

## RV BELGICA CRUISE 2019/ 21AB – CRUISE REPORT

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**Fishery: 26/08/2019 - 06/09/2019**

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## 1. CRUISE DETAILS

|    |   |   |
|----|---|---|
| 1. | Cruise number   | 2019/21ab   |
| 2. | Date/time<br>Zeebrugge TD<br>Great Yarmouth TA<br>Great Yarmouth TD<br>Zeebrugge TA | 26/08/2019: 11h00<br>30/08/2019: 18h00 LT Loods<br>02/08/2019: 08h00 LT Loods<br>06/09/2019: 08h00 LT |
| 3. | Chief Scientist<br>Participating institutes   | MSc. Loes Vandecasteele<br>ILVO   |
| 4. | Area of interest  | Central & southern North Sea (Belgian, French and English Continental shelves)                        |

## 2. LIST OF PARTICIPANTS

| Institute                  | NAME                | Gender | 26/08 - 31/08/19 | 01/09 - 06/09/19 |
|----------------------------|---------------------|--------|------------------|------------------|
| ILVO                       | Loes Vandecasteele  | F      | X                | X                |
|                            | Lies Vansteenbrugge | F      | X                |                  |
|                            | Patrick Calebout    | M      | X                | X                |
|                            | Jürgen Bossaert     | M      | X                | X                |
|                            | Glenn Kyndt         | M      | X                | X                |
|                            | Benedict Deputter   | M      | X                | X                |
|                            | Coenraad Deputter   | M      | X                | X                |
|                            | David Vuylsteke     | M      | X                | X                |
|                            | Sebastian Uhlmann   | M      | X                |                  |
|                            | Silvia Paoletti     | F      | X                |                  |
|                            | Sam Vanhoorne       | M      |                  | X                |
|                            | Manu Claessens      | M      |                  | X                |
|                            | Justin Defever      | M      |                  | X                |
| <i>Total participants:</i> |                     |        | 10               | 10               |

## 3. SCIENTIFIC OBJECTIVES

### a) ILVO – NSBTS

Indices of abundance and biomass of adult flatfishes (traditionally mainly plaice and sole, but increasingly important are also dab, flounder, lemon sole, turbot, brill, ...) will be calculated by means of stratified tows in the southern and central North Sea. The results will be incorporated in the survey database "DATRAS" of the "International Council for the Exploration of the Sea (ICES)" and will be used in analytical population studies of these species/stocks, mainly serving as tuning indices in several stock assessments leading to the fishing TACs and quota. Also abundance indices for several round fish species (cod, whiting, bib, tub gurnard, ...) and elasmobranchs (sharks and rays) will be constructed. Additionally, several other investigations are planned, such as (a) the construction of "age-length-keys" for a number of commercially important flatfish species (turbot, brill, plaice, sole, dab and lemon sole) and cod, and (b) documenting distribution and abundance of all commercial and non-commercial bycatch species (both fish and non-fish).

#### **b) ILVO – EU 7KP CleanSea**

There is an urgent need for an improved knowledge base for the management of marine litter. CleanSea aims to generate new information on the impacts (biological, social and economic) of marine litter, develop novel tools needed to collect and monitor litter and protocols needed for monitoring data (litter composition and quantities) and evaluate the impact of mitigation strategies and measures in order to provide options to policy makers in the EU. This will be achieved through 7 work packages, covering biological impacts and technical aspects of marine monitoring, monitoring tools and applications, and an analysis of multilevel socio-economic impacts and barriers to Good Environmental Status. All results will be integrated in a participatory approach in order to identify and assess management measures, strategies and policy options in collaboration with stakeholders that reduce marine litter and alleviate diverse ecological and socio-economic impacts.

#### **c) ILVO – Study vitality of plaice**

In support of the study “Overleving monitoren” (monitoring flatfish survival; 18/up1/30/div), funded by the European Maritime and Fisheries Fund, a protocol for vitality scoring of juvenile plaice on board of a vessel will be tested using a custom-made electronic measuring board. Secondly, a procedure will be developed, similar to the sampling protocol of the survey, to estimate the volume of rocks, sand and debris in the net. The protocol will facilitate data collection on board of commercial trawlers to eventually quantify survivability of flatfish discards and its contributing factors.

