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MRV *Alba na Mara*

Survey 2022A

PROGRAMME

6-22 December 2022

Loading: Leith, 05 December 2022

Unloading: Fraserburgh, 22 December 2022

In setting the survey programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Lab Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Survey Report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a cruise ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

Out-turn days per project: 20732 - 17 days

Equipment

Sandeel dredge x 2 (modified 4' scallop dredge with 6" teeth and spare toothbars) with towing bar and camera attachment.

Minilogger (or equivalent – i.e. DST).

Objectives

1. To determine the abundance, length and age of sandeels in the sediment from regions east of the Firth of Forth and around Turbot bank.
2. To collect and preserve samples of *A. marinus*, from the different stations for further analyses and partners at UK-CEH.
3. To determine the sex and maturity stage of all sandeels selected for ageing.
4. If time allows, to determine the abundance, length and age of sandeels in the sediment from stations within the NnG and Seagreen offshore windfarms.

Procedure

All required gear will be loaded onto the vessel on 5 December, with scientific staff joining the same day. Two regions of historical importance for sandeel fishing will be surveyed (see Figure 1) in the period 6 December to 21 December, weather permitting. In addition, new stations outside the closed area (stations 53-63) will be sampled to investigate the effect of fishing pressure on size and length distributions. A modified scallop dredge will be used to catch sandeels buried in the substrate at the priority stations given in Table 1 and Figure 2. Ideally five repeat tows will be conducted at each station although this may be reduced to a minimum of two if catch quantities are low or available time is limited. Dredge duration will be approximately ten minutes at a towing speed between 2 and 3 (ideally 2.5) knots.

At each dredge station, all sandeels will be identified to species level, measured, and otoliths (5, 8 or 10 depending on length strata, per half centimetre) will be taken for age determination (Objective 1).

All 0-group sandeels and some fish bycatch will be retained and frozen for later analysis. Sub-samples of 100 age-1 sandeel (size to be determined from age-length keys of sampled catches) *A. marinus* will be taken from the northerly (latitude > 57°N) and southerly (latitude < 57°N) sub-regions (Objective 2).

Sandeels selected for ageing will be hand stripped and assigned a maturity stage based on a simple three-point scale (I = immature/indeterminate sex; MM= mature male; MF = mature female). Immature individuals will be individually frozen for further dissection and assigned to 1 of 2 stages (IM =Immature male or IF= Immature Female). (Objective 3).

If favourable weather and time allows, sandeel will be sampled at stations within the NnG and Seagreen offshore windfarms (Table 1 and Figure 2, Objective 4).

Following the completion of survey work, *Alba na Mara* will return to Fraserburgh for unloading.

Normal contacts will be maintained with the laboratory.

Submitted:
T Regnier
22 November 2022

Approved:
I Gibb
02 December 2022

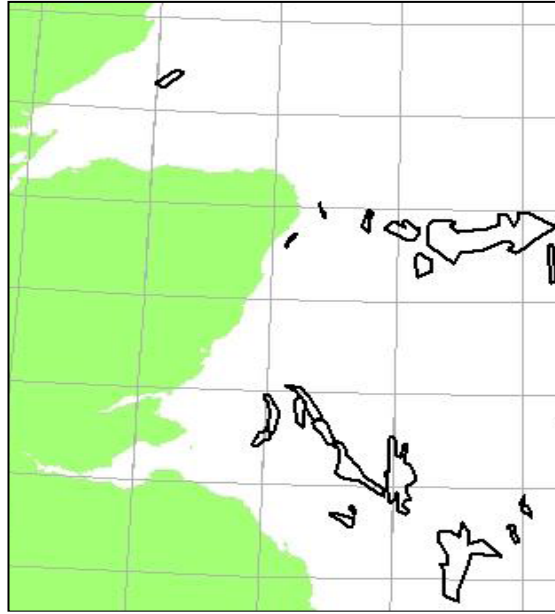


Figure 1: Location of important sandeel fishing areas.

