THÜNEN

Institute of Baltic Sea Fisheries

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# Cruise Report
# FRV „Solea" Cruise 759
# 02. – 12.02.2019

## Mupeds

Cruise leader: Dr. Daniel Oesterwind & Paco Rodriguez-Tress (Thünen-OF)

## 1. Background

Demersal fishing was performed along a depth gradient from the Bornholm Basin to the Rönnebank / Adlergrund area and off Rügen Island in ICES SD 24/25. The cruise served three purposes:

I) Depth-stratified stomach sampling of cod and flatfishes for further diet analysis

II) Evaluating the potential impact of a modified BACOMA codend

III) Student education

**Distribution list:**

BLE, Hamburg
Schiffsführung FFS „SOLEA"
Deutsche Fischfang-Union
Sassnitzer Seefischerei e. G.
Landesverband der Kutter- u. Küstenfischer
DFFU Cuxhaven
BMEL, Ref. 614
Thünen-Institut - Pressestelle, Dr. Welling
Thünen-Institut - Präsidialbüro
Thünen-Institut - Institut für Fischereiökologie
Thünen-Institut - Institut für Seefischerei
Thünen-Institut - Institut für Ostseefischerei
Thünen-Institut - FIZ-Fischerei
BFEL HH, FB Fischqualität
Reiseplanung Forschungsschiffe, Herr Dr. Rohlf
Fahrtteilnehmer
Bundesamt für Seeschifffahrt und Hydrographie, Hamburg
Mecklenburger Hochseefischerei Sassnitz
Doggerbank Seefischerei GmbH, Bremerhaven
Deutscher Fischerei-Verband e. V., Hamburg
Leibniz-Institut für Meereswissenschaften IFM-GEOMAR
BSH, Hamburg
Leibniz-Institut für Ostseeforschung Warnemünde
Institut für Fischerei der Landesforschungsanstalt
LA für Landwirtschaft, Lebensmittels. und Fischerei
Euro-Baltic Mukran

## 2. Cruise track

The cruise started on Monday the 2nd of February 2019 and ended at the 12th of February in Marienehe / Rostock. The scientific crew and students changed in Sassnitz harbour at the 6th of February. During the whole cruise weather conditions were relatively good and fishing was performed as planned. A total of 36 double-belly hauls and 12 CTD casts were performed during the cruise. A depth range of 17 to 94 meters was covered by the cruise.