#### **d) AUMS (OD Nature)**

The AUMS (Autonomous Underway Measurement System) project is inspired by the success of similar systems deployed on various ships of opportunity in the framework of the European Union FerryBox project ([www.ferrybox.org](http://www.ferrybox.org)). The instrumentation will greatly enhance the continuous oceanographic measurements made by RV Belgica by taking advantage of the significant technological improvements since the design of the existing (salinity, temperature, fluorescence) systems. In particular, many new parameters can now be measured continuously including important ecosystem parameters such as nitrate, ammonia, silicate, dissolved oxygen and CO<sub>2</sub>, turbidity, alkalinity and phytoplankton pigments. In addition, the new equipment allows automatic acquisition and preservation of water samples, rendering RV Belgica operations significantly more efficient by reducing onboard human resources. Data will be available in near real-time via OD NATURE’s public web site and following quality control, from the Belgian Marine Data Centre.

#### **e) ESA-MC (GNSS)**

For the European Space Agency continuous GNSS (Global Navigation Satellite system) data is autonomously acquired in the maritime environment for performance evaluation under different conditions.

## **4. OPERATIONAL COURSE**

*All times are given in local time (GMT+2). All coordinates in WGS84.  
Throughout the campaign, measurements are made with the AUMS system.  
Fish tracks were registered in OURS.*

### **Monday 26/08/2019**

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|         |   |
|---------|---|
| 08h-09h | Embarkation of instruments and personnel                  |
| 12h     | Transit to station 40 + fishing at stations 40, 86, 1 & 2 |
|         | Transit to station 7                                      |

### **Tuesday 27/08/2019**

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|            |  |
|------------|--|
| 06h45-dusk | Fishing at stations 7, 8, 9, 116, 113, 11, 112 |
|            | Transit to station 16                          |

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**Wednesday 28/08/2019**

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06h45-dusk Fishing at stations 16, 17, 72, 22, 18, 19 (stations 114 and 20 were cancelled due to passive fishing gear on the track).  
Transit to station 110

**Thursday 29/08/2019**

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06h45-dusk Fishing at stations 110, 60, 111, 81, 115, 25, 26, 24  
Transit to station 61

**Friday 30/08/2019**

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06h45-dusk Fishing at stations 61, 62, 73, 28, 29, 107  
Transit to Great Yarmouth

**Saturday 31/08/2019**

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Mid-survey break at Great Yarmouth.

**Sunday 01/09/2019**

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Mid-survey break at Great Yarmouth.

**Monday 02/09/2019**

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08h-dusk Transit to station 90 + fishing at stations 90, 64, 82, 92, 91, 83 (station 102 was cancelled due to passive fishing gear on the track and station 98 was skipped due to lack of time).  
Transit to station 63

**Tuesday 03/09/2019**

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06h45-dusk Fishing at stations 63, 6, 5, 30, 4, 3, 32  
Transit to station 87

**Wednesday 04/09/2019**

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06h45-dusk Fishing at stations 93, 95, 80, 94, 96, 85, 34, 33 (station 87 was cancelled due to passive fishing gear on the track).  
Transit to station 84

**Thursday 05/09/2019**

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06h45-dusk Fishing at stations 38, 37, 36, 39 (station 84 was cancelled due to passive fishing gear on the track)  
Transit and arrival at Zeebrugge

**Friday 06/09/2019**

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07h-10h Debarkation of material and personnel

