

RV SONNE - SO 293 "AleutBio"

Aleutian Trench Biodiversity Studies

24. July – 06. September 2022

Dutch Harbor (Alaska, USA) – Vancouver (Canada)

6th Weekly report

22. August – 28. August 2022



During the past week, we spent the first three days at the hadal station area 11 (Fig. 1) and unfortunately, due to poor weather we had to skip the last deployment, the Agassiz trawl for sampling megafauna, before we steamed to the easternmost transect of station areas 12-14.

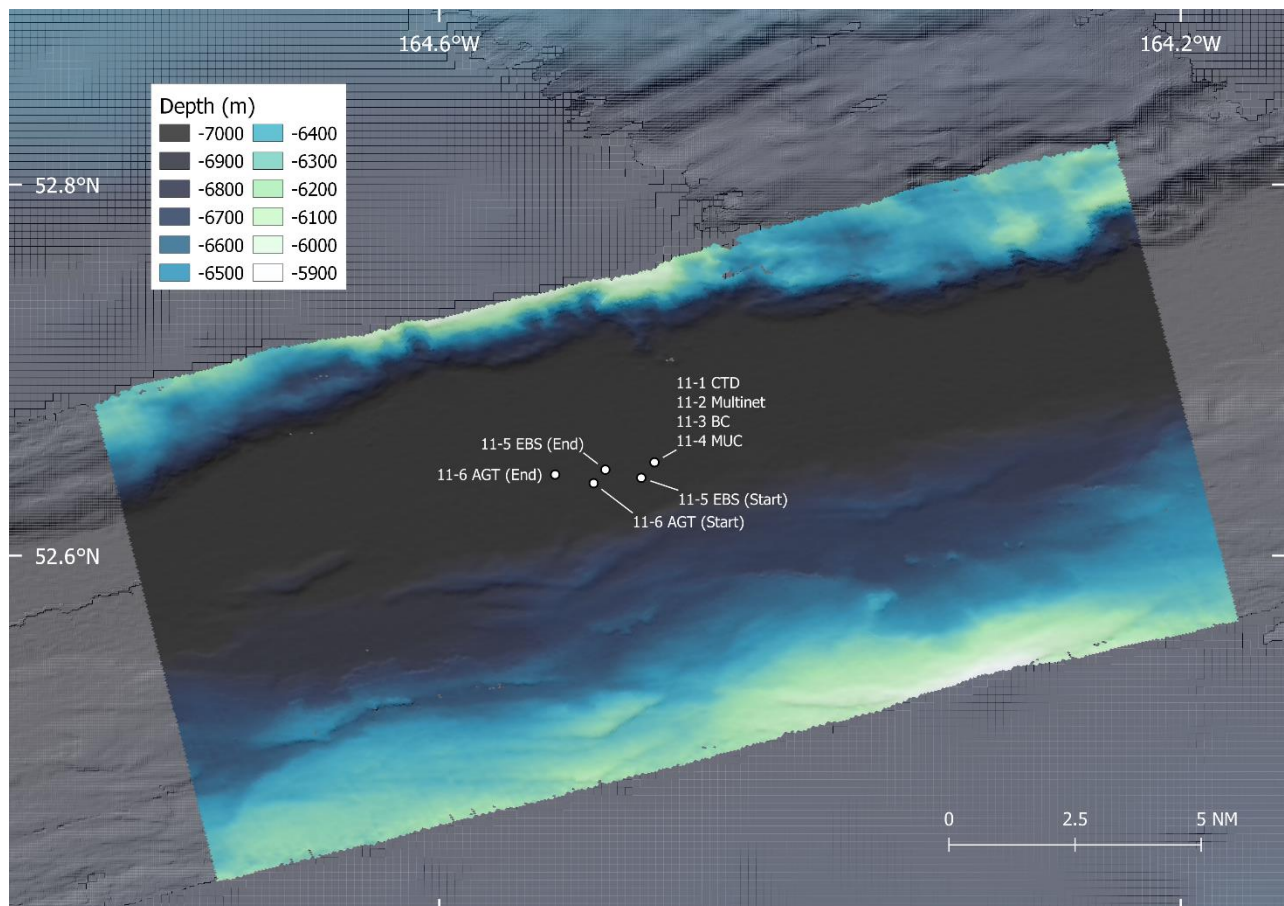


Figure 1: Bathymetric map of the station area 11 of the AleutBio (SO293) expedition.

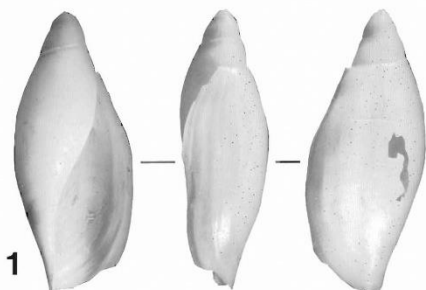
At the abyssal station 12 in roughly 4300 m depth, we found some interesting surprises. First of all, we sighted the beautiful large white volute snail *Tenebrincola frigida* Harasewych and Kantor, 1991 during the OFOS (Ocean Floor Observing System) dive. We saw it 5 times during OFOS on Station 12, and it was also spotted once at station area 8 by the OFOS team. *Tenebrincola rigida* was described and known from just the holotype collected by Vityaz in 1955 from 5020 m deep in Aleutian Trench (St. 3359), and these observations are the first time the animal has been seen alive.

