

## Weekly report Alkor Cruise AL544 (Leg 2)

Goal of the cruise is to investigate biological oceanography of the Baltic Sea along the extended salinity gradient from intermediate saline SW Baltic Sea towards low saline northern Gotland Basin of the Baltic Sea. Apart from teaching a diverse set of biological oceanographic sampling techniques, the aim is to characterize the macro-zooplankton and ichthyoplankton community. We observed large accumulations of native and invasive macrozooplankton species in different areas of the Baltic Sea as well as extended anoxia in bottom waters, especially in NE waters. Due to unstable weather conditions, we had to modify the cruise plan along the way. In short, we cancelled northern most investigation area and eastern waters to avoid being trapped by an approaching low pressure. Instead we included an in depth investigation of the SW Baltic Sea, where the invasive comb jelly *Mnemiopsis leidyi* is currently forming local blooms with very high abundance patches. We did not observe *M. leidyi* at stations north of the Bornholm Basin. In summary, we managed to sample large parts of the salinity gradient with very interesting results, especially concerning anoxic conditions in bottom waters and added a high resolution investigation of the SW Baltic Sea in order to understand population dynamics of the invasive comb jelly *Mnemiopsis leidyi*.

Note: Due to the current Corona Pandemie, the scientific staff had been reduced by 50% which makes 24h work impossible.

Daily activities are outlined below and include operation the different gear, both from a practical and theoretical perspective, analyzing all samples alive for macrozooplankton and ichthyoplankton as well as basic principals in sample handling and preservation. All data are entered by the students in the evenings and the practical work is followed up by lectures and student presentations.

Due to heavy weather conditions, the investigation area changed slightly and includes now a station grid in the SW Baltic Sea (see Fig. 1).

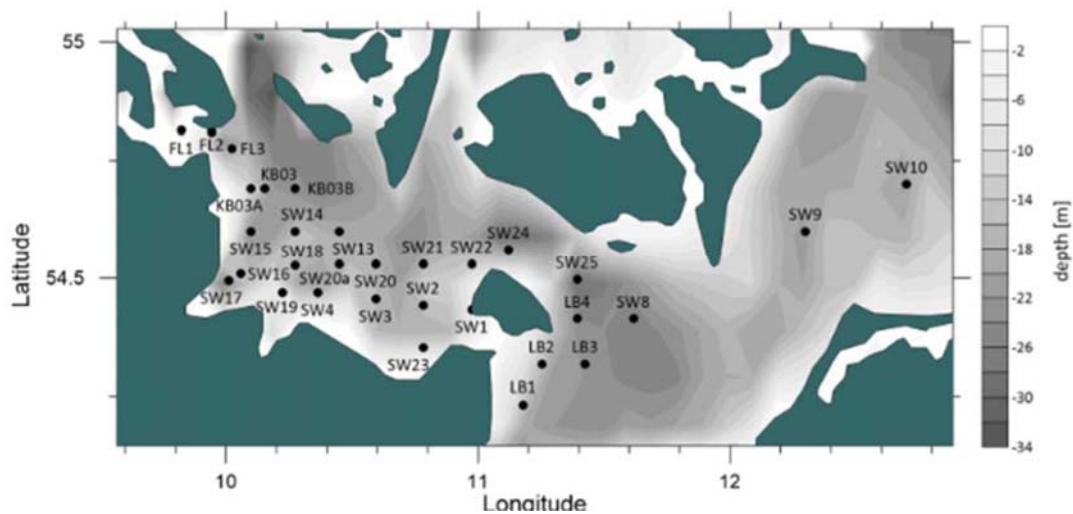


Fig. 1: SW Baltic Sea station grid. (Additional stations in the Lübecker bight are depicted in Fig. 2).

**9.9.2020 Wednesday**

Finishing up work in the SW Baltic Sea. Special focus was devoted towards occurrence of the invasive hydromedusae *Blackfordia virginica* – which was caught on station SW19B.