- End of campaign 2019/21ab -

## 5. TRACK PLOT

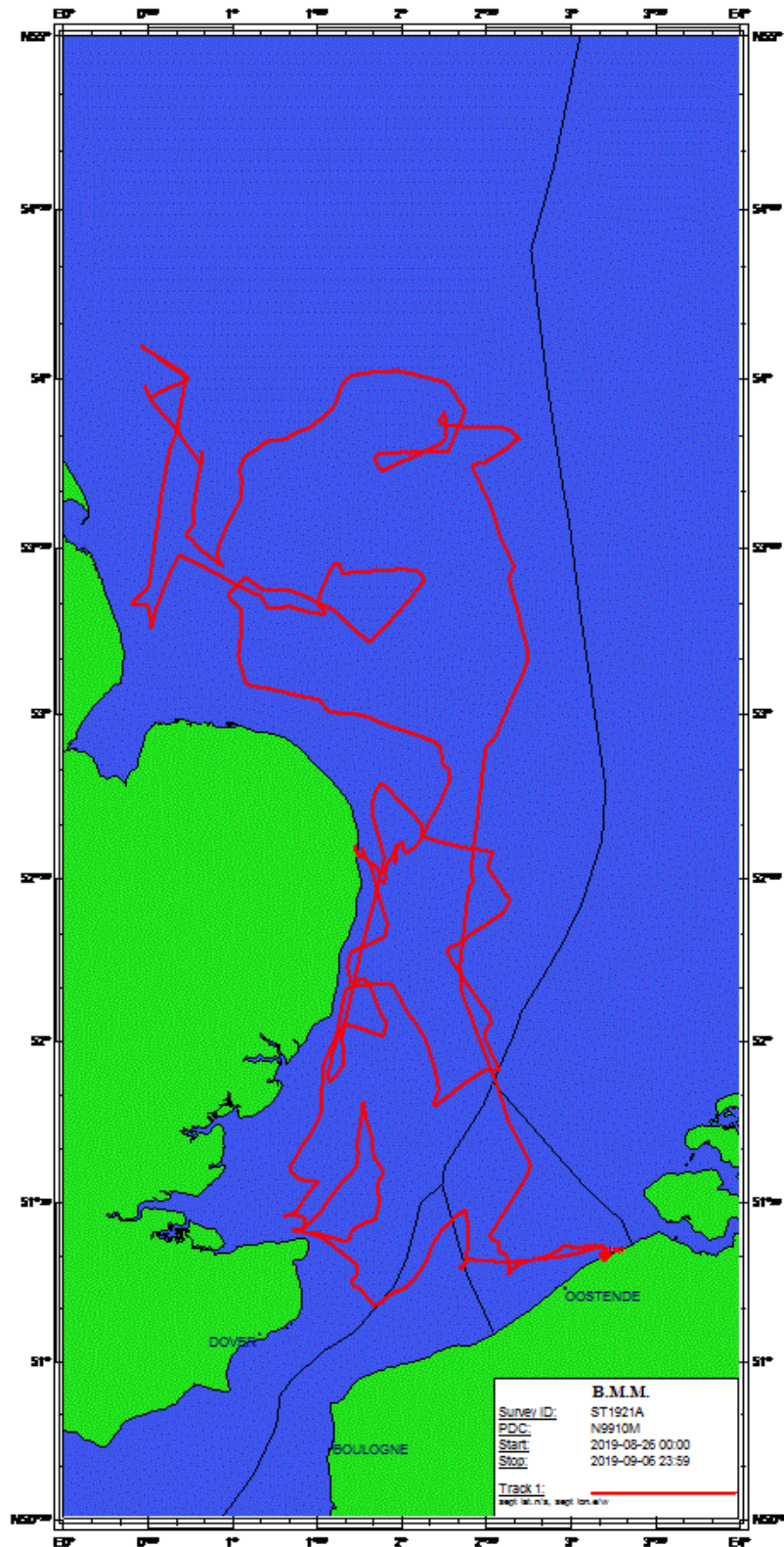


Figure 1: Track plot of campaign 2019/21ab

## 6. MEASUREMENTS AND SAMPLING

### 6.1. OD NATURE-VVL (ZAGRI)

*Table 1: List of fishing stations (tracks) of campaign 2019/21ab (sampling activities for all of the above mentioned scientific objectives was performed in the catches realized on these tracks).*