Station	Latitude (dec deg)	Longitude (dec deg)	Bank/Area	Region	Latitude (deg, dec min)	Longitude (deg, dec min)
1	56.099	-1.343	Berwick Bank	FOF	56°5.94'N	1°20.58'W
2	56.122	-1.388	Berwick Bank	FOF	56°7.32'N	1°23.28'W
3	56.225	-2.056	Wee Bankie	FOF	56°13.5'N	2°3.36'W
4	56.244	-2.039	Wee Bankie	FOF	56°14.64'N	2°2.34'W
7	56.417	-2.435	Bell Rock	FOF	56°25.02'N	2°26.1'W
8	56.416	-1.977	NW Marr Bank	FOF	56°24.96'N	1°58.62'W
9	56.468	-1.735	N Marr Bank	FOF	56°28.1'N	1°44.1'W
10	56.365	-1.698	Marr Bank	FOF	56°21.9'N	1°41.9'W
12	56.246	-1.982	Wee Bankie	FOF	56°14.76'N	1°58.92'W
17	56.065	-1.328	Berwick Bank	FOF	56°3.9'N	1°19.7'W
18	55.793	-1.323	South Berwick Bank	FOF	55°47.6'N	1°19.4'W
19	56.665	-1.805	Scalp Bank	FOF	56°39.9'N	1°48.3'W
20	57.318	-1.11	Turbot Bank West	TUR	57°19.1'N	1°6.6'W
21	57.712	-1.218	Aeroplane Bank	TUR	57°42.7'N	1°13.1'W
22	57.74	-1.433	Belgar Head	TUR	57°44.4'N	1°26'W
23	57.773	-1.482	Belgar Head	TUR	57°46.4'N	1°28.9'W
24	57.402	-0.702	Turbot Bank Central	TUR	57°24.1'N	0°42.1'W
26	57.387	-1.789	Cruden Bay	TUR	57°23.22'N	1°47.34'W
27	57.713	-1.595	Rattray Head	TUR	57°42.8'N	1°35.7'W
28	57.688	-1.583	Rattray Head	TUR	57°41.3'N	1°35'W
29	57.72	-2.212	Aberdour Bay	TUR	57°43.2'N	2°12.7'W
30	57.37	-0.692	Turbot Bank Central	TUR	57°22.2'N	0°41.5'W
31	57.402	-0.812	Turbot Bank Central	TUR	57°24.1'N	0°48.7'W
32	57.368	-0.838	Turbot Bank Central	TUR	57°22.1'N	0°50.3'W
33	57.366	-0.951	Turbot Bank West	TUR	57°21.96'N	0°57.06'W
34	57.415	-0.882	Turbot Bank Central	TUR	57°24.9'N	0°52.9'W
35	57.425	-1.115	Turbot Bank West	TUR	57°25.5'N	1°6.9'W
36	57.4	-1.04	Turbot Bank West	TUR	57°24'N	1°2.4'W
52	57.723	-1.976	Fraserburgh	TUR	57°43.38'N	1°58.56'W
53	56.131	-0.961	Stendysen v. Aberdeen	FOF	56°7.885'N	0°57.637'W
54	56.076	-0.949	Stendysen v. Aberdeen	FOF	56°4.571'N	0°56.911'W
55	56.049	-0.875	Stendysen v. Aberdeen	FOF	56°2.948'N	0°52.502'W
56	55.652	-0.562	Eventyr Bank	FOF	55°39.122'N	0°33.695'W
57	55.576	-0.529	Eventyr Bank	FOF	55°34.551'N	0°31.713'W
58	55.529	-0.529	Eventyr Bank	FOF	55°31.724'N	0°31.745'W
59	57.228	-0.815	Aberdeen Bank	TUR	57°13.661'N	0°48.875'W
60	57.178	-0.783	Aberdeen Bank	TUR	57°10.704'N	0°46.984'W
61	57.429	-0.02	Turbot Bank East	TUR	57°25.758'N	0°1.216'W
62	57.385	-0.016	Turbot Bank East	TUR	57°23.075'N	0°0.945'W
63	57.321	-0.021	Turbot Bank East	TUR	57°19.247'N	0°1.278'W
101	57.765	-2.905	Buckie	TUR	57°45.9'N	2°54.3'W
SG1	56.671	-1.914	Seagreen	FOF	56°40.276'N	1°54.824'W
SG2	56.668	-1.704	Seagreen	FOF	56°40.109'N	1°42.263'W
NNG	56.307	-2.268	NnG	FOF	56°18.392'N	2°16.09'W

Table 1: Location of dredge stations.

