

RV BELGICA CRUISE 2013/23ab – CRUISE REPORT

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Fishery: 26/08/2013 – 6/09/2013

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1. CRUISE DETAILS

1.	Cruise number	2013/23ab
2.	Date/time	Zeebrugge TD: 26/08/2013 at 10h30 Ipswich TA: 30/08/2013 at 19h42 Ipswich TD: 02/09/2013 at 10h24 Zeebrugge TA: 06/09/2013 at 09h00
3.	Chief Scientist Participating institutes	MSc. Kelle Moreau ILVO
4.	Area of interest	Southern North Sea (Belgian, French and English Continental Shelves)

2. LIST OF PARTICIPANTS

Institute	NAME	26/08 – 31/08/13	01 - 06/09/13
ILVO	Kelle Moreau	X	X
ILVO	Patrick Calebout	X	X
ILVO	Jurgen Bossaert	X	X
ILVO	Glenn Kyndt	X	X
ILVO	Benny Deputter	X	X
ILVO	Coenraad Deputter	X	X
ILVO	David Vuylsteke	X	X
ILVO	Nicolas Pyck	X	
Total n° of participants		8	7

3. SCIENTIFIC OBJECTIVES

a) ILVO – NSBTS

Indices of abundance and biomass of adult flatfishes (mainly plaice and sole) 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 quota.

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 and sole) and cod, and (b) documenting distribution and abundance of all commercial and non-commercial bycatch species.

b) Marine Litter

ILVO – EU 7KP CleanSea (Lisa Devriese)

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.

KIMO (and partners) – Fishing for Litter (Wendy Bonne)

Despite many initiatives to reduce marine litter it remains one of the most significant environmental problems affecting the marine environment. 20,000 tonnes of litter is dumped into the North Sea alone every year. KIMO's Fishing for Litter is an imaginative yet simple initiative that aims to reduce marine litter by involving one of the key stakeholders, the fishing industry. KIMO directly provides fishing boats with large bags to deposit marine sourced litter. When full, these bags are deposited safely on the quayside to then be collected for disposal. This reduces the volume of debris washing up on our beaches and also reduces the amount of time fishermen spend untangling their nets. To gain extra data, also scientific RV's are currently requested to engage in the project.

The initiative not only involves the direct removal of litter from the sea, but also raises awareness of the significance of the problem amongst each community. This pioneering project has expanded from an original pilot scheme in the Netherlands to now be a highly recognisable initiative in the United Kingdom and beyond.

To be able to serve the needs of both abovementioned litter-related projects, we will work in the following way:

- Within the geographical limits of the BPNS : all litter is collected in separate bags per station and brought ashore, where it will be characterized on litter sheets in the framework of CleanSea. Afterwards, this litter will be added to the 'Fishing for litter'-bags.
- Outside the BPNS, the litter will be characterized on litter sheets per station on board, and then added to the 'Fishing for litter'-bags.

c) KU Leuven – RADseq-Goby (Prof. Dr. Filip Volcakert)

The KU Leuven in collaboration with the Univ. of Gothenburg studies the adaptive genomics of the sand goby *Pomatoschistus minutus* on a salinity gradient between the Baltic and North Sea. For this purpose, all individuals caught in the statistical rectangles 35F0 and 36F0 will be collected and frozen. The sample off England represents the westernmost sampling site on this gradient.

d) ULG – Mercury in European waters (seabass) (Dr. Joseph Schnitzler)

To investigate the presence of mercury in European waters, all seabass *Dicentrarchus labrax* of lengths between 22 and 27 cm caught during campaign 2013/23ab will be frozen for the analysis of several organs. All mercury will be characterized by means of isotopes, making it also possible to distinguish between natural and anthropogenic sources.

e) MUMM – Jellyfish observation in Belgica mooring dock (Dr. Geneviève Lacroix)

The goal of this project is to determine the effect of winter temperature on the presence of jellyfish (and jellyfish blooms) in Zeebrugge harbor. For this purpose the number of common jellyfish *Aurelia aurita* will be estimated in a limited area next to the ship, before the sampling campaign. The data will be presented in abundance and size classes, and data on water transparency, wind strength and direction, floating algae etc. will also be collected.

MUMM-AUMS

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 MUMM's public web site and following quality control, from the Belgian Marine Data Centre.

ESA

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. All coordinates in WGS84.

Throughout the campaign, measurements are made with the AUMS system.