| Station Name | Shoot Latitude | Shoot Longitude | Haul Latitude | Haul Longitude | ODASIII |
|--------------|----------------|-----------------|---------------|----------------|---------|
| 40           | 51.3605        | 2.9437          | 51.3513       | 2.9230         | X       |
| 86           | 51.2808        | 2.6273          | 51.3128       | 2.6337         | X       |
| 1            | 51.3992        | 2.5218          | 51.4255       | 2.5542         | X       |
| 2            | 51.6148        | 2.7613          | 51.6445       | 2.7403         | X       |
| 7            | 52.9068        | 2.5033          | 52.9275       | 2.5462         | X       |
| 8            | 53.1633        | 2.7395          | 53.1967       | 2.7428         | X       |
| 9            | 53.4140        | 2.6355          | 53.4440       | 2.6630         | X       |
| 116          | 53.7498        | 2.4252          | 53.7542       | 2.4807         | X       |
| 113          | 53.8345        | 2.6778          | 53.8533       | 2.6287         | X       |
| 11           | 53.8762        | 2.2187          | 53.9027       | 2.2483         | X       |
| 112          | 53.7332        | 1.8695          | 53.7633       | 1.8413         | X       |
| 16           | 53.8550        | 1.4383          | 53.8452       | 1.3847         | X       |
| 17           | 53.8198        | 1.2715          | 53.8193       | 1.2182         | X       |
| 72           | 53.4733        | .9118           | 53.4475       | .9430          | X       |
| 22           | 53.5580        | .7508           | 53.5720       | .7677          | X       |
| 18           | 53.7847        | .8227           | 53.7563       | .8165          | X       |
| 19           | 53.9798        | .4855           | 53.9565       | .4998          | X       |
| 110          | 53.3325        | .4350           | 53.3317       | .4868          | X       |
| 60           | 53.2775        | .5165           | 53.2620       | .5162          | X       |
| 111          | 53.4412        | .6465           | 53.4697       | .6738          | X       |
| 81           | 53.3538        | 1.1713          | 53.3253       | 1.2008         | X       |
| 115          | 53.3060        | 1.5540          | 53.3278       | 1.5112         | X       |
| 25           | 53.4570        | 1.6200          | 53.4287       | 1.6465         | X       |
| 26           | 53.4318        | 2.0927          | 53.4080       | 2.1340         | X       |
| 24           | 53.2177        | 1.8048          | 53.2372       | 1.7637         | X       |
| 61           | 53.0445        | 1.5140          | 53.0188       | 1.5523         | X       |
| 62           | 53.0023        | 1.6828          | 53.0010       | 1.7378         | X       |
| 73           | 52.8958        | 2.2273          | 52.8653       | 2.2420         | X       |
| 28           | 52.8380        | 2.2732          | 52.8170       | 2.2825         | X       |
| 29           | 52.5992        | 2.0802          | 52.5825       | 2.0303         | X       |
| 107          | 52.5552        | 1.9603          | 52.5870       | 1.9660         | X       |
| 90           | 52.3613        | 1.9143          | 52.3278       | 1.9013         | X       |
| 64           | 52.1832        | 1.7107          | 52.1948       | 1.7613         | X       |
| 82           | 52.0567        | 1.9068          | 52.0257       | 1.8958         | X       |
| 92           | 52.0503        | 1.6635          | 52.0222       | 1.6477         | X       |
| 91           | 51.9257        | 1.6497          | 51.9027       | 1.6158         | X       |
| 83           | 51.9172        | 1.5733          | 51.9482       | 1.5843         | X       |
| 63           | 52.6642        | 2.1220          | 52.6330       | 2.1225         | X       |

