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	Zeebrugge TD Great Yarmouth TA Great Yarmouth TD Zeebrugge TA	26/08/2019: 11h00 30/08/2019: 18h00 LT Loods 02/08/2019: 08h00 LT Loods 06/09/2019: 08h00 LT
3.	Chief Scientist Participating institutes		MSc. Loes Vandecasteele 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
	Total participants:		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 elasmobranches (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). 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 CO2, 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

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

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

Wednesday 28/08/2019

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

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

Friday 30/08/2019

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

Saturday 31/08/2019

Mid-survey break at Great Yarmouth.

Sunday 01/09/2019

Mid-survey break at Great Yarmouth.

Monday 02/09/2019

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

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

Wednesday 04/09/2019

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

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

07h-10h Debarkation of material and personnel

- End of campaign 2019/21ab -

5. TRACK PLOT

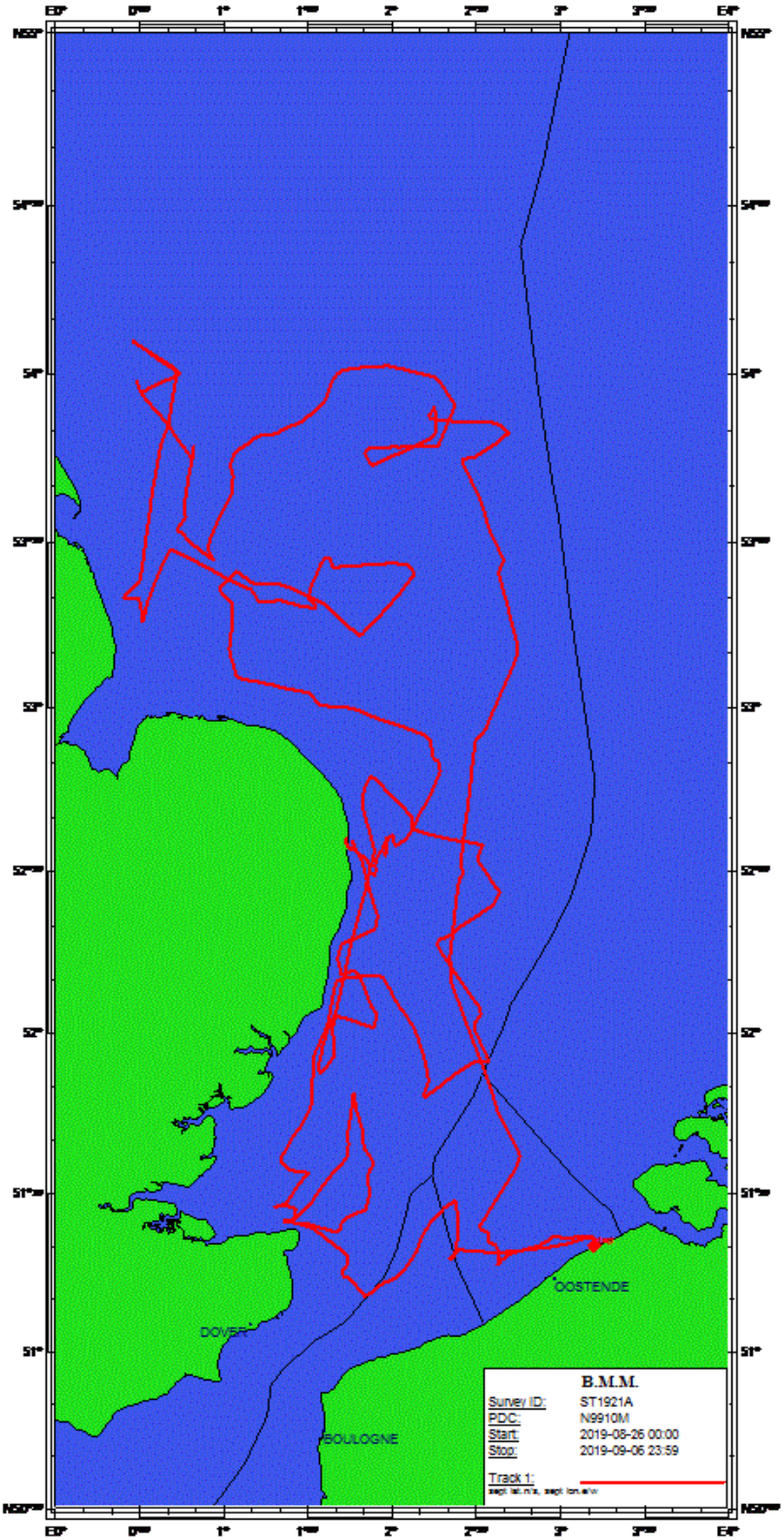

Figure 1: Track plot of campaign 2019/21ab

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**.** Questions on how to download or use this data can be addressed to loes.vandecasteele@ilvo.vlaanderen.be or 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 or noemi.vanbogaert@ilvo.vlaanderen.be.
- No data was provided to OD NATURE-BMDC since it is freely available on DATRAS.