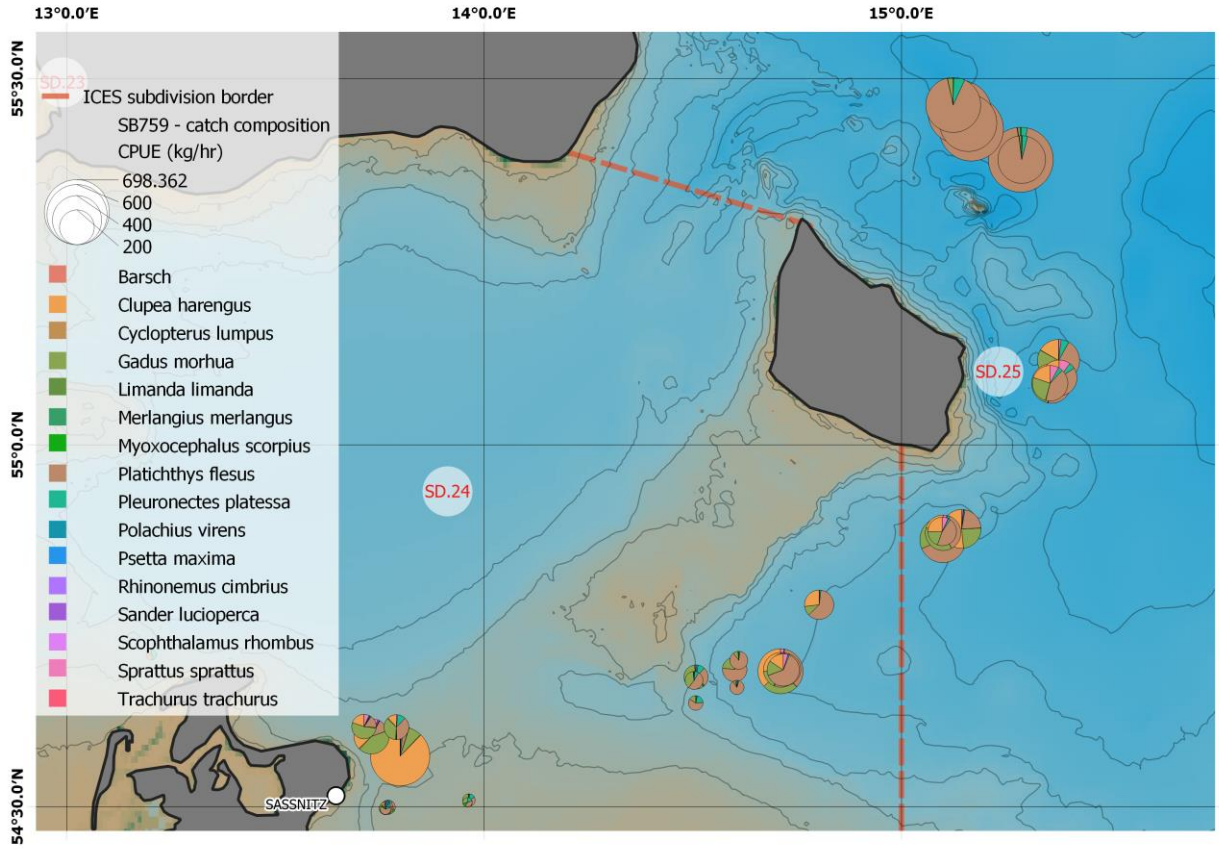


*Figure 1. Cruise map with fishing stations and catch compositions for FRV Solea cruise 759.*

## 3. Preliminary results

### Catch composition & stomach sampling

A total of 16 fish species with a total weight of 4 150 kg were caught. The fish composition consisted mainly of the clupeids: *C. harengus*, *S. sprattus*; the flatfishes: *P. flesus*, *P. platessa* and the Gadoid: *G. morhua. P. flesus* was the most abundant demersal species in most catches (Fig. 2, Tab. 1) especially in the Bornholm Basin while *C. harengus* was partly dominant close to Rügen Island.

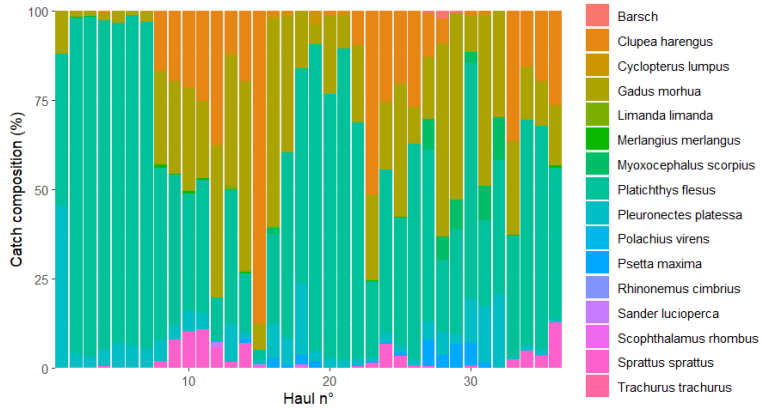


*Figure 2. Catch composition of each haul during FRV Solea cruise 759.*

*Table 1. Total catch numbers during FRV Solea cruise 759.*

| SPECIES | NUMBER (N) | BIOMASS (KG) |
|---|---|---|
| *PLATICHTHYS FLESUS* | 11 048 | 2 472 |
| *CLUPEA HARRENGUS* | 10 265 | 685 |
| *SPRATTUS SPRATTUS* | 5 898 | 84 |
| *GADUS MORHUA* | 1 785 | 578 |
| *PLEURONECTES PLATESSA* | 982 | 159 |
| *MERLANGIUS MERLANGUS* | 93 | 7 |
| *MYOXOCEPHALUS SCORPIUS* | 33 | 7 |
| *PSETTA MAXIMA* | 24 | 9 |
| *CYCLOPTERUS LUMPUS* | 15 | 5 |
| *TRACHURUS TRACHURUS* | 8 | <1 |
| *RHINONEMUS CIMBRIUS* | 5 | <1 |
| *LIMANDA LIMANDA* | 4 | 1 |
| *PERCA FLUVIATILIS* | 4 | 1 |
| *SANDER LUCIOPERCA* | 2 | 3 |
| *POLACHIUS VIRENS* | 1 | <1 |
| *SCOPHTHALMUS RHOMBUS* | 1 | <1 |

In total, we were able to collect enough samples for stomach content analysis. The stomachs were frozen for later analysis. In addition, approximately 100 genetic samples from cod were collected in SD 24 for stock assignment.