We strategically attempted to collect alive specimens of this species, sending the epibenthic sledge as well as the Agassiz trawl along the same track as the OFOS, but were unsuccessful. However, we collected a large egg with median attachment which is plausibly an egg of this animal, since volutid snails commonly deposit large single-embryo eggs that develop directly into crawling juveniles. We have one such egg from AGT 6-9 and another from EBS 12-5 (the one figured here in Fig. 2), which will be analysed for DNA sequences back in Germany.

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TENEBRINCOLA FRIGIDA, A NEW GENUS AND SPECIES OF ABYSSAL VOLUTE FROM THE NORTHERN PACIFIC OCEAN (GASTROPODA: VOLUTIDAE)

M. G. Harasewych¹ and Yuri I. Kantor²



Type Locality: Aleutian Trench, SW of Agattu Island, Near Islands, 51°30'06"N, 172°04'30"E, in 5020 m. R/V Vityaz sta. 3359, Sigsbee trawl, 8 June 1955.

Material examined: Holotype, Zoological Museum, University of Moscow (ZMUM) N Lc 16252, 68.4 mm.

Distribution: This species is known only from the type locality.

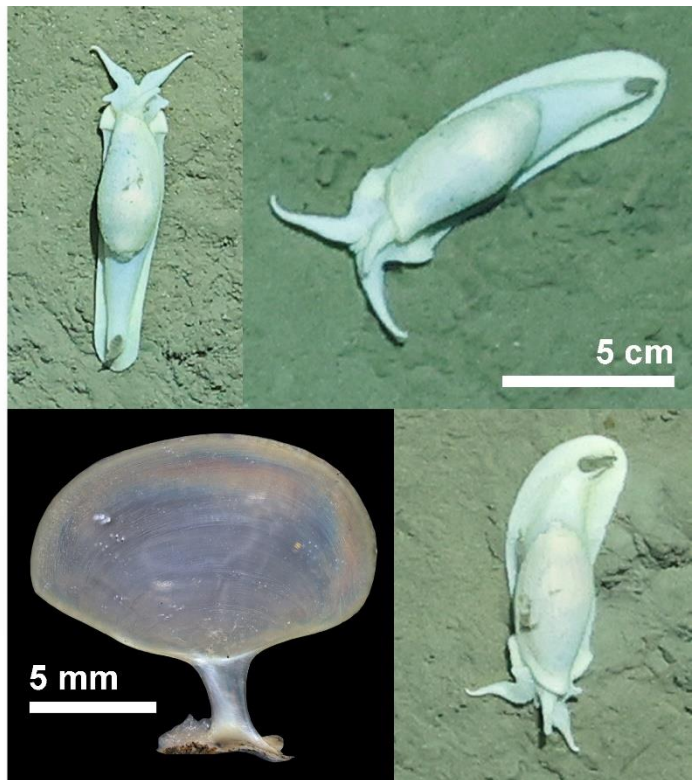


Figure 2: Plate documenting the description of the white volute snail *Tenebrincola frigida* Harasewych and Kantor, 1991 as well as *in situ* images from the seafloor obtained with the OFOS System of RV SONNE as well as a photograph taken with a camera stereomicroscope after sampling.

At station area 12 we found much life at the seafloor and many traces of megafaunal animals – as usual for many OFOS Dives. In this dive, we saw abundant individuals of the beautiful triangular sea urchin *Echinocrepis rostrata* Mironov 1973 (Fig. 3), a member of the Pourtalesiidae (Echinoidea, Meridosterniana) which is currently being redescribed by one of our Russian collaborators.



Figure 3: The beautiful triangular sea urchin *Echinocrepis rostrata* Mironov 1973.



Figure 4: A *Echinocrepis rostrata* Mironov and its Lebensspuren (trail); B An example of biodeposition via a holothurian.

Like many animals moving over the seafloor this species leaves visible traces (Figure 4). In the EBS hauls, most of the animals were Amphipoda and Polychaeta as well as a high abundance of Bivalvia. We also recovered many species of Isopoda (Fig. 5), but in much lower numbers than in previous expeditions in the Kuril-Kamchatka Trench (KKT).

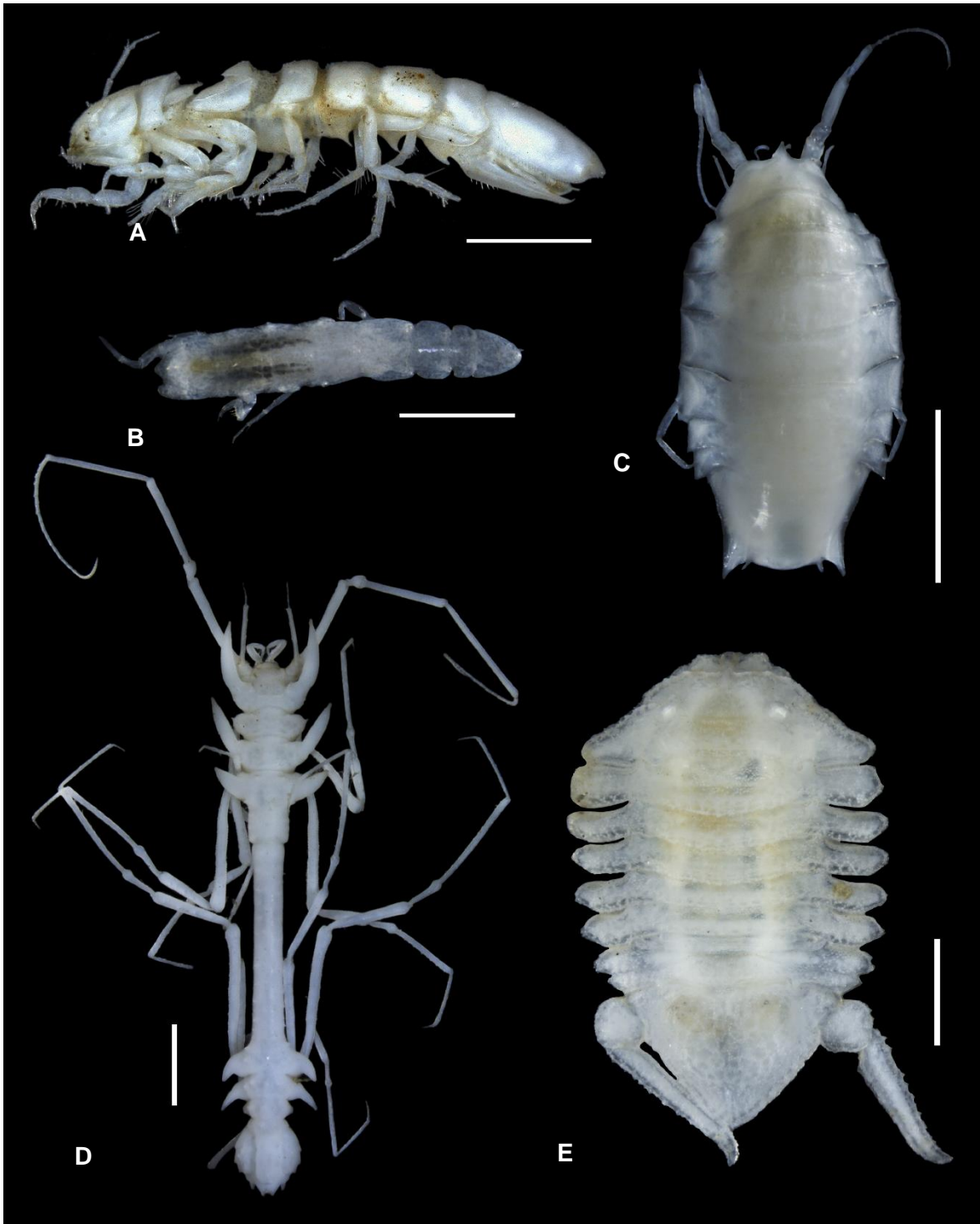


Figure 5: Isopoda: A, Macrostylidae (Scale bar = 1 mm), B, Nannoniscidae (Scale bar = 0.5 mm), C, Haploniscidae (Scale bar = 1 mm), D, Ischnomesidae (Scale bar = 2 mm), E Ancinidae (Scale bar = 1 mm).

This has been a really challenging but also very interesting expedition, as we find many surprises. The central hadal seems to be almost a "dead" zone, nearly devoid of animal life, as we find only very few animals and mostly suprabenthic. The sediment is extremely fluid, and at much deeper places we find a layer of clay. In the results of the Soviet expeditions on the RV Vityaz, they mentioned that the fauna of the Aleutian Trench was poorer than comparable areas, and there were also already hints to the differences in sediment composition between western and eastern part of the Aleutian Trench. In the western part, the sediment is apparently washed out by currents, while the eastern part is characterized by very fine-grain suspended sediments. The sediment at these central hadal stations is a distinctive grey, and most likely of glacial origin from the mountains in mainland Alaska.

The positive news is that we catch species that are common with the KKT; while this will need to be confirmed with molecular data, it is nonetheless interesting as it documents connectivity that is surprising for brooding species like pericarid crustaceans. It documents that species connectivity is likely (as we noted previously in the second weekly report) despite the fact that the sampling areas of KuramBio and AleutBio are 3000 km away from each other.

Please follow us at <https://aleutbio.sgn.one/de/>

or

<https://www.dosi-project.org/aleutbio-expedition-update/>

and in Alaska the story aired on the statewide news show last night

<https://alaskapublic.org/2022/08/24/alaska-news-nightly-wed-aug-24-2022/>

<https://alaskapublic.org/2022/08/24/an-international-team-of-scientists-is-mapping-out-life-in-the-deep-bering-sea/>

All are well and send greetings home.

Angelika Brandt (on behalf of all scientists of the expedition AleutBio).



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and Natural History Museum Frankfurt