Monday 26/08/2013

08hxx-10h30 Embarkation of instruments and personnel
10h30 Departure at Zeebrugge
10h30-12h00 Transit to station 40
12h00-20h30 Fishing & sampling stations 40, 86, 39, 37 & 36 + transits between stations
20h30 Start transit to station 1

Tuesday 27/08/2013

07h00-20h15 Fishing & sampling stations 1, 2, 32, 3, 4, 30 & 5 + transits between stations

Wednesday 28/08/2013

07h00-20h20 Fishing & sampling stations 116, 113, 11, 112, 16, 17, 114 & 22 + transits between stations

Thursday 29/08/2013

07h20-19h30 Fishing & sampling stations 20, 19, 18, 111, 110, 60 & 81 + transits between stations

Friday 30/08/2013

07h00-15h40 Fishing & sampling stations 107, 90, 102, 64, 82, 92 & 91 + transits between stations
15h40-19h42 Transit to Ipswich
19h42 Arrival to Ipswich

Monday 2/09/2013

10h24 Departure at Ipswich + start transit to station 98
13h30-21h Fishing & sampling stations 98, 87, 93, 95 & 80 + transits between stations

Tuesday 3/09/2013

07h00-18h50 Fishing & sampling stations 6, 29, 63, 28, 73, 7, 8 & 9 + transits between stations

Wednesday 4/09/2013

07h00-19h20 Fishing & sampling stations 26, 25, 115, 24, 61 & 62 + transits between stations

Thursday 5/09/2013

06h50-16h00 Fishing & sampling stations 33, 34, 85, 96, 94, 84 & 38 + transits between stations
16h00 Start transit to Zeebrugge

Friday 6/09/2013

09h00 Arrival to Zeebrugge
09h00-12h00 Disembarkation of instruments and personnel