## Oceanography

Oceanographic conditions showed a typical winter stratification. The surface water temperature was around 3-4 °C with an increasing temperature in deeper layers with a maximum of ca. 9 °C at the bottom of the Bornholm Basin. Oxygen was less than 2.5 ml/l in the deeper parts at the Bornholm Basin and at the surface around 10ml/l. Salinities were around 7.5 psu with salinities up to >15 psu in the deepest part of the Bornholm Basin (Fig. 3).

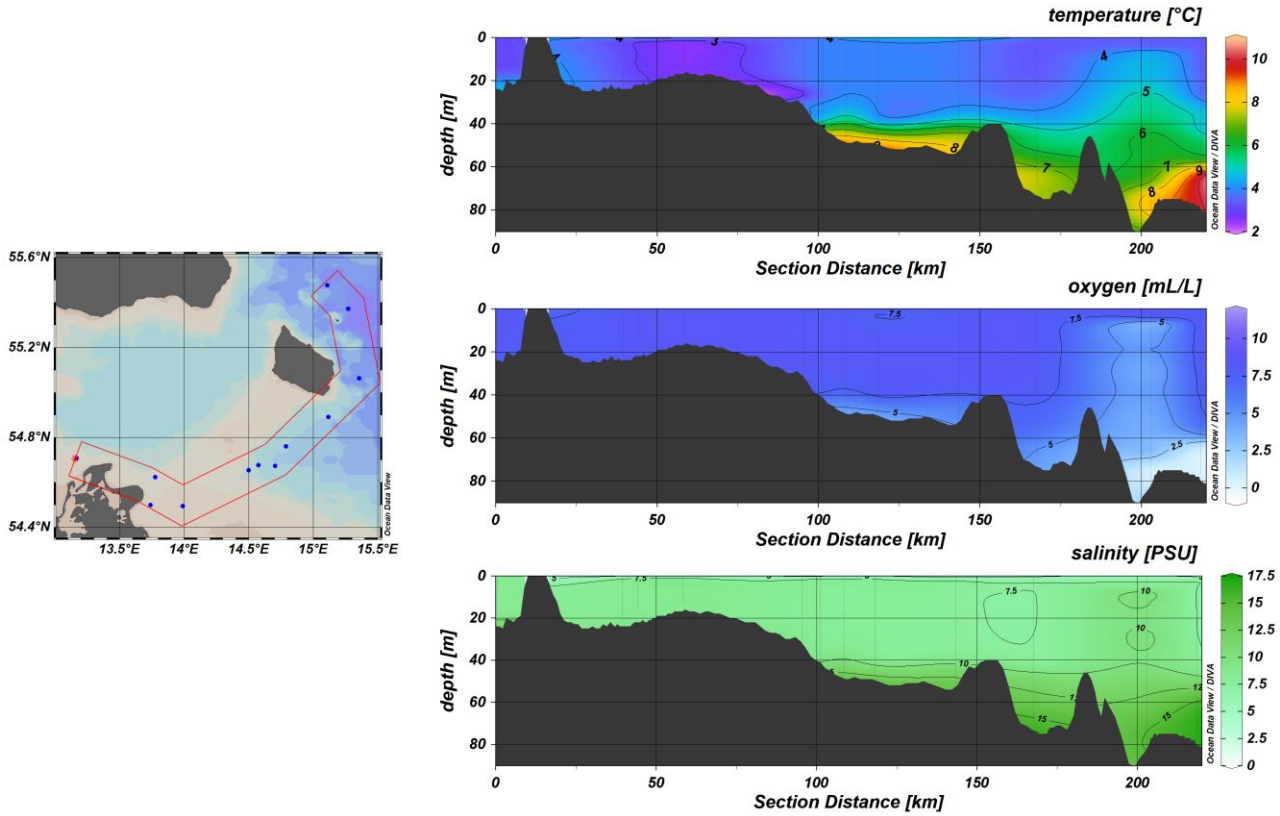


*Figure 3. Temperature, oxygen and salinity measurements along the depth gradient from the Island of Rügen to the Bornholm Basin during FRV Solea cruise 759.*