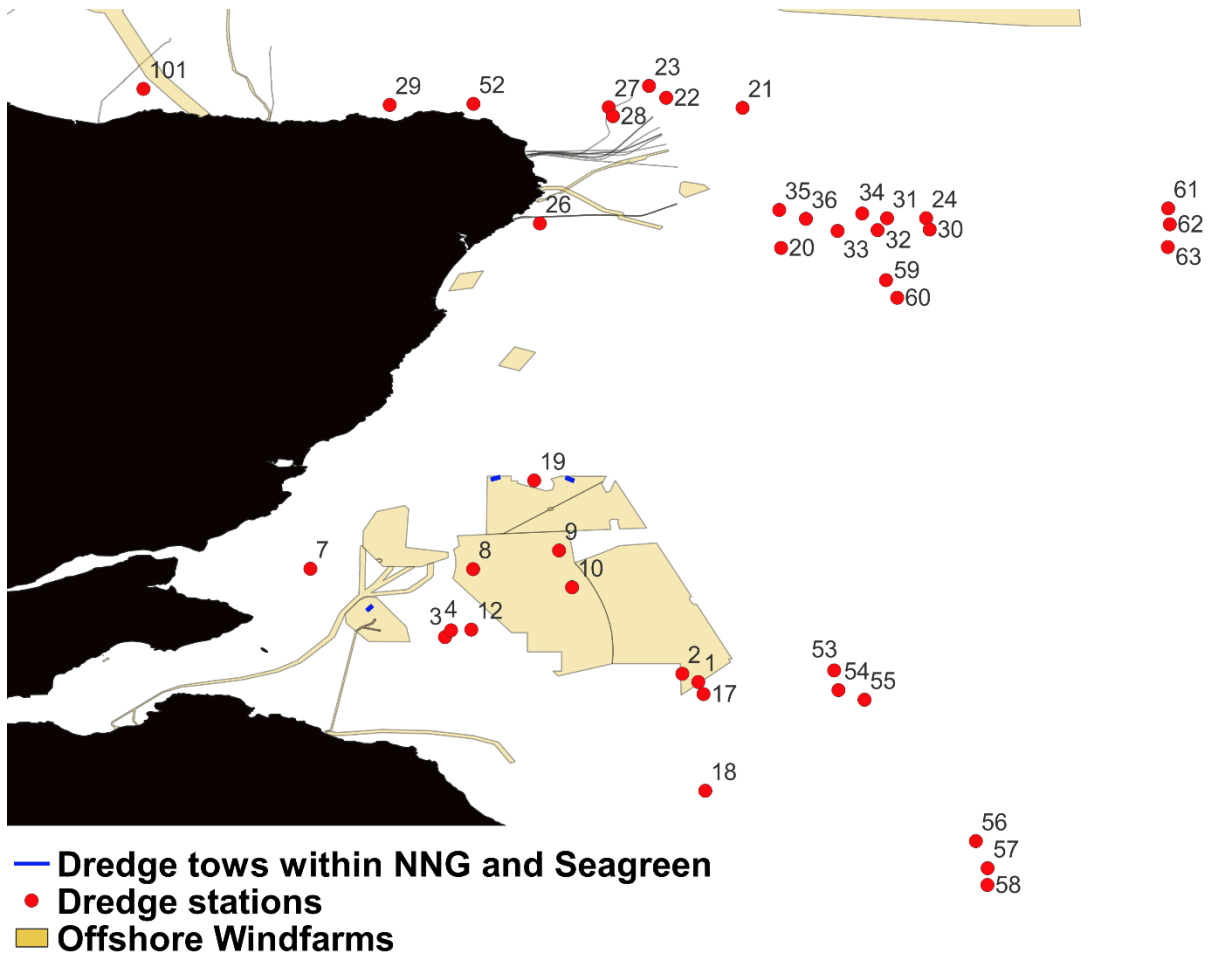


Figure 2: Chart of dredge stations to be sampled in 2022A.