dance Ceilidh was postponed to the cosy get-together on December 25th. Then we had a lot of space in the hangar and could try out this Scottish Christmas dance under Lucy's guidance in a big round with hopping and clapping and dancing and spinning with a lot of laughing-because it wasn't easy. She then reported that this was the easiest of the ten to twelve dances normally danced on Christmas Eve in Scotland. We then remembered our simple disco steps again and danced more to modern but also old music. We had also white Christmas, but not as in the north of Germany, where it had snowed to freezing temperatures on the 24th, but because in the afternoon of the 24th, when we sat with the short coffee in the mess-room of the Sonne, white salt water spray blew past high at the large windows of the room, because we had actually at first very bad weather at the northernmost point of our voyage (30°N), until in the evening the well-known pink sky tones indicated that eagerly the last Christmas cookies were baked in the heavenly bakehouses for Christmas get togethers all over the globe.

With cordial greetings the team of SO287-Connect remains - all healthy and lively on board - until next week.

Birgit Quack

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