## Gear experiment

The task was to compare the catchability of a standard BACOMA codend (120mm mesh size) with a modified BACOMA codend (the BACOMA codend was closed with a strong rope, thus mimicking the illegal gear modification used by fishers). A standard gear with a mesh size of 60mm was used as a control codend. With alternating sides of the double belly, we performed a total of 36 hauls, at least 4 hauls at each depth stratum. Preliminary results showed that the impact of a closed BACOMA codend is higher for cod compared to flounder and plaice. The manipulation of the BACOMA codend makes it approx. twice as efficient in regard to marked-sized cod caught compared to the mandatory BACOMA codend. Also approx. three to four times more undersized cod and approx. twice the amount of bycatch was caught with the modified codend. Therefore, the modification of the BACOMA codend has adverse effects on the cod stock. (Fig. 4).

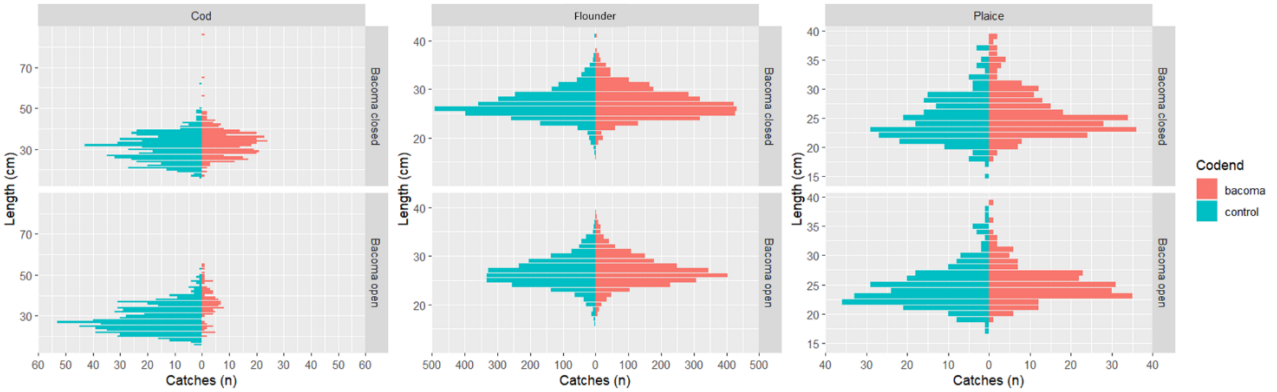


*Figure 4. Catches in numbers per length class for modified Bacoma (upper row) and legal Bacoma (lower row) versus control for cod, flounder and plaice.*

## 4. Cruise participants

| | | |
|---|---|---|
| Dr. Daniel Oesterwind | scientist | Thünen-OF |
| Paco Rodriguez-Tress | scientist | Thünen-OF |
| Cornelia Albrecht | technician | Thünen-OF |
| Gloria Denfeld | student | University of Greifswald |
| Michael Klinger | student | University of Rostock |
| Tobias Reßing | student | University of Hamburg |
| Peter Hornetz | student | University of Hamburg |
| Alexander Rixen | student | University of Rostock |
| Markus Steinkopf | student | University of Rostock |
| Jaqueline Schottes | student | University of Hamburg |

Dr. Daniel Oesterwind (TI-OF)
(Scientist in charge)