|    |         |        |         |        |   |
|----|---------|--------|---------|--------|---|
| 6  | 52.5772 | 2.5337 | 52.5465 | 2.5103 | X |
| 5  | 52.4308 | 2.6347 | 52.4030 | 2.6032 | X |
| 30 | 52.3002 | 2.3317 | 52.2908 | 2.2748 | X |
| 4  | 52.0605 | 2.5287 | 52.0355 | 2.4940 | X |
| 3  | 51.9107 | 2.5665 | 51.9138 | 2.5180 | X |
| 32 | 51.8117 | 2.1888 | 51.8422 | 2.2110 | X |
| 93 | 51.5653 | 1.5060 | 51.5428 | 1.4672 | X |
| 95 | 51.4675 | 1.3577 | 51.4578 | 1.3050 | X |
| 80 | 51.4088 | 1.4153 | 51.4087 | 1.4667 | X |
| 94 | 51.3847 | 1.6880 | 51.4125 | 1.7028 | X |
| 96 | 51.4513 | 1.8440 | 51.4802 | 1.8583 | X |
| 85 | 51.5598 | 1.8553 | 51.5888 | 1.8830 | X |
| 34 | 51.6620 | 1.8293 | 51.6932 | 1.8240 | X |
| 33 | 51.7768 | 1.7817 | 51.8092 | 1.7770 | X |
| 38 | 51.1862 | 1.8702 | 51.2033 | 1.9122 | X |
| 37 | 51.3830 | 2.1925 | 51.4065 | 2.2245 | X |
| 36 | 51.4603 | 2.3220 | 51.4765 | 2.3705 | X |
| 39 | 51.2960 | 2.3415 | 51.3192 | 2.3828 | X |

## 7. REMARKS

- The weather conditions were sufficient to carry out all fishing activities during the two weeks of the campaign.
- RV Belgica went into dry dock for full maintenance during summer. All fouling was removed and the ship was painted. This allowed transits to go faster comparing to last year, which was beneficial for the campaign.
- Due to the presence of passive fishing gear (crab pots) on the fishing track the stations 114, 20, 102, 87 and 84 had to be cancelled.
- Station 98 was skipped due to lack of time on Monday 2 September. There was no time later in the campaign to come back to this location.
- We encountered some minor technical problems that were always quickly solved by the commander and crew of RV Belgica (e.g. not functioning of one of the generators). This did not cause substantial delays or a loss of stations. However, the Marelec fishing gear control system broke down several times and by the end of the campaign, this issue was still not solved. This is a major problem for this campaign, since it is not safe to fish without knowledge of the weight in the net. Commander and crew took the necessary steps to have the problem solved by the next ILVO campaign.
- Conclusion: 56 out of a total of 62 planned stations were successfully fished and declared valid. This is within the margin of 90% of the plan to be achieved imposed by the European Commission (DG Mare).

## 8. DATA STORAGE

- All biological data on fish (numbers, lengths, weights and ages) and invertebrates (numbers and sample weight for all species, lengths for commercial invertebrate species) are stored in Smartfish, the national database at ILVO.
- Accompanied by trip and haul information and the required ODAS-parameters (temperature and salinity) the biological data will be uploaded to DATRAS, the survey-database hosted by ICES, latest by mid-2020. Litter data, collected according to the international protocol supported by the ICES community, will also be uploaded to DATRAS by mid-2020.

- **All of the data that is in DATRAS is freely available for anyone to use.** Data can be accessed through: [https://datras.ices.dk/Data\\_products/Download/Download\\_Data\\_public.aspx](https://datras.ices.dk/Data_products/Download/Download_Data_public.aspx). Questions on how to download or use this data can be addressed to [loes.vandecasteele@ilvo.vlaanderen.be](mailto:loes.vandecasteele@ilvo.vlaanderen.be) or [lies.vansteenbrugge@ilvo.vlaanderen.be](mailto:lies.vansteenbrugge@ilvo.vlaanderen.be).
- The survival data was collected as test data for the survival monitoring project. Questions on survival data can be addressed to [Sebastian.uhlman@ilvo.vlaanderen.be](mailto:Sebastian.uhlman@ilvo.vlaanderen.be) or [noemi.vanbogaert@ilvo.vlaanderen.be](mailto:noemi.vanbogaert@ilvo.vlaanderen.be).
- No data was provided to OD NATURE-BMDC since it is freely available on DATRAS.