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MRV *Alba na Mara*

Survey 1922A

REPORT

28 November – 3 December 2022

Ports

Loading: Leith, (28 November 2022)

Sailing: Leith, (29 November 2022)

Unloading: Leith, (5 December 2022)

Personnel

Maria Hunter (SIC)

Nicky Shepherd

Samantha Cunningham

Gear:

BT 158 with 50 mm cod-end

2 m beam trawl with 50 mm cod-end

Day grab and table

Catamaran and manta net

Objectives

1. To undertake flatfish sampling in the Forth and St Andrews Bay (with sediment) in support of the Clean Seas Environment Monitoring Programme (OSPAR and UK MS D8).
2. To undertake fish sample preparation for subsequent eco-toxicological analyses (biological effects).
3. To undertake survey of seabed litter and sea-surface litter in the Firth of Forth (UK MS D10).
4. To collect flatfish and sediment for the OSPAR:CONnect (CONtaminants of Emerging Concern and Threat in the marine environment) project in the Firth of Forth.

Estimated Days per Project: 3 days ST04a (OSPAR & MSFD D8); 2 days ST04c (MSFD D10)

Narrative

Loading

Scientific equipment was loaded onto *Alba na Mara* on 28 November in Leith, ahead of the cruise. Scientific staff joined the ship on the 28th November.

29 November 2022

The ship sailed from Leith on 29 November at 07:00. The ship proceeded to sail to the Kingston Hudds fishing site where fishing commenced at 08:45. Two trawls were completed and the required number of 50 dab were caught. The ship then sailed to the Forth inner

offshore sediment sites where five out of five sites were successfully completed. The ship then sailed to the St Andrews Bay sediment sites where three out of five sediment sites were completed and two further sites were attempted, however, there was not enough sediment in the grab so no samples were taken. The ship then went to anchor in St Andrews Bay at 18:15.

30 November 2022

The next morning the anchor was raised at 07:00 and fishing commenced in St Andrews Bay at 07:40. Three hauls returned the required number of 50 flounder. The two remaining St Andrews Bay sediment sites were attempted again and successful, therefore, five out of five sites were completed. The ship sailed to the Firth of Forth where three cat tows were successfully completed. The ship then returned to anchor at Musselburgh at 17:00.

1 December 2022

The next morning anchor was raised at 07:00 and the ship sailed to the Tancred Bank fishing site where seven beam trawls were successful in returning the required 50 flounder alongside eight extra flounder taken for the CONnECT project. The Lower Forth Estuary sediment sites were then sampled and five out of five were completed as well as an extra sediment sample at Tancred Bank for the CONnECT project and two further cat tows were completed. One cat tow was not possible to obtain because it was to be towed beneath the Forth bridges and it was too dark to clearly see any obstacles in the narrow channel. The ship then went to port in Leith at 19:00.

On return to the lab it was discovered that the Tancred Bank sediment site had been sampled twice by mistake with one labelled LFE GC. Also the LFE GC site had been sampled but labelled LFE EB. Therefore, the extra Tancred sample was deleted from the login spreadsheet and the LFE EB sample was re-named LFE GC instead.

Acknowledgements

The MSS staff on this survey would like to thank all the ship's crew for the excellent service they provided throughout the survey.

Results

A summary of the results is given in Table 1 and 2.

Submitted: M Hunter

Table 1: Samples collected during cruise 1922A for chemical, ecotoxicological and disease analyses.

Area:	Forth Inner Offshore (Kingston Hudds)	Lower Forth Estuary (Tancred Bank)	St Andrews Bay	TOTAL
Species no, (required)	Dab 50 (50)	Flounder 50 (50)	Dab 50 (50)	NA
CONnect		Flounder 8		
Number of trawls	2	7	3	NA
Biological Effects				
External Disease	50	50	50	150
Bile	22	24	20	66
Liver histopathology	50	50	50	150
Gonad histopathology	15	26	23	64
EROD	15	14	14	43
Otoliths	50	50	50	150
Blood for micronucleus	25	25	25	75
Liver Chemistry				
PCBs / PBDEs	5 ⁽¹⁾	5 ⁽¹⁾	5 ⁽¹⁾	15
Metals	5 ⁽¹⁾	5 ⁽¹⁾	5 ⁽¹⁾	15
Muscle Chemistry				
Metals	5 ⁽¹⁾	5 ⁽¹⁾	5 ⁽¹⁾	15
Sediments				
Sites required	5	5	5	15
PAHs	5	4	5	14
PCBs/PBDEs	5	4	5	14
Organotin	5	4	5	14
Metals	5	4	5	14
CHN/Particle Size	5	4	5	14
CONnect	NA	1	NA	1

(1) Pools of 5 fish

Table 2: Catamaran manta trawls undertaken during cruise 1922A for floating litter.

Region	No.	Duration
Firth of Forth	5	30 mins each