**Station list**

| station | date | min.depth | max.depth | ICES.area | lon | lat | action |
|---|---|---|---|---|---|---|---|
| 70/2 | 02.02.2019 | 26 | 29 | 24 | 13,203331 | 54,710093 | trawl |
| 70/2 | 02.02.2019 | | 27 | | 13,166667 | 54,708667 | CTD |
| 71/3 | 03.02.2019 | 92 | 94 | 25 | 15,289142 | 55,389717 | trawl |
| 72/4 | 03.02.2019 | | 90 | | 15,268167 | 55,373333 | CTD |
| 73/5 | 03.02.2019 | 91 | 94 | 25 | 15,286686 | 55,389676 | trawl |
| 74/6 | 03.02.2019 | 84 | 86 | 25 | 15,160584 | 55,439279 | trawl |
| 75/7 | 03.02.2019 | 83 | 85 | 25 | 15,124565 | 55,463913 | trawl |
| 76/8 | 03.02.2019 | | 80 | | 15,108 | 55,479 | CTD |
| 77/9 | 03.02.2019 | 83 | 85 | 25 | 15,140129 | 55,453708 | trawl |
| 78/10 | 03.02.2019 | 83 | 89 | 25 | 15,167602 | 55,431215 | trawl |
| 79/11 | 04.02.2019 | 73 | 81 | 25 | 15,376695 | 55,115138 | trawl |
| 80/12 | 04.02.2019 | 74 | 77 | 25 | 15,356964 | 55,083991 | trawl |
| 81/13 | 04.02.2019 | | 71 | | 15,353333 | 55,0645 | CTD |
| 82/14 | 04.02.2019 | 75 | 82 | 25 | 15,378921 | 55,091052 | trawl |
| 83/15 | 04.02.2019 | 73 | 77 | 25 | 15,36011 | 55,083732 | trawl |
| 84/16 | 05.02.2019 | 26 | 29 | 24 | 13,73053 | 54,597187 | trawl |
| 85/17 | 05.02.2019 | 23 | 28 | 24 | 13,79036 | 54,60991 | trawl |
| 86/18 | 05.02.2019 | | 25 | | 13,773 | 54,625 | CTD |
| 87/19 | 05.02.2019 | 26 | 30 | 24 | 13,712788 | 54,610939 | trawl |
| 88/20 | 05.02.2019 | 23 | 25 | 24 | 13,799201 | 54,569622 | trawl |
| 89/21 | 06.02.2019 | 37 | 40 | 24 | 14,508495 | 54,679651 | trawl |
| 90/22 | 06.02.2019 | 37 | 40 | 24 | 14,503611 | 54,674352 | trawl |
| 91/23 | 06.02.2019 | | 36 | | 14,4975 | 54,6545 | CTD |
| 92/24 | 06.02.2019 | 32 | 39 | 24 | 14,507752 | 54,643232 | trawl |
| 93/25 | 07.02.2019 | 46 | 50 | 24 | 14,606276 | 54,665244 | trawl |
| 94/26 | 07.02.2019 | 47 | 50 | 24 | 14,601594 | 54,689534 | trawl |
| 95/27 | 07.02.2019 | | 44 | | 14,575333 | 54,676833 | CTD |
| 96/28 | 07.02.2019 | 44 | 50 | 24 | 14,611184 | 54,702352 | trawl |
| 97/29 | 08.02.2019 | 62 | 64 | 24 | 15,099567 | 54,868933 | trawl |
| 98/30 | 08.02.2019 | 63 | 64 | 24 | 15,145058 | 54,883883 | trawl |
| 99/31 | 08.02.2019 | | 57 | | 15,112667 | 54,891667 | CTD |
| 100/32 | 08.02.2019 | 62 | 63 | 24 | 15,097817 | 54,880217 | trawl |
| 101/33 | 08.02.2019 | 63 | 63 | 24 | 15,100333 | 54,8785 | trawl |
| 102/34 | 08.02.2019 | 54 | 56 | 24 | 14,80355 | 54,779517 | trawl |
| 103/35 | 09.02.2019 | | 52 | | 14,785833 | 54,761333 | CTD |
| 104/36 | 09.02.2019 | 19 | 19 | 24 | 13,763867 | 54,496883 | trawl |
| 105/37 | 09.02.2019 | 19 | 19 | 24 | 13,770642 | 54,498592 | trawl |
| 106/38 | 09.02.2019 | | 18 | | 13,737333 | 54,499667 | CTD |
| 107/39 | 09.02.2019 | 19 | 19 | 24 | 13,766467 | 54,49804 | trawl |
| 108/40 | 09.02.2019 | 19 | 20 | 24 | 13,764125 | 54,49587 | trawl |
| 109/41 | 09.02.2019 | 17 | 20 | 24 | 13,964599 | 54,508486 | trawl |
| 110/42 | 09.02.2019 | | 16 | | 13,988167 | 54,494833 | CTD |
| 111/43 | 09.02.2019 | 17 | 19 | 24 | 13,961149 | 54,505329 | trawl |
| 112/44 | 10.02.2019 | 52 | 55 | 24 | 14,71114 | 54,687099 | trawl |
| 113/45 | 10.02.2019 | 52 | 55 | 24 | 14,717225 | 54,689155 | trawl |
| 114/46 | 10.02.2019 | | 49 | | 14,702 | 54,6745 | CTD |
| 115/47 | 10.02.2019 | 51 | 55 | 24 | 14,720424 | 54,689713 | trawl |
| 116/48 | 10.02.2019 | 52 | 55 | 24 | 14,711519 | 54,689267 | trawl |