- End of campaign 2013/23ab -

5. TRACK PLOT

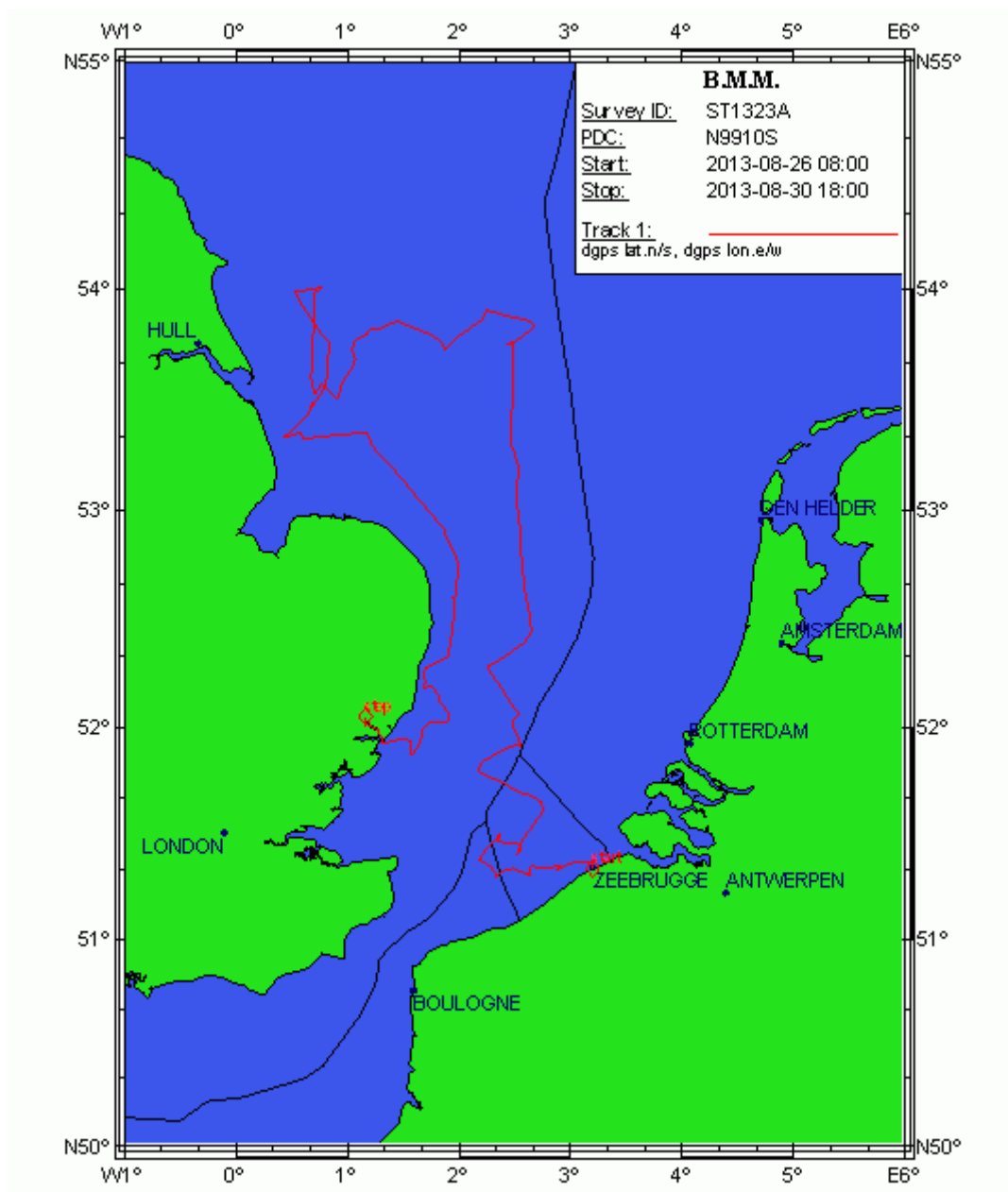


Figure 1: Track plot of campaign 2013/23a

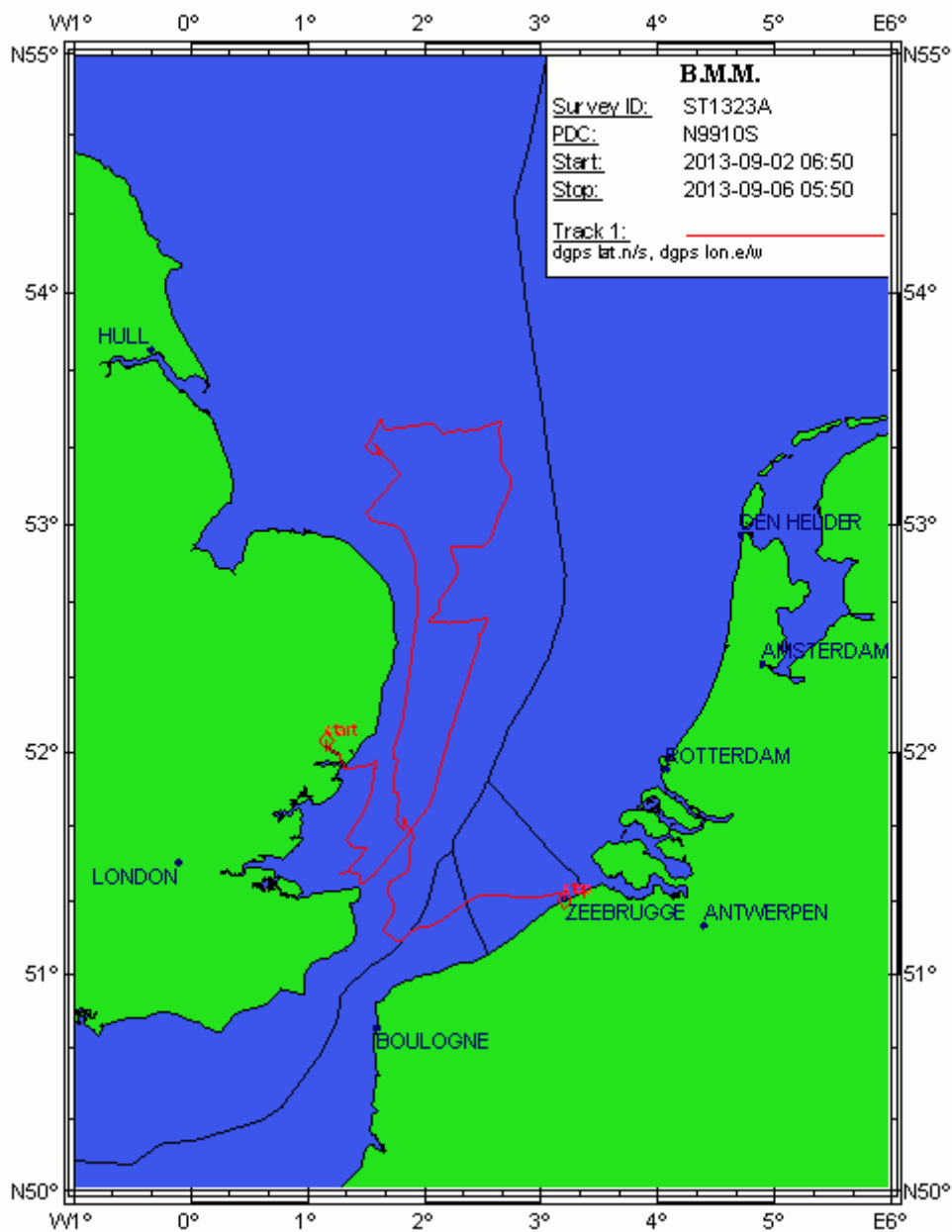


Figure 2: Track plot of campaign 2013/23b

6. MEASUREMENTS AND SAMPLING

Table 1: List of fishing stations (tracks) of campaign 2013/23ab (sampling activities for all of the abovementioned scientific objectives was performed in the catches realized on these tracks).

Station Name	Shooting position		Hauling position	
	Latitude	Longitude	Latitude	Longitude
1	N 51° 40.194	E 2° 52.694	N 51° 42.972	E 2° 55.306
2	N 51° 61.667	E 2° 76.556	N 51° 65.694	E 2° 74.139
3	N 51° 91.778	E 2° 57.250	N 51° 92.500	E 2° 50.000
4	N 52° 06.472	E 2° 53.472	N 52° 03.917	E 2° 48.750
5	N 52° 40.000	E 2° 60.000	N 52° 44.194	E 2° 64.417
6	N 52° 55.167	E 2° 51.028	N 52° 58.306	E 2° 54.000

7	N 52° 91.111	E 2° 50.194	N 52° 93.722	E 2° 55.806
8	N 53° 16.750	E 2° 74.306	N 53° 20.250	E 2° 74.833
9	N 53° 41.250	E 2° 65.278	N 53° 45.944	E 2° 69.361
11	N 53° 86.833	E 2° 20.528	N 53° 90.056	E 2° 24.000
16	N 53° 85.056	E 1° 38.250	N 53° 85.889	E 1° 44.306
17	N 53° 82.417	E 1° 29.861	N 53° 82.361	E 1° 22.333
18	N 53° 76.278	E 0° 82.556	N 53° 81.861	E 0° 83.444
19	N 53° 98.333	E 0° 46.667	N 53° 95.000	E 0° 50.611
20	N 53° 99.333	E 0° 67.056	N 54° 00.000	E 0° 72.556
22	N 53° 57.111	E 0° 77.361	N 53° 54.472	E 0° 73.056
24	N 53° 22.556	E 1° 80.556	N 53° 25.778	E 1° 75.778
25	N 53° 45.556	E 1° 63.639	N 53° 42.333	E 1° 66.083
26	N 53° 39.444	E 2° 16.639	N 53° 43.889	E 2° 09.722
28	N 52° 80.722	E 2° 28.833	N 52° 54.667	E 2° 27.278
29	N 52° 60.861	E 2° 08.889	N 52° 59.222	E 2° 03.417
30	N 52° 30.111	E 2° 33.972	N 52° 28.944	E 2° 26.361