**Station SW17**

- Multinetz midi (towed)
- CTD
- WP2

**Station SW15**

- Multinetz midi (towed)
- WP2
- CTD

**Station SW14A**

- Multinetz midi (towed)
- CTD
- WP2

**Station SW18**

- Multinetz midi (towed)
- WP2
- CTD

**Station SW20A**

- Multinetz midi (towed)
- CTD
- WP2

**Station SW 19**

- Multinetz midi (towed)
- WP2
- CTD

**Station SW19B**

- Multinetz midi (towed)
- CTD
- WP2

Continuation along the German Baltic Sea coast covering the Lübecker- and Mecklenburger Bight (see Fig. 2 for updated Station grid).



**Fig. 2:** Station grid in the Lübecker Bight / Mecklenburger Bight which was conducted due to heavy weather conditions in Northern and Eastern parts of the Baltic Sea, which made a change in the cruise plan necessary.

### **10.9.2020 Thursday**

#### **Station LB1A**

- Multinetz midi (towed)
- CTD
- WP2

#### **Station LB9**

- Multinetz midi (towed)
- WP2
- CTD

#### **Station LB8**

- Multinetz midi (towed)
- CTD
- WP2

#### **Station LB5**

- Multinetz midi (towed)

- WP2
- CTD

**Station LB11**

- Multinetz midi (towed)
- CTD
- WP2

**Station LB6**

- Multinetz midi (towed)
- WP2
- CTD

**Station LB7**

- Multinetz midi (towed)
- CTD
- WP2

**Station LB10**

- Multinetz midi (towed)
- WP2
- CTD

Steaming towards the Bornholm Basin to continue station work on the most important spawning ground for cod in the Baltic Sea to investigate the spatial and temporal overlap between gelatinous macrozooplankton and ichthyoplankton – especially considering cod and sprat larvae. To contribute to ongoing monitoring activities and convey the importance of spatial and temporal high resolution investigations for addressing scientific questions. The students also received a theoretical introduction to most important species being present, their taxonomy, morphological identification and recruitment processes.

**11.9.2020 Friday**

**Investigation of 9 stations in the central Baltic Sea on the BB station grid. On each station, CTD and Bongo tows have been conducted. Additionally, the depth distribution of zooplankton was studied in depth on station BB30 - with 18 discrete multinet samples as outlined below:**

**Station BB30 (Cod larvae focus station)**

- Water rosette sampler for discrete water samples to conduct O<sub>2</sub> titration and Chl a determination.
- CTD
- Multinetz Maxi (towed in 5m depth intervals with 18 nets in total to get depth stratified fish larvae abundance data as well as distribution of gelatinous macrozooplankton and general zooplankton community composition)
- Bongo

Leaving Bornholm Basin at 22:30 to finish the high resolution investigation of the German Baltic Sea coast for gelatinous macrozooplankton and ichthyoplankton – east of Rügen (Fig. 3).



**Fig. 1:** Investigation area in the eastern part of the German Baltic Sea coast around Rügen.

### **12.9.2020 Saturday**

#### **Station N1**

- Multinetz midi (towed)
- CTD
- WP2

#### **Station N1A**

- Multinetz midi (towed)
- WP2
- CTD

#### **Station N2A**

- Multinetz midi (towed)
- CTD
- WP2

#### **Station N2**

- Multinetz midi (towed)
- WP2

- CTD

**Station R6**

- Multinetz midi (towed)
- CTD
- WP2

**Station R8**

- Multinetz midi (towed)
- WP2
- CTD

**Station R9**

- Multinetz midi (towed)
- CTD
- WP2

**13.9.2020 Sunday**

Finishing station work in the Arkona and Meckenburger Bight. In total 75 stations have been covered with 50+ depth resolved multinet stations, which has in this breath never been conducted in the SW Baltic Sea before.

**Station LB3C**

- Multinetz midi (towed)
- CTD
- WP2

**Station LB3B**

- Multinetz midi (towed)
- WP2
- CTD

**Station LB1C**

- Multinetz midi (towed)
- CTD
- WP2

**Station LB1B**

- Multinetz midi (towed)
- WP2
- CTD

**Station LB3A**

- Multinetz midi (towed)
- CTD
- WP2

**14.9.2020 Monday**

Toll inspection and unloading of scientific equipment. Cleaning and finishing up of field work.

**15.9.2020 Tuesday**

Sorting and unloading of all frozen samples and organization of storage and transport to the cooperating institutions.

End of the cruise.