32	N 51° 84.361	E 2° 21.278	N 51° 80.556	E 2° 18.972
33	N 51° 81.833	E 1° 78.278	N 51° 78.222	E 1° 79.056
34	N 51° 70.278	E 1° 82.778	N 51° 66.611	E 1° 82.167
36	N 51° 47.222	E 2° 35.194	N 51° 50.917	E 2° 37.694
37	N 51° 38.722	E 2° 18.389	N 51° 41.917	E 2° 23.167
38	N 51° 18.389	E 1° 87.083	N 51° 20.417	E 1° 92.111
39	N 51° 30.556	E 2° 34.722	N 51° 32.806	E 2° 39.417
40	N 51° 35.833	E 2° 93.944	N 51° 34.278	E 2° 89.000
60	N 53° 36.083	E 0° 59.944	N 53° 32.111	E 0° 59.194
61	N 53° 05.194	E 1° 51.861	N 53° 02.167	E 1° 56.500
62	N 53° 03.222	E 1° 69.417	N 53° 01.778	E 1° 74.583
63	N 52° 63.028	E 2° 12.722	N 52° 67.306	E 2° 12.417
64	N 52° 17.028	E 1° 69.611	N 52° 20.306	E 1° 73.861
72	N 53° 44.778	E 0° 95.750	N 53° 47.861	E 0° 91.556
73	N 52° 90.000	E 2° 23.056	N 52° 87.556	E 2° 24.528
80	N 51° 41.555	E 1° 43.944	N 51° 41.750	E 1° 50.028
81	N 53° 35.222	E 1° 17.722	N 53° 33.444	E 1° 20.694
82	N 52° 06.000	E 1° 91.028	N 52° 01.750	E 1° 89.639
83	N 51° 91.778	E 1° 57.556	N 51° 96.056	E 1° 58.444
84	N 51° 28.889	E 1° 73.889	N 51° 24.250	E 1° 70.694
85	N 51° 61.389	E 1° 90.472	N 51° 57.222	E 1° 86.111
86	N 51° 34.472	E 2° 64.361	N 51° 30.194	E 2° 64.028
87	N 51° 68.333	E 1° 42.389	N 51° 66.389	E 1° 39.361
90	N 52° 37.194	E 1° 92.194	N 52° 33.639	E 1° 90.028
91	N 51° 93.583	E 1° 65.444	N 51° 90.056	E 1° 62.056
92	N 51° 99.667	E 1° 72.056	N 51° 01.778	E 1° 22.222
93	N 51° 56.667	E 1° 50.722	N 51° 54.417	E 1° 47.056
94	N 51° 43.056	E 1° 71.667	N 51° 40.028	E 1° 70.111
95	N 51° 46.944	E 1° 36.833	N 51° 45.278	E 1° 27.250
96	N 51° 50.917	E 1° 86.944	N 51° 45.750	E 1° 85.167
98	N 51° 96.306	E 1° 59.111	N 51° 92.750	E 1° 58.028
102	N 52° 27.500	E 1° 70.528	N 52° 23.611	E 1° 68.056

107	N 52° 59.333	E 1° 97.694	N 52° 55.861	E 1° 96.556
110	N 53° 34.333	E 0° 41.778	N 53° 34.167	E 0° 49.333
111	N 53° 45.083	E 0° 65.611	N 53° 48.056	E 0° 68.333
112	N 53° 73.806	E 1° 87.472	N 53° 77.917	E 1° 83.861
113	N 53° 84.611	E 2° 68.861	N 53° 86.611	E 2° 61.861
114	N 53° 72.278	E 1° 04.722	N 53° 69.417	E 1° 07.722
115	N 53° 33.333	E 1° 50.972	N 53° 31.306	E 1° 55.972
116	N 53° 75.000	E 2° 43.333	N 53° 91.750	E 2° 54.250

7. REMARKS

- In 2013, we were blessed with calm seas and almost no wind, so the weather did not interfere with the fishing activities.
- Technical issues that have affected the cruise plan only occurred once, being after our departure from Ipswich on Monday the 2nd of September when hydraulic problems caused us to miss one station. There were some additional minor malfunctions (e.g. the sudden loss of electricity in the fish lab) that were always quickly solved by the crew and didn't cause any delays or data losses. For two stations (61 & 62) we did lose the ODAS/OURS data as one of the crew members had turned off the computer.

A second station was missed due to active crab fisheries on the track, and one performed tow was declared invalid as such due to a rupture of the fishing net.

Conclusion: 60 out of the total of 62 planned stations have been fished successfully, of which 59 were declared valid. This is within the margin of 10% missed stations (would be a maximum of 6 missed stations) superposed by the European Commission (DG Mare). The three missed/invalid stations were well spread over the survey area, so a minimum of three valid stations was fished in each of the fourteen rectangles that make up the survey area, ensuring a good geographical spread of the obtained data.

8. DATA STORAGE

- All biological data on fish (numbers, lengths, weights and ages) and invertebrates (numbers for all species, measurements for commercially important species), and the accompanying ODAS-parameters are being stored.
- Currently, all data are only stored at ILVO, where a new database is currently under development for this purpose. The data on fish are being prepared to be uploaded to DATRAS, the survey-database hosted by ICES. By April 2013, the data for at least the three most recent years will be available in this database for anyone who wants to use them (www.datras.ices.dk). Later on we will be working our way back through the time series and keep uploading additional years to DATRAS.
- No data have been specifically submitted to MUMM